LaDonna Driver
Licensed in Illinois
Direct Dial: 217-993-6073
nld@heplerbroom.com

HeplerBroom LLC

EDWARDSVILLE (Madison County), IL
SAINT LOUIS, MO • CHICAGO, IL
SPRINGFIELD, IL • CRYSTAL LAKE, IL
HAMMOND (Lake County), IN

www.heplerbroom.com

4340 Acer Grove Drive
Springfield, IL 62711
PH: 217-528-3674
FX: 217-528-3964

September 11, 2023

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Community Relations
Illinois EPA

Via Hand Delivery and Electronic Mail

Mr. Brad Frost
Office of Community Relations
Illinois Environmental Protection Agency
PO Box 19506
Springfield, Illinois 62794-9506
brad.frost@illinois.gov

Re: Comment Letter
United States Steel Corporation – Granite City Works
Notice of Intent to Deny Application for Revision to
Construction Permit/PSD Approval (Permit/Application No. 95010001)
ID No. 119813AAI

Dear Mr. Frost:

This letter is written on behalf of my client, United States Steel Corporation ("USSC"). Attached to this letter are comments prepared by USSC in response to the Illinois Environmental Protection Agency's ("Illinois EPA") Notice of Intent to Deny Application for Revision to Construction Permit/PSD Approval for the USSC Granite City Works. The Notice was posted on Illinois EPA's Public Notice website on July 21, 2023 and had an original deadline of August 21, 2023 for submittal of comments. On August 17, 2023, USSC submitted a request for an extension of the comment period. On August 18, 2023, Illinois EPA granted that request and extended the deadline for submitting comments to September 11, 2023. The comments attached to this letter are therefore timely submitted.

We appreciate the opportunity to submit comments on the Notice of Intent, as well as Illinois EPA's careful consideration of our comments.

Sincerely,

N. LaDonna Driver

N. LaDonna Driver

Enclosure

Comments of the United States Steel Corporation - Granite City Works

Notice of the Intent to Deny Application for Revision to Construction Permit/PSD Approval (Permit/Application No. 95010001

While it is with great disappointment that U. S. Steel received Illinois EPA's notice of intent to deny the pending permit application, we respectfully request that the Agency reconsider its preliminary decision and work with U. S. Steel on resolving any outstanding issues. We also request to meet with Illinois EPA in the interest of reaching resolution considering many of the reasons that Illinois EPA raises in its proposed denial were not known to U. S. Steel until it received the notice (or very shortly beforehand) notwithstanding the parties met several times to discuss the permit application. U. S. Steel also notes that Illinois EPA did not notify U. S. Steel of any deficiency in the application or information submitted in such application pursuant to 35 Ill. Admin. Code 201.158 and 204.1300 or 415 ILCS 5/39.5(5). We are greatly disappointed that the Agency took this path, when many of the issues, as explained herein, could have been efficiently resolved if the Illinois EPA raised them during the years while the permit application was pending as is customary. U. S. Steel also notes that the permit application is for a revision to a previously issued PSD permit (as issued to National Steel Corporation in 1996) to a source that has been and continues to operate; and is not a request for a new major modification – and, therefore, the scope of the review is more limited and the process is substantially different than when compared to a major modification or a revision to a PSD permit for a source that has yet to operate.

In Section I below, U. S. Steel addresses Illinois EPA's stated reasons for its proposed denial of the pending permit application, as required by Section 39 of the Illinois Environmental Protection Act and as summarized in the draft denial letter. In Sections II through XIII below, U. S. Steel addresses the denial points listed in Attachment 1 to the draft denial letter.

I. U. S. Steel Disagrees with Illinois EPA Regarding Whether Issuance of the Requested Permit Revision Would Violate Provisions of the Illinois Environmental Protection Act or the Regulations of the Pollution Control Board

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that Section 9.1 of the Illinois Environmental Protection Act *might be violated.* Neither Attachment 1 to the draft denial letter nor the accompanying Project Summary makes any mention of Section 9.1 or provides any indication as to how issuance of the requested permit revision *might violate* this provision. Because the notice is unclear as to what precisely "might be violated," U. S. Steel cannot substantively respond to this assertion. The ambiguity in the stated reason for the proposed denial violates due process. In addition, this assertion inappropriately shifts the burden on U. S. Steel to prove the negative; as Illinois EPA has not shown how or what would be violated. That being said, U. S. Steel is willing to discuss Illinois EPA's assertion such that meaningful discussions can potentially lead to resolution of the issue.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that Section 39 of the Illinois Environmental Protection Act might be

violated. Neither Attachment 1 to the draft denial letter nor the accompanying Project Summary makes any mention of Section 39. Section 39(a) states that "it shall be the duty of the Agency to issue …a permit upon proof by the applicant that the facility, equipment, vehicle, vessel, or aircraft will not cause a violation of this Act or of regulations hereunder." As set forth further herein, U. S. Steel maintains that its application demonstrates that the facility and equipment at issue in the application will not cause a violation of the Illinois Environmental Protection Act or the regulations thereunder. Therefore, it is Illinois EPA's duty, under the statute, to proceed with permit issuance. Section 39(a) further provides:

> If the Agency denies any permit under this Section, the Agency shall transmit to the applicant within the time limitations of this Section specific, detailed statements as to the reasons the permit application was denied. Such statements shall include, but not be limited to, the following:
>
> (i) the Sections of this Act which may be violated if the permit were granted;
>
> (ii) the provision of the regulations, promulgated under this Act, which may be violated if the permit were granted;
>
> (iii) the specific type of information, if any, which the Agency deems the applicant did not provide the Agency; and
>
> (iv) a statement of specific reasons why the Act and the regulations might not be met if the permit were granted.

For the various reasons set forth herein, U. S. Steel maintains that the draft permit denial does not satisfy the above requirements. To summarize the matters discussed in this comment: the Illinois EPA has not clearly specified how certain provisions of the Act and regulations might not be met if the permit were granted; for those areas where certain provisions of the Act and regulations are specified, Illinois EPA is incorrect that those provisions would be violated if the permit were granted; and where the Illinois EPA has asserted that information was not provided to the Agency, U. S. Steel is providing that information here, is directing the Illinois EPA to the information in the application, or describes why such information is not pertinent to the issues at hand. Accordingly, Illinois EPA should not issue the proposed permit denial. As stated herein, U. S. Steel stands ready to work with Illinois EPA to resolve any remaining concerns for permit issuance.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that subsections 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act, pertaining to administrative amendments of Clean Air Act Permit Program ("CAAPP") permits, might be violated. Neither Attachment 1 to the draft denial letter nor the accompanying Project Summary provides any indication as to how issuance of the requested permit revision might violate these provisions; indeed, the only discussion of these provisions in Attachment 1 is a determination by Illinois EPA that the administrative amendment process can be used only to amend "the current CAAPP permit." U. S. Steel agrees with this determination. U. S. Steel further notes that, because the listed subsections of the Illinois Environmental Protection Act relate only to the CAAPP, it would be inappropriate to deny the application for a revision of the construction permit

and PSD approval based on a failure to satisfy these statutory provisions, as discussed in Section XIII.A herein.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that subsections 39.5(5)(c) and 39.5(10)(a)(i) of the Illinois Environmental Protection Act might be violated. Neither Attachment 1 to the draft denial letter nor the accompanying Project Summary makes any mention of subsections 39.5(5)(c) or 39.5(10)(a)(i) or provides any indication as to how issuance of the requested permit revision might violate these provisions. The draft denial letter states that the application does not satisfy the requirement for a certification of truth, accuracy, and completeness in subsection 39.5(5)(e); this is not a valid basis for denial of the permit application for the reasons discussed in Section III herein.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that 35 Ill. Adm. Code Sections 203.128 and 204.560 might be violated. The cited rule provisions are definitions, not affirmative requirements, and cannot be violated.

Illinois EPA also proposes to deny the permit application, at least in part, because Section 201.142 and Section 201.160 might be violated. However, the Illinois EPA's basis for this assertion is unclear as it simply states that these sections "might be violated" with no supporting information. Nowhere in the letter or in Attachment 1 does Illinois EPA discuss and provide any explanation of this proposition. For this reason, U. S. Steel is unable to respond to the ambiguous claim. Furthermore, simply stating that something might be violated without providing supporting information cannot be used as the basis to deny a permit application.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that 35 Ill. Adm. Code Sections 203.601, 203.602, 204.1100, 204.1110, 204.1120 and 204.1130 might be violated. These claims, which relate to the Prevention of Significant Deterioration ("PSD") and Nonattainment New Source Review ("NNSR") programs under the federal Clean Air Act, are without merit for the reasons discussed in Sections VI through VIII below.

II. THE PERMIT APPLICATION SATISFIES 35 ILL. ADM. CODE SECTION 201.159

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the pending permit application "does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022, as required by 35 IAC 201.159" and that "the 2022 application includes a photocopy of an earlier certification, dated February 25, 2022, which was submitted with a prior application." These assertions are incorrect in several respects.

First, the agency misrepresents the requirements of the cited rule provision, which are as follows. There is no requirement for a certification of truth, accuracy, and completeness.

> All applications and supplements thereto shall be signed by the owner and operator of the source, or their authorized agent, and shall be accompanied by evidence of authority to sign the application.

Second, the application that the agency refers to as the "2022 application" is actually a construction permit application submitted on March 2, 2020. This permit application includes a completed 199-CAAPP form, with a certification signed and dated February 25, 2020, and a completed 197-FEE and form, with a check for the application fee of $23,000 and a certification signed and dated February 25, 2020.

A supplement to the permit application was submitted in October 2022. As required by 35 Ill. Adm. Code Section 201.159, the supplement was signed by Michael Patton, the General Manager of the Granite City Works. No application fee was provided, as is appropriate for a supplement to a pending application for a construction permit.

The list of statutory and regulatory requirements presented in the draft denial letter does not include any reference to 35 Ill. Adm. Code Section 201.159, so it is unclear whether these assertions in Attachment 1 to the draft denial letter are intended to support Illinois EPA's proposed denial of the application. If these assertions are so intended, U. S. Steel disagrees that this is a valid basis for denial of the application for the reasons described above.

Furthermore, U. S. Steel notes that, while Illinois EPA had the permit application supplement for months, and virtually met with U. S. Steel to discuss the pending permit application and the supplement, the Agency never requested such a new certification.

III. A Signed Certification of Truth, Accuracy, and Completeness is Provided Herewith

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the pending permit application "does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022" and that such a certification is required by Section 39.5(5)(e) of the Illinois Environmental Protection Act. This is not a valid basis for denial of the permit application for the following reasons.

As noted in Section II above, the agency mischaracterizes the October 2022 submittal as a new or separate permit application, as it is merely a supplement to the permit application submitted in March 2020. In the transmittal letter for the supplement, and for administrative convenience U. S. Steel suggested that Illinois EPA refer to the supplement rather than to the initial submittal from March 2020 because, as requested by Illinois EPA staff following review of the initial permit application submittal, the sections of the permit application were reordered.[1] The cited provision of the Illinois Environmental Protection Act requires that each submitted permit application include a certification, but it does not expressly require a separate certification for each supplement to a permit application.

Nonetheless, and without waiving any rights or defenses, U. S. Steel is providing a new certification of the truth, accuracy and completeness of the supplement that was submitted in October 2022 as Exhibit 1 with these comments. Accordingly, even if Illinois EPA's interpretation of Section 39.5(5)(e) of the Illinois Environmental Protection Act is correct and a separate certification is

[1] For example, the sections summarizing changes to CO emissions and presenting proposed Best Available Control Technology ("BACT") determinations for CO emissions were sections 3 and 4 of the initial permit application and were sections 4 and 8 of the supplement, and these sections were cross-referenced in sections 1 and 2 of each submittal.

required for each supplement to a pending permit application, that requirement is now satisfied and this claimed deficiency is no longer a valid basis for denial of the permit application. Furthermore, this issue could easily have been avoided if IEPA simply made a request to certify the supplement. U. S. Steel has worked collaboratively with Illinois EPA in responding to inquiries and requests.

IV. PURPORTED FAILURE TO BE CONSISTENT WITH PENDING BOARD APPEALS

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the application must be denied because it does not individually address all items that are currently under appeal with the Illinois Pollution Control Board. In particular, Illinois EPA claims, "the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62." Quite strikingly, Illinois EPA cites to no Board order or regulatory or statutory citation to support its assertion. This is for good reason, as there is none. The assertion is without merit. Although it is logical that Illinois EPA might inquire about contested provisions in the appeals before the Board that may appear to be absent in the application, the absence of such mention is not grounds for denying the permit application. Furthermore, the permit application submitted in March 2020 and supplemented in October 2022 has been pending for more than three years, during which time Illinois EPA and U. S. Steel met in person and virtually on several occasions to discuss the PSD permit revisions, yet only in the proposal to deny the permit application did U. S. Steel learn of Illinois EPA's apparent contention that U. S. Steel was obligated to address individually in its permit application all items that are currently under appeal with the Illinois Pollution Control Board. U. S. Steel's understanding from these discussions was that, with satisfactory issuance of the revised permit, the pending appeals could be dismissed in their entirety. U. S. Steel would be pleased to discuss Illinois EPA's concerns in the context of the appeal before the Board, but the Agency cannot claim these differences as a basis to deny the permit application.

V. PURPORTED INCONSISTENCY BETWEEN THIS PERMIT APPLICATION AND THE PERMIT APPLICATION SUBMITTED IN 2008 REQUESTING REVISIONS RELATING TO SO_2 EMISSIONS

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the application must be denied because it "is inconsistent with" a separate permit application submitted in 2008.

Unfortunately, the Illinois EPA has not acted on the 2008 application. That application was submitted in accordance with the Consent Decree between U. S. Steel and the Illinois EPA. (*See, People of the State of Illinois v. United States Steel Corporation*, No. 05-CH-750, Third Judicial Circuit, Madison County.) The 2008 application was submitted based on limited information that was available at the time, and subsequent information indicates that when averaged over the year, the emission factor in the existing permit is appropriate. This topic was discussed with the Illinois EPA as the permit application submitted in 2020 was pending; and the Illinois EPA did not object to this development at the time. To now claim that this discrepancy serves as a basis to deny the PSD application is disingenuous. U. S. Steel cannot simply withdraw the 2008 permit application at this time but would do so following issuance of the revised PSD permit, pursuant to the permit application submitted in 2020 and supplemented in 2022, and termination of the Consent Decree. U. S. Steel has indicated it would work with Illinois EPA on that process and remains committed and willing to do so.

VI. THE PERMIT APPLICATION IS SUFFICIENT AS TO THE PSD AIR QUALITY IMPACTS ANALYSIS FOR CARBON MONOXIDE

The Production Increase Project was a major modification under the preconstruction PSD permitting program because it involved physical and operational changes that would result in a significant net increase in emissions of carbon monoxide (CO). National Steel Corporation, then the owner and operator of Granite City Works, submitted a PSD permit application for this project in 1995. Illinois EPA determined that this PSD permit application included all necessary information and granted PSD approval for the project in conjunction with issuance of Permit No. 95010001 on Jan. 25, 1996. One of the key requirements of the preconstruction PSD permitting program, which Illinois EPA determined had been satisfied by National Steel Corporation's 1995 permit application, is an air quality impact analysis—a demonstration by the applicant that the project will not cause or contribute to a violation of any national ambient air quality standard for CO. 40 CFR § 52.21(k).

As explained in the permit application submitted by U. S. Steel in March 2020 and supplemented in October 2022, recent information suggests that some of the emissions data relied upon by Illinois EPA in issuing Permit No. 95010001 in 1996 is not representative. Therefore, during informal discussions between Illinois EPA and U. S. Steel, the parties agreed that corrective updates to these data and to the CO air quality impact analysis is appropriate. The pending permit application includes such updated analysis.

In Attachment 1 to the draft denial letter, Illinois EPA indicates that a basis for the denial of the permit application is that the updated CO air quality impact analysis "cannot be relied upon because the inventory for the CO emissions of the source with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered." In particular, Illinois EPA indicates it has "concern" there may be some CO emissions from the Basic Oxygen Furnace Shop Roof Monitor which are not reflected in the air quality impact analysis and also suggests that the analysis should "consider the CO emissions of the former by-product coke oven batteries at the source." In addition, Illinois EPA asserts that the ambient background CO concentration data used by U. S. Steel, gathered by Illinois EPA during the period of three calendar years from 2016 through 2018, are "not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted."

None of the concerns listed by Illinois EPA are deficiencies warranting denial of the permit application. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a request for revision of a PSD approval include any of the listed information, nor does the agency point to even an application form or guidance document suggesting that such information be provided. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[2] but that was not done here.

[2] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

As it relates to the possibility of CO emissions from the Basic Oxygen Furnace Shop Roof Monitor, U. S. Steel responds further as follows: Illinois EPA's prior determination that the Production Increase Project would not cause or contribute to a violation of any national ambient air quality standard for CO was based on the agency's assumption that there are no CO emissions from this point. In the pending permit application, U. S. Steel did not request any changes to existing permit terms relating to this emission point. Illinois EPA has neither requested that U. S. Steel's updated CO air quality impacts analysis include any emissions from this emission point, nor has the agency provided a quantitative estimate of those emissions. In the absence of such a request, U. S. Steel had no reasonable basis to conclude that the agency had reconsidered its prior determination as relating to CO emissions from the Basic Oxygen Furnace Shop Roof Monitor; it was therefore reasonable for U. S. Steel to conclude that its updated CO air quality impacts analysis, with revisions to the CO emission rates only for those emission points where the parties agreed that National Steel Corporation's modeled rates should be corrected, was sufficient for the purpose of requesting revisions to the permitted CO emissions from certain combustion units burning blast furnace gas and/or natural gas and affected by Production Increase Project.

As it relates to historical CO emissions from the by-product coke oven batteries that were operated by National Steel Corporation at the time the PSD approval was granted by Illinois EPA in 1996, U. S. Steel responds further as follows: It is unclear to U. S. Steel whether this observation relates to the demonstration that was approved by Illinois EPA in 1996 or to the demonstration submitted by U. S. Steel in March 2020 and supplemented in October 2022. If the former, then U. S. Steel notes that those emissions were, in fact, included.[3] If the latter, then U. S. Steel notes that it is not requesting PSD approval or other authorization for CO emissions from by-product coke oven batteries and that there is no basis for considering emissions under a counterfactual scenario in evaluating whether a requested change will cause or contribute to a violation of any national ambient air quality standard.

Finally, as it relates to the use of 2016-2018 background CO concentration data, U. S. Steel responds further as follows: These data were the most current quality-assured data available at the time of U. S. Steel's submittal of the pending permit application in March 2020 and use of these data was approved by Illinois EPA following its review of U. S. Steel's dispersion modeling protocol in February 2020. U. S. Steel agrees that the 2016-2018 background CO concentration data are less current now than they were at the time of permit application submittal. Currentness of air quality data is one aspect of the permit application review process that is ensured by compliance with the procedural requirements relating to timely processing of permit applications.[4]

VII. THE PERMIT APPLICATION IS SUFFICIENT AS TO BEST AVAILABLE CONTROL TECHNOLOGY

A. Introduction

The pertinent provision of the PSD rule governing the required contents of the permit application pertaining to establishment of Best Available Control Technology ("BACT") is a requirement to include in the application:

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[3] *See, e.g.*, permit application supplement submitted by National Steel Corporation Jan. 16, 1996, at Table 5-8.

[4] *See*, 35 Ill. Adm. Code Section 201.158 (providing that a permit application shall be deemed to have been filed 30 days after submittal if Illinois EPA has not notified the applicant that it is incomplete) and 42 U.S.C. § 7475(c) (requiring final action on a PSD permit application not later than one year after filing).

> A detailed description as to what system of continuous emission reduction is planned for the source or modification, emission estimates, and any other information necessary to determine that best available control technology would be applied. 40 CFR § 52.21(n)(1)(iii).[5]

It is undisputed that the permit application includes estimates of the CO emissions from the casthouse and the blast furnace stoves as well as a detailed description of the systems of continuous emission reduction that U. S. Steel plans to use to control these emissions.

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the application "lacks necessary information" for the agency to make BACT determinations for the casthouse and the blast furnace stoves.

B. CO Emissions from Blast Furnace Casthouse

For the casthouse, as discussed in Section 8.2.3 of the permit application, the only control options identified by U. S. Steel for potential consideration in a BACT determination by Illinois EPA are add-on air pollution control equipment options—specifically, installation and use of a capture system and some type of incinerator. Illinois EPA asserts that this part of the permit application is deficient because it provides neither an explanation of "why process-related control options are not available" nor, with respect to the literature search conducted by U. S. Steel that did not identify any process-related control options for CO emissions from blast furnace casthouses, "documentary support for the review of available control options that was conducted." It is unclear to U. S. Steel how it would be helpful to Illinois EPA's BACT determination to have copies of reports that contain no pertinent information, and it is even more unclear how U. S. Steel might be expected to know, without receiving from Illinois EPA a request for specific additional information, which reports containing no pertinent information would be most valuable for this purpose. As to the first of the purported deficiencies listed by Illinois EPA—the failure to explain why no process-related control options are available for controlling CO emissions from the blast furnace casthouse—U. S. Steel notes that Illinois EPA is familiar with the chemical reaction that is intentionally forced to occur in the casthouse as an inherent part of the ironmaking process.[6] Having not received from Illinois EPA a request for specific additional information, U. S. Steel had no way to know that it was necessary to explain in the permit application that the partial combustion of coke inevitably yields carbon monoxide as a reaction product.

U. S. Steel also notes that, as it pertains to CO emissions from the casthouse, U. S. Steel has not requested any changes to its current permits and is currently subject neither to any numeric emission limitations nor to any work practice requirements other than those in 40 CFR part 63, subpart FFFFF. U. S. Steel did not include any information pertaining to BACT for CO emissions from the casthouse in the initial permit application submitted in March 2020; at the request of Illinois EPA, although

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[5] *See, also,* the current PSD rule at 35 Ill. Adm. Code Section 204.810(a)(3).

[6] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 4 ("The charge materials (iron ore, coke, limestone and other flux material) are fed into the furnace at the top through a double-bell lock system. Heated air is blown into the furnace through nozzles or tuyeres near the bottom of the furnaces. In the furnaces, the coke undergoes partial combustion to carbon monoxide providing the heat to melt the charge as well as reducing the iron ore to elemental iron.")

under no obligation to do so,[7] U. S. Steel voluntarily provided a proposed BACT analysis for CO emissions from the casthouse in the permit application supplement submitted in October 2022. Illinois EPA's proposed denial of the permit application will simply ensure the status quo is maintained, *i.e.*, that U. S. Steel is not subject to any limitations on CO emissions from the casthouse.

C. CO Emissions from Blast Furnace Stoves

In the permit application it submitted in 1995, National Steel Corporation made the following proposal:

> Therefore the BACT recommendation for control of CO emissions from the blast furnace stoves is the maintenance of good combustion practices.[8]

As described in Section 8.1 of the permit application, Illinois EPA reviewed this proposal and agreed with it, determining that work practices constitute BACT for CO emissions from the blast furnace stoves at Granite City Works.

As discussed in Section 8.2.1.1 of the permit application, this determination is consistent with the PSD rule requirements, which expressly provides for a PSD permit to prescribe work practices to satisfy the BACT requirement where the permitting authority "determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible." 40 CFR § 52.21(b)(12).[9]

In 2013, when issuing the CAAPP permit for the Granite City Works, Illinois EPA again determined that work practices suffice for purposes of demonstrating compliance with the applicable requirements of Permit No. 95010001.[10]

In Section 8.2.2.6 of the permit application, in the discussion of step 5 of the proposed BACT analysis for CO emissions from the blast furnace stoves, U. S. Steel stated as follows:

> USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions—*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel emissions units subject to the BACT requirements for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves there is no sampling port satisfying the location requirement in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.
>
> For the reasons presented above, numeric CO emission standards are not feasible for the blast

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[7] *See, e.g., U.S. v. Midwest Generation, LLC*, 781 F. Supp. 2d 677 (N.D. Ill. 2011)(holding that source owner's obligations with respect to BACT are limited to those imposed in a PSD permit).

[8] *See,* permit application supplement submitted by National Steel Corporation Oct. 30, 1995, at p. 4-11.

[9] *See, also,* the current PSD rule at 35 Ill. Adm. Code Section 204.280.

[10] *See,* CAAPP Permit No. 96030056 at Condition 7.4.12.b, stipulating that compliance with all applicable requirements for the stoves and certain other processes are demonstrated by meeting "the work practices, testing, monitoring, recordkeeping, and reporting requirements in Sections 7.4 and 5 of this permit;" note that the permit does not include any testing, monitoring, recordkeeping, or reporting requirements specific to the blast furnace stoves.

furnace stoves.

Footnote 45. For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.

Footnote 46. Appendix A-1 to 40 CFR part 60.

In Attachment 1 to the draft denial letter, Illinois EPA makes the following assertion:

> Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. For example, the application does not include diagrams for the existing ductwork of the stoves to address whether the configuration of this ductwork would accommodate installation of test ports at a location that would satisfy USEPA Reference Method 1. The application also does not show how the refractory lining on the stacks or their age, approximately one hundred years old, would present significant technical challenges and costs so that the installation of test ports at a suitable location should be considered infeasible. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

With respect to both Illinois EPA's general suggestion that "further support" is needed and its list of specific examples, Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. Notably, the documentation provided in the permit application supplement submitted in October 2022 regarding infeasibility of emissions testing is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. U. S. Steel's permit application includes all information required by the applicable permitting rules—including the PSD rule—relating to BACT for CO emissions from the blast furnace stoves at Granite City Works. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[11] but that was not done here.

D. Emissions Associated with Combustion of Coke Oven Gas

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it "does not demonstrate that prior to February 2015, when the by-product recovery coke oven batteries at the Granite City Works were shut down and [coke oven gas] ceased to be available, BACT was being utilized for the SO_2 and CO emissions from use of [coke oven gas] in the stoves." U.

[11] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

S. Steel acknowledges that the BACT determination made by Illinois EPA in 1996, in response to the permit application submitted by National Steel Corporation in 1995, may have been deficient in this regard. Nonetheless, Illinois EPA's assertion that any such historical deficiency is relevant to U. S. Steel's pending permit application is entirely without merit.[12]

VIII. PSD AND NNSR APPLICABILITY WITH RESPECT TO NO_X EMISSIONS

A. Lack of Clarity in Illinois EPA's Claims

Attachment 1 to the draft denial letter at paragraph 1 suggests that the permit application is deficient because it does not include or otherwise address the substantive requirements of the PSD and NNSR programs with respect to NO_X emissions. However, in its evaluation of whether the Production Increase Project is or would become a major modification, Illinois EPA appears to take into account emissions and emissions increases that were authorized by Illinois EPA at the time Permit No. 95010001 was issued to National Steel Corporation.[13] In addition, in summarizing its review of the updated net emissions increase ("netting") analysis provided in the permit application, Illinois EPA conspicuously avoids using the controlling language of the source obligation provisions, discussed in detail in Section VIII.B below, but rather states that the application "does not show that the Project would still not be a major modification for NO_X." In this regard, Illinois EPA's assertions regarding applicability of the substantive requirements of the PSD and NNSR programs with respect to NO_X emissions are ambiguous: U. S. Steel cannot determine from the draft denial letter and associated documents whether Illinois EPA is claiming that the Production Increase Project as authorized by Illinois EPA and as implemented by National Steel Corporation prior to U. S. Steel's ownership was a major modification subject to the substantive requirements of the PSD and NNSR programs or, instead, if Illinois EPA is claiming that the measures required by Permit No. 95010001 as issued to National Steel Corporation were sufficient to ensure the Production Increase Project would not be a major modification and that the project would become a major modification solely by virtue of the relaxations requested by U. S. Steel.

For purposes of these comments, U. S. Steel has assumed Illinois EPA's claims fall into the latter category, *i.e.*, that the Production Increase Project would become a major modification for NO_X solely by virtue of the requested relaxations.

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[12] *See, e.g., U.S. v. Midwest Generation, LLC*, 781 F. Supp. 2d 677 (N.D. Ill. 2011)(holding that source owner's obligations with respect to BACT are limited to those imposed in a PSD permit).

[13] *See, e.g.,* Attachment 1 at p. 4, suggesting that the updated applicability analysis should include "'future' NO_X emissions" from Boilers 1 through 10 based on the configuration of those boilers as they existed at the time the Production Increase Project was implemented by National Steel and at the time U. S. Steel purchased the assets in 2003, notwithstanding the fact that those boilers are prohibited from operating currently and in the future; Attachment 1 at p. 4, suggesting that the updated applicability analysis should include greater NO_X emission rates from Boilers 11 and 12 based on the configuration of those boilers as they existed at the time the Production Increase Project was implemented by National Steel and at the time U. S. Steel purchased the assets in 2003, notwithstanding the fact that the Boilers are prohibited from operating at those emission rates currently and in the future; Attachment 1 at p. 4, suggesting that the updated applicability analysis should include greater NO_X emission rates from Boilers 11 and 12 and from the blast furnace stoves based on the use of coke oven gas as fuel in those units at the time the Production Increase Project was implemented by National Steel and at the time U. S. Steel purchased the assets in 2003, notwithstanding the fact that coke oven gas is not an available fuel at the facility currently or in the future.

B. Source Obligation

Under the PSD and NNSR programs as in effect at the time of the Production Increase Project, where the project involved changes to existing emissions units that are so significant that the emissions unit was deemed not to have begun normal operation, the post-change actual emissions of that unit are assumed equal to its potential to emit. 40 CFR § 52.21(b)(21).[14] The major modification applicability test was therefore based on a comparison of the pre-project actual emissions and the post-project potential to emit of the emissions unit or group of units. 40 CFR §§ 52.21(b)(2)-(3). An emissions unit's potential to emit is its maximum capacity to emit a pollutant under its physical and operational design. 40 CFR § 52.21(b)(4). Limitations on the capacity to emit a pollutant are treated as part of the design of an emissions unit or group of units if the limitation or the effect it would have on emissions is legally enforceable and enforceable as a practical matter. Where the potential to emit of a unit or group of units is governed by enforceable limitations rather than by the unrestricted physical capacity of that unit or those units, and where those limitations were necessary to a determination that a project was not a major modification, the term "synthetic minor" is commonly used to describe the project and the associated limitations.

As explained in detail in Section 2.2.4 of the permit application, the PSD and NNSR rules provide that after-the-fact PSD or NNSR permitting is required when a project becomes a major modification "solely by virtue of a relaxation in" a synthetic minor limitation. 40 CFR § 52.21(r)(4).[15] These "source obligation" provisions effectively require updated PSD and NNSR applicability analyses in situations where the applicant proposes to relax a synthetic minor limitation in a permit.

Applicability analyses performed in order to determine whether the source obligation provisions apply in conjunction with a requested relaxation are prospective, not retrospective. All of the facts as they will exist at the time of the requested relaxation are considered in the updated emissions increase calculations; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time.[16]

The updated NO_X emissions increase calculations presented in the permit application fully conform to and satisfy the source obligation provisions of the PSD and NNSR rules. U. S. Steel's prospective calculation of potential NO_X emissions from the certain fuel combustion units affected by the Production Increase Project includes zero emissions from Boilers 1 through 10, which accurately represents the future potential to emit of those boilers because they no longer exist; does not include

[14] Except as noted, all citations to the applicable PSD rules herein are to the federal PSD rule as codified and in effect at the time of issuance of Permit No. 95010001 in 1996; where the corresponding provision of the then-effective NNSR rule is equivalent, separate citations are not provided.

[15] *See, also,* the current PSD rule at 35 Ill. Adm. Code Section 204.850.

[16] *See, e.g.*, letter from S.C. Riva, U.S. EPA, to R. Frontanes, Pfizer Pharmaceuticals LLC (Sept. 23, 2015), conveying U.S. EPA's non-applicability determination for proposed relaxation of synthetic minor limitations that had been imposed in 1994 in order to establish synthetic minor status with respect to NO_X emissions from a project that involved installation of five diesel generators and two boilers. The synthetic minor limitations imposed in 1994 established the combined potential to emit NO_X from the seven new units at 56 tons per year; if the combined potential to emit had been 65 tons per year or more, the project would have been a major modification. U.S. EPA's 2015 applicability determination allowed relaxation of the limitations such that the new potential to emit would be 90 tons per year; the agency's source obligation analysis relied on the fact that other facts had changed during the intervening time period and it gave no consideration to the fact that, had the combined potential to emit been 90 tons per year historically, the project would have been a major modification.

the greater NO_X emission rates of Boilers 11 and 12 prior to the required retrofit of flue gas recirculation in those boilers; and includes zero emissions from combustion of coke oven gas as fuel, which accurately represents the future emissions of units that previously burned coke oven gas because coke oven gas is no longer an available fuel at the facility. As discussed further in Sections VIII.C and VIII.D below, if Illinois EPA revises Permit No. 95010001 with the requested relaxations and other changes to the limitations in the permit currently in effect, the Production Increase Project will not become a major modification solely due to those relaxations.

C. Project Emissions Increases and Net Emissions Increases

By definition, the net emissions increase from a project is the sum of two values: The increase in actual emissions from the project and "[a]ny other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable." 40 CFR § 52.21(b)(3)(i).

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that "additional decreases in NO_X emissions that would now be proposed to be relied upon" by U. S. Steel are not contemporaneous and otherwise creditable.[17] This preliminary determination is erroneous for three reasons.

First, to the extent that Illinois EPA's analysis includes separate calculations of increases and decreases based on specific fuels and changes in fuels, those calculations are inconsistent with the PSD and NNSR rule requirements. As described previously, the major modification applicability test requires a comparison of the pre-project actual emissions of the emissions unit or group of units with the post-project actual emissions (or potential to emit) of that emissions unit or group of units; the applicable definition of actual emissions does not provide for a calculation that considers only some portions of the units' emissions. For the certain fuel combustion units affected by the Production Increase Project, the change in actual NO_X emissions is properly calculated as the total post-project actual NO_X emissions, regardless of the fuel or fuels being burned to generate those emissions, minus the total pre-project actual NO_X emissions, regardless of the fuel or fuels that were burned to generate those emissions. This is the basis for the values shown in Table 6-8 of the permit application.

Second, the emissions changes at issue are at certain fuel combustion units affected by the Production Increase Project. Emissions changes at these emissions units must be included in the calculation of the emissions increase that will occur as a result of the project, under the first clause in the definition of the term "net emissions increase."[18] Therefore, it was proper to include the emissions changes at the certain fuel combustion units affected by the Production Increase Project in the updated calculation of the NO_X emissions increase from the project, -10.7 tons per year, as calculated in Table 6-8 of the permit application and as shown in Table 6-9 of the permit application.

Third, even if the contribution of the certain fuel combustion units affected by the Production Increase Project were properly considered as among the other decreases under the second clause of the

[17] Attachment 1 at p. 3.

[18] Contrast this with the emissions changes at the blooming mill and galvanizing line shown in Table 6-9. Because these are emissions units not affected by the Production Increase Project, increases and decreases in actual emissions at these units are among the other changes that are considered under the second clause in the definition.

definition rather than a contribution to the emissions increase from the project under the first clause of the definition, it is not relied upon for the non-applicability determination. The net NO_X emissions increase from the project as presented in Table 6-9 of the permit application is -237.3 tons per year; even if the decrease of 250.3 tons per year as calculated by Illinois EPA is omitted from the calculation, the net emissions increase is 13 tons per year (-237.3+250.3), which is less than the significant level of 40 tons per year and therefore sufficient to demonstrate that the Production Increase Project would not become a major modification solely by virtue of the relaxations requested by U. S. Steel.

D. Substantive Requirements of the PSD and NNSR Programs Are Not Applicable with Respect to NO_X Emissions

Because the Production Increase Project would not become a major modification with respect to NO_X emissions solely by virtue of the relaxations requested by U. S. Steel, the substantive requirements of the PSD and NNSR programs[19] are not required elements of the permit application and the fact that these requirements are not addressed in the permit application is not a valid basis for application denial.

IX. The Permit Application Includes All Required Information Pertaining to Pre-Project (Baseline) NO_X Emissions Calculations

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient in that it omits certain information that is purportedly necessary for Illinois EPA to validate the PSD/NNSR non-applicability determinations. As explained below, these assertions are without merit.

A. Volume of Coke Oven Gas Combusted During the Pre-Project Baseline Period

In Attachment 1 to the draft denial letter, Illinois EPA states that the updated calculations of the NO_X emissions change resulting from the Production Increase Project include the difference between the pre-project and post-project actual emissions from certain combustion units and that the calculation of pre-project actual NO_X emissions rates for some of these combustion units includes consideration of NO_X formed from combustion of coke oven gas, among other fuels. These statements are correct.

Illinois EPA then asserts that the pre-project coke oven gas usage rates used in calculating these emission contributions "are not accompanied by any documentation or explanation," suggesting that it is not enough to identify the quantity of coke oven gas consumed in each type of affected combustion unit. With respect to an "explanation," this assertion is incorrect. The permit application includes extensive discussion of the use of coke oven gas as fuel during the pre-project baseline period.[20]

With respect to additional documentation or further explanation, Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular documentation or explanation in conjunction with a historical operational rate or emissions rate, nor do they point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. Notably, the

[19] 35 Ill. Adm. Code Sections 203.601, 203.602, 204.1100, 204.1110, 204.1120 and 204.1130.

[20] *See, e.g.*, pp. 2-4, 4-2, 5-5, and 11-2 of the body of the permit application. Additional information is provided in the appendices to the application.

documentation provided for coke oven gas in the permit application supplement submitted in October 2022 is indistinguishable from the documentation provided with respect to other fuels, both in the permit application supplement submitted in October 2022 and in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. In all cases, what was provided was a table of usage values, with no primary source documents such as strip charts, because it is neither required nor customary to provide such documents. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[21] but that was not done here.

B. NO_X Emission Factor for Use of COG in Boilers 11 and 12:

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that Table 6-4 in the permit application indicates the emission factor used in calculating the amount of NO_X formed from combustion of coke oven gas in the boilers during the pre-project baseline period is based on emissions testing performed at a coke oven battery.

The emission factor basis listed in Table 6-4 of the permit application is a scrivener's error. The error was pointed out to U. S. Steel by Illinois EPA's permit application reviewer by telephone in January 2023. The factor is actually based on emission testing performed at Boiler #12, which is one of the boilers that is the subject of the calculation. This fact was conveyed to Illinois EPA's permit application reviewer by telephone in January 2023.

C. Emission Factor for Use of Natural Gas in Ladle Preheaters

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the calculations presented in the permit application in support of the pre-project actual NO_X emissions from certain fuel combustion units affected by the Production Increase Project, U. S. Steel used a single emission factor for all such units, including ladle preheaters. This statement is correct.

Illinois EPA then asserts that the permit application "does not show that it is appropriate to utilize this emissions factor for ladle preheaters." Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular documentation or justification for the emission factors used to estimate historical emissions, nor do they point to even an application form or guidance document suggesting that such documentation or justification be provided. Notably, for a period of nearly thirty years, the emission factor at issue has been used consistently for all purposes pertaining to the permitting of the Production Increase Project and has been both accepted and prescribed by Illinois EPA for that purpose.[22] In light of Illinois EPA's repeated acceptance of and reliance on this emission factor for

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[21] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[22] *See, e.g.*, "Calculation Sheet" prepared by Jim Ross of Illinois EPA, Dec. 5, 1995 (summarizing Illinois EPA's review of the construction permit application submitted by National Steel Corporation and received by Illinois EPA on Jan. 3, 1995) at p. 12; permit application supplement submitted by National Steel Corporation Jan. 16, 1996, at p. 3-2; Construction Permit No. 95010001 as issued Jan. 25, 1996, at Table 4 (prescribing use of this factor for ladle preheaters and certain other combustion units); Construction Permit No. 95010001 as revised Dec. 17, 2012, at Table 4 (same).

calculating NO_X emissions from combustion of natural gas in ladle preheaters in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application submitted in March 2020 and supplemented in October 2022.

D. Emissions from Use of Natural Gas on the Continuous Casting Lines:

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the calculations presented in the permit application in support of the pre-project actual NO_X emissions from emissions units affected by the Production Increase Project, U. S. Steel indicated there is no NO_X formation from the continuous casting operation other than from combustion of natural gas and, because all natural gas consumption in the continuous casting operation is accounted for elsewhere, U. S. Steel did not account for any additional pre-project actual NO_X emissions from the continuous casting operation. Illinois EPA's statements in this regard are correct.

Illinois EPA then asserts that U. S. Steel's failure to double-count the pre-project actual NO_X emissions from the continuous casting operation is "problematic." This assertion is incorrect. U. S. Steel's election not to overstate the pre-project actual NO_X emissions from emissions units affected by the Production Increase Project is the correct and appropriate approach, as it best represents the increases in actual emissions resulting from the project, consistent with the requirements of the PSD and NNSR rules. However, the manner in which U. S. Steel presented in the permit application the natural gas usage rates and associated NO_X emissions contributions during the pre-project baseline period gas is unclear, and that lack of clarity appears to have caused confusion on the part of Illinois EPA's reviewer. The lack of clarity and the correctness of the total pre-project actual NO_X emissions from natural gas consumption in certain fuel combustion units affected by the Production Increase Project is explained below.

Following are the natural gas usage rates during the pre-project baseline period as listed in Table 3-2 of the permit application submitted by National Steel Corporation in 1995[23] and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996.

Source Description	Emission Factor	Base Year Throughput	Actual Emission	Projected Throughput	Projected Emission
Boiler House 1 (Blrs 1-10) – NG	306 lb/MMcf	361 MMcf	55.23 tpy	included below	
Boiler #11 – NG	306 lb/MMcf	226 MMcf	34.58 tpy	included below	
Boiler #12 – NG	306 lb/MMcf	218 MMcf	33.35 tpy	included below	
BOF Preheaters/Dryers – NG	306 lb/MMcf	283 MMcf	43.30 tpy	included below	
Continuous Caster #1 & #2 – NG	306 lb/MMcf	57 MMcf	8.72 tpy	included below	
Natural gas usage	306 lb/MMcf	1,145 MMcf	inc. above	1,145 MMcf	175.19

[23] *See*, permit application supplement submitted by National Steel Corporation Jan. 16, 1996, at Table 3-2.

The total natural gas usage in the affected units during the pre-project baseline period is 1,145 million cubic feet per year, including 805 million cubic feet per year from the boilers and 340 million cubic feet per year from the BOF shop and the continuous casting operations. The total associated NO_X contribution during the pre-project baseline period is 175.19 tons per year, including 123.17 tons per year from the boilers and 52.02 tons per year from the BOF shop and the continuous casting operations. National Steel Corporation's projection of the total post-project natural gas usage in the affected units, including the continuous casting operations, was the same as the pre-project amount: 1,145 million cubic feet per year. The total NO_X emissions increase from the Production Increase Project as shown in Table 3-2 of the permit application submitted by National Steel Corporation in 1995 is 238.8 tons per year.

Illinois EPA included in Permit No. 95010001 a limit on total post-project natural gas usage and a limit on total post-project NO_X emissions contribution from this natural gas usage. The limits are 1,145 million cubic feet per year and 175.19 tons per year, respectively.[24] These limits precisely match the values that were presented in Table 3-2 of the permit application submitted by National Steel Corporation in 1995 and that included natural gas usage in the continuous casting operations. Illinois EPA also included in the permit a list of the fuel combustion units to which these limits apply.[25] Likely inadvertently, Illinois EPA omitted the continuous casting operations from this list of fuel combustion units. It is undisputed that Illinois EPA accepted and relied upon both the pre-project baseline information and the projections presented in Table 3-2 of the permit application submitted by National Steel Corporation in 1995: The total NO_X emissions increase authorized in the construction permit issued in 1996 is 238.8 tons per year,[26] which precisely matches the value presented in the 1995 permit application.

In the permit application submitted by U. S. Steel in March 2020 and in the supplement submitted in October 2022, the total natural gas usage in the affected units during the pre-project baseline period is documented as 1,145 million cubic feet per year, including 805 million cubic feet per year from the boilers and 340 million cubic feet per year from the BOF shop. The total associated NO_X contribution during the pre-project baseline period is documented as 175.19 tons per year, including 123.17 tons per year from the boilers and 52.02 tons per year from the BOF shop. Consistent with the approach taken by Illinois EPA in drafting Permit No. 95010001, and perpetuating what was likely an inadvertent error, U. S. Steel omitted the continuous casting operations from the list of fuel combustion units burning natural gas and contributing to the total associated NO_X contribution during the pre-project baseline period but included the contribution of the continuous casting operations. However, emissions associated with natural gas combustion in this operation were properly accounted for both in pre-project baseline and the post project emission for the project affected units.

X. THERE ARE NO QUANTIFIABLE FUGITIVE EMISSIONS OF NO_X OR VOM FROM THE BASIC OXYGEN FURNACES

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application "does not address uncaptured emissions" of NO_X and VOM from the basic oxygen furnaces and that the emissions calculations presented in the permit application reflect an assumption "that all emissions of

[24] *See, e.g.,* Construction Permit No. 95010001 as issued Jan. 25, 1996, at Special Condition 21 and Table 4.
[25] *Ibid* at Special Condition 21, Special Condition 35, and Table 4.
[26] *Ibid* at Special Condition 42.c and Table 6.

these pollutants from the basic oxygen furnaces are now captured" and routed to atmosphere through the electrostatic precipitator or baghouse. Illinois EPA also acknowledges that such uncaptured emissions, if they exist, are not significant and that, if estimated quantities of such uncaptured emissions were added to the calculations supporting the PSD/NNSR non-applicability demonstrations, would yield smaller (rather than greater) emissions increases.

With one minor exception, Illinois EPA's general statements characterizing the emissions increase calculations presented in the permit application, as summarized above, are correct. The minor exception is this: The permit application does not reflect an assumption that there are zero uncaptured emissions of NO_X and VOM from the basic oxygen furnaces but rather reflects the conclusion that, if there are any such uncaptured emissions, those emissions are fugitive emissions[27] and are not quantifiable. Fugitive emissions are counted for purposes of PSD and NNSR applicability determinations only to the extent that such emissions are quantifiable.[28]

Although Illinois EPA presents speculation regarding possible fugitive emissions of NO_X and VOM from the basic oxygen furnaces, that speculation is not a sufficient basis to determine that such emissions exist and are quantifiable. U. S. Steel nor Illinois EPA has not identified any evidence of such quantifiable emissions in the literature or in the permitting records of other iron and steel mills.

The fact that there are fugitive particulate matter emissions from basic oxygen furnaces is not indicative of the formation of NO_X or VOM emissions. The capture system serving the secondary baghouse at Granite City Works is a large ventilation system that is generally evacuating the space around the basic oxygen furnace vessels during the charging, refining, and tapping operations. The primary mechanism for formation of particulate matter during charging and tapping is the oxidation of molten metal. This formation mechanism cannot be expected to result in the formation of NO_X or VOM.

XI. The Permit Application Includes All Required Information Pertaining to Pre-Project (Baseline) Particulate Matter Emissions Calculations

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient for the following reason:

> With regard to baseline particulate emissions, the determination of baseline emissions from handling of coke, iron pellets and limestone provided in the revised netting analysis cannot be

[27] Fugitive emissions are "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening." 40 CFR § 52.21(b)(20). The emissions capture systems serving the basic oxygen furnaces satisfy the stringent requirements of 40 CFR part 63, subpart FFFFF, which reflects U.S. EPA's determination of the maximum degree of reduction in emissions that is achievable for these operations. 42 U.S.C. § 7412(d)(2). It is indisputable that these capture systems reflect the state of the art and that, to the extent there are any uncaptured emissions of NO_X or VOM, those emissions could not reasonably be captured or controlled and thus are fugitive emissions.

[28] *See, e.g.*, 40 CFR § 52.21(i)(4)(vii)(exempting a project from PSD permitting requirements if it would be major "only if fugitive emissions, to the extent quantifiable, are considered" and it would occur at a source that is not in a listed source category); *see, also,* 45 *Fed. Reg.* 52676 at 52692 (Aug. 7, 1980)(EPA explains that it is declining to extend the exemption the exemption at § 52.21(i)(4)(vii) to the listed source categories, such as iron and steel mills, but stated, "EPA emphasizes, however, that fugitive emissions from a source in one of the listed categories will only be included in threshold calculations 'to the extent quantifiable'").

> independently confirmed. In this regard, the 2022 application does not provide needed supporting information for the "corrected" determinations of baseline particulate emissions of these operations as it is not accompanied by detailed calculations for the emissions from handling each material.

The assertion regarding a deficiency in the permit application is, for two reasons, without merit. First, Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Second, Illinois EPA's characterization of these pre-project (baseline) emission rates as "corrected" is erroneous: These are the values presented in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. U. S. Steel made no change to these values and is not in possession of information that would allow such change. In light of Illinois EPA's acceptance of and reliance on these values during that prior permitting action, which preceded U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the present permit application. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[29] but that was not done here.

XII. The Permit Application Includes All Required Information Relating to Post-Project Actual Emissions of PM, PM_{10}, NO_X, and VOM and to Enforceable Limitations on Potential to Emit These Pollutants

A. It Is Feasible to Establish Enforceable Emission Caps for Groups of Emissions Units and Emission Points as Proposed in the Permit Application

As correctly described by Illinois EPA in Attachment 1 to the draft denial letter, U. S. Steel's permit application proposes that PM, PM_{10}, NO_X, and VOM emissions be subject to annual emission caps covering groups of related emissions units and emission points. For the blast furnace operations and the BOF shop, the proposed groupings include emission points with significant emissions, such as the BOF electrostatic precipitator stack, and minor emission points such as the iron spout baghouse stack. U. S. Steel's permit application also proposes approaches to making these emission caps enforceable as a practical matter, as would be required if these emission caps were to serve as synthetic minor limitations.[30]

In Attachment 1 to the draft denial letter, Illinois EPA asserts that there may be alternative groupings of emissions units and emission points that could be subjected to enforceable emission caps or other limitations:

> It would be reasonable and appropriate for both the annual emissions of the casthouse and the

[29] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[30] See discussion of synthetic minor limitations in Section VIII.B herein.

> annual emissions of the two basic oxygen furnaces to be directly limited separately from the emissions of any other units.
> *
> *
> Alternatively, limits specifically for the emissions of the casthouse for the blast furnaces and the basic oxygen furnaces, i.e., the principal units at the facility for iron and steel production, could be accompanied by group limits for the overall emissions of these principal units and the other, "non- principal" units in these areas of the facility. For example, limits could be set for both emissions of the casthouse and for the emissions of the casthouse, charging of the blast furnaces, and the slag pits. Attachment 1 at 18-19.

U. S. Steel agrees with Illinois EPA generally that there are potentially suitable groupings other than those proposed in U. S. Steel's permit application and that the approach suggested by Illinois EPA in Attachment 1 is likely permissible under the applicable permitting rules.

It is unclear whether Illinois EPA's discussion of other potentially suitable groupings of other emissions units and emission points is intended to explain Illinois EPA's proposed denial of the permit application.[31] If it is so intended, U. S. Steel disagrees that this represents a valid basis for such denial. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

B. Particulate Matter Emissions Associated with a Facility Configuration No Longer Authorized Are Immaterial to the "Source Obligation" Demonstration

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application does not include information associated with emissions from the handling of coal and coke at the by-product coke oven batteries that were permanently shut down in 2015. This statement is correct.

Illinois EPA then asserts that this omission represents a deficiency in the permit application because these emissions should be included in the total post-project actual emissions quantity as used in determining whether PSD and NNSR permitting requirements apply. This assertion is without merit. Although this information may be relevant to an evaluation of whether the Production Increase Project as authorized by Illinois EPA and as implemented by National Steel Corporation prior to U. S. Steel's ownership was a major modification subject to the substantive requirements of the PSD and NNSR programs, it is not relevant to the "source obligation" analysis and demonstration that are required here. As discussed in Section VIII.B above, these analyses are prospective, not retrospective; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time.

[31] Notably, Illinois EPA has not claimed that the groupings and approaches proposed by Illinois EPA would result in permit conditions that are not enforceable as a practical matter or that are otherwise impermissible under the applicable rules.

C. The Permit Application Includes All Required Information Relating to Quantifying Emissions of NO_X and VOM from the Blast Furnace Casthouse Roof Monitor

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed NO_X and VOM emission caps, U. S. Steel proposed that emissions of these pollutants from the Blast Furnace Casthouse Roof Monitor be calculated as 5.3% of the measured emission rate from the Blast Furnace Casthouse Baghouse. (This value reflects the assumption that the emissions from the baghouse represent 95.0% of the total emissions from the casthouse and the uncaptured and unmeasured emissions represent 5.0% of the total: 5% ÷ 95% = 5.3%.)

Illinois EPA then asserts that U. S. Steel's permit application does not demonstrate that the proposed methodology would yield calculated emission rates that are representative of actual emissions from the Blast Furnace Casthouse Roof Monitor under all conditions; in particular, Illinois EPA asserts, the proposed methodology might underestimate actual emissions if the capture efficiency is less than the assumed 95%. Finally, Illinois EPA suggests that prescribing specific emission rates for NO_X and VOM in the permit can reasonably be expected to be more representative than the ratio approach proposed by U. S. Steel.

It is unclear whether these assertions in Attachment 1 to the draft denial letter are intended to support Illinois EPA's proposed denial of the application. If these assertions are so intended, U. S. Steel disagrees that this is a valid basis for denial of the application. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

U. S. Steel agrees that the potential problem identified and discussed by Illinois EPA—that an actual capture efficiency of less than 95% would not be reflected in the calculation methodology proposed by U. S. Steel—exists as a theoretical matter. U. S. Steel contends that this scenario is effectively prohibited, as operation of the blast furnace casthouse capture system is subject to stringent requirements under 40 CFR part 63, subpart FFFFF, particularly § 63.7790(b). Thus, if it were left to U. S. Steel to decide on appropriate compliance demonstration methods for inclusion in the revised construction permit, the proposed 5.3% ratio approach would be used. However, U. S. Steel recognizes that this decision is within the judgment and discretion of Illinois EPA.

D. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Blast Furnace Casthouse Roof Monitor

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Blast Furnace Casthouse Roof Monitor be calculated using prescribed emission factors of 0.030 lb per ton of iron and 0.0153 lb per ton of iron, respectively. Each of these proposed emission factors is derived

from the pre-control PM emission factor of 0.6 lb per ton of iron published by U.S. EPA.[32] Specifically, the PM emission factor is based on an assumed 95% capture efficiency (*i.e.*, 5% of the pre-control emissions are emitted to atmosphere through the roof monitor; 5% × 0.6 = 0.030). The PM_{10} emission factor is based on an assumed particle size distribution where the PM_{10} emission rate is equal to 51% of the PM emission rate (51% × 0.030 = 0.0153), again based on data published by U.S. EPA.[33]

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to these emission factors because the application "does not include relevant supporting information," "only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency," and therefore does not demonstrate that the proposed emission factors would yield calculated emission rates that are representative of actual emissions from the Blast Furnace Casthouse Roof Monitor.

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Notably, the supporting information provided in the permit application regarding the emission factors at issue is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. The assumption of 95% capture efficiency for the blast furnace casthouse at Granite City Works has been consistently applied by Illinois EPA for many years.[34]

A brief recap of the history of U. S. Steel's approach with respect to this issue is in order. In the construction permit application submitted in March 2020, U. S. Steel proposed PM and PM_{10} emission factors of 0.031 lb per ton of iron and 0.0155 lb per ton of iron, respectively. These emission factors have been prescribed by Illinois EPA for this purpose for decades.[35] Among Illinois EPA's informal comments regarding that permit application submittal, Illinois EPA's permit application reviewer correctly pointed out that these historically assumed emission factors are slightly higher than the values that would result from correctly calculating the emission factors using Illinois EPA's historic assumptions of 0.6 lb per ton pre-control, 95% capture efficiency, and 51% PM_{10}:PM ratio. Illinois EPA's permit application reviewer also stated that the agency's records do not appear to contain an explanation for this discrepancy. Accordingly, the permit application reviewer suggested

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[32] *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 4th Ed. U.S. EPA, Research Triangle Park, NC. Section 7.5, "Iron and Steel Production," Table 7.5-2, "Particulate Emission Factors for Iron and Steel Mills," May 1983.

[33] *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 5th Ed. U.S. EPA, Research Triangle Park, NC. Section 7.5, "Iron and Steel Production," Table 7.5-2, "Size Specific Emission Factors," January 1995.

[34] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 41.

[35] *See, e.g.*, Construction Permit No. 95090167 issued Sept. 15, 1995; Construction Permit No. 95010001 issued Jan. 25, 1996.

that U. S. Steel use the revised and corrected emission factors in the permit application supplement submitted in October 2022, which U. S. Steel did.

In light of Illinois EPA's repeated acceptance of and reliance on the assumption of 95% capture efficiency in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, and in light of the informal suggestion by Illinois EPA's permit application reviewer to correct the emission factor calculations in the manner described above, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application supplement submitted in October 2022. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[36] but that was not done here.

Alternatively, if Illinois EPA now believes there are insufficient data to quantify the capture efficiency of the state-of-the-art capture system employed at the blast furnace casthouse at Granite City Works, and that the fugitive emissions[37] from the Blast Furnace Casthouse Roof Monitor are therefore not quantifiable, then those emissions should be omitted from the analyses performed by Illinois EPA to determine whether the source obligation provisions apply in conjunction with the permit revisions requested by Illinois EPA. Fugitive emissions are counted for purposes of PSD and NNSR applicability determinations only to the extent that such emissions are quantifiable.[38]

E. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Slag Pits

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Slag Pits be calculated using a prescribed emission factor of 0.00417 lb per ton of hot metal.

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to this emission factor because the application "does not include relevant supporting information" and therefore does not demonstrate that the proposed emission factor would yield calculated emission rates that are representative of actual emissions from the Slag Pits.

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[36] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[37] Fugitive emissions are "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening." 40 CFR § 52.21(b)(20). The emissions capture systems serving the blast furnace casthouse satisfy the stringent requirements of 40 CFR part 63, subpart FFFFF, which reflects U.S. EPA's determination of the maximum degree of reduction in emissions that is achievable for these operations. 42 U.S.C. § 7412(d)(2). It is indisputable that these capture systems reflect the state of the art and that, to the extent there are any uncaptured emissions of PM_{10} or PM, those emissions could not reasonably be captured or controlled and thus are fugitive emissions.

[38] *See, e.g.*, 40 CFR § 52.21(i)(4)(vii)(exempting a project from PSD permitting requirements if it would be major "only if fugitive emissions, to the extent quantifiable, are considered" and it would occur at a source that is not in a listed source category); *see, also*, 45 *Fed. Reg.* 52676 at 52692 (Aug. 7, 1980)(EPA explains that it is declining to extend the exemption the exemption at § 52.21(i)(4)(vii) to the listed source categories, such as iron and steel mills, but stated, "EPA emphasizes, however, that fugitive emissions from a source in one of the listed categories will only be included in threshold calculations 'to the extent quantifiable'").

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Notably, the supporting information provided in the permit application regarding the emission factor at issue is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. The emission factor of 0.00417 lb per ton for the Slag Pits at Granite City Works has been consistently applied by Illinois EPA for decades.[39] The summary of the derivation of that factor as provided by U. S. Steel in the permit application is simply a paraphrasing of Illinois EPA's description.[40]

In light of Illinois EPA's repeated acceptance of and reliance on this emission factor in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application supplement submitted in October 2022. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[41] but that was not done here.

F. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Continuous Casting Operation

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Caster Mold, Slab Cutoff, and Slab Ripping operations be calculated using prescribed emission factors.

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to these emission factors because the application does not supporting information "sufficient to show that the emission factors that are proposed as prescribed factors are representative."

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[39] *See, e.g.*, Construction Permit No. 95090167 issued Sept. 15, 1995; Construction Permit No. 95010001 issued Jan. 25, 1996.

[40] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 42, stating as follows:

> Emission Factor: 0.00417 lbs/ton of iron
> Origin of EF: Calculated from EPA Assessment of Atmospheric Emissions from Quenching of Blast Furnace Slag. Also, AP-42, Table 13.2.4-4, Fugitive Uncontrolled emissions.
> Summation of the following emission factors:
> a. Slag Quenching = 0.0026 lbs/ton iron,
> b. Slag Digging = 0.00157 lbs/ton iron.

[41] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Notably, the supporting information provided in the permit application regarding the emission factors at issue is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. These PM/PM_{10} emission factors for the continuous casting operation at Granite City Works have been consistently prescribed by Illinois EPA for this purpose for many years.[42]

In light of Illinois EPA's repeated acceptance of and reliance on these emission factors in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application submitted in March 2020 or the permit application supplement submitted in October 2022. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[43] but that was not done here.

G. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Iron Pellet Screen

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Iron Pellet Screen be calculated using a prescribed emission factor of 0.00131 lb per ton of material. As explained in the permit application, the proposed emission factor is derived from the PM_{10} emission factor of 0.0087 lb per ton of material published by U.S. EPA for crushed stone screening,[44] with application of an 85% control efficiency. Specifically, the PM emission factor is based on an assumed 95% capture efficiency (*i.e.*, 5% of the pre-control emissions are emitted to atmosphere through the roof monitor; $5\% \times 0.6 = 0.030$).

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to this emission factor because the application "does not include relevant supporting information," particularly with

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[42] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 47; Construction Permit No. 95090167 issued Sept. 15, 1995; Construction Permit No. 95010001 issued Jan. 25, 1996.

[43] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[44] *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 5th Ed. U.S. EPA, Research Triangle Park, NC. Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing," Table 11.19.2-2, "Emission Factors for Crushed Stone Processing Operations," updated Aug. 2004. A control efficiency of 85% was applied for this operation 7.5, "Iron and Steel Production," Table 7.5-2, "Particulate Emission Factors for Iron and Steel Mills," May 1983.

respect to the proposal to use an emission factor for PM derived from an emission factor published by U.S. EPA for PM_{10}, and therefore does not demonstrate that the proposed emission factor would yield calculated emission rates that are representative of actual emissions from the Iron Pellet Screen.

The listing of the PM_{10}-derived emission factor as the proposed, prescribed factor for PM emissions was a scrivener's error in the permit application; U. S. Steel's intent was to propose that Illinois EPA prescribe use of the corresponding PM emission factor of 0.00375 lb per ton of material as shown in Table 5-5 of the permit application supplement submitted in October 2022. Nonetheless, the assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any proposed emission quantification methods for fugitive emissions, nor does the agency point to even an application form or guidance document suggesting that such a proposal be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate, including recordkeeping requirements and other compliance demonstration methods; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

H. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Mag Lime Silo

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that U. S. Steel proposed in the permit application that emissions of PM and PM_{10} from the Mag Lime Silo be included in the permit conditions relating to demonstration of compliance with the proposed PM and PM_{10} emission caps, and further proposed that emissions of these pollutants from the Mag Lime Silo be calculated using a prescribed emission rate of 0.009 lb per hour.

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to this emission factor because the application does not include supporting information demonstrating that the proposed emission rate of 0.009 lb per hour is representative of actual emissions from the Mag Lime Silo.

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any proposed compliance demonstration methods, nor does the agency point to even an application form or guidance document suggesting that such a proposal be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate, including recordkeeping requirements and other compliance demonstration methods; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters. Here, it is noteworthy that U. S. Steel voluntarily proposed that emissions from the Mag Lime Silo be subject to limits where it had no obligation to do so. Illinois EPA's proposed denial of the permit application will simply ensure the status quo is maintained, *i.e.*, that U. S. Steel is not subject to any limitations on emissions from this emissions unit.

I. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Basic Oxygen Furnace Shop Roof Monitor

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Basic Oxygen Furnace Shop Roof Monitor be calculated using prescribed emission factors that are lower than the emission factors used by National Steel Corporation in the permit application submitted in 1995 and by Illinois EPA in the permit issued in 1996. Illinois EPA characterizes U. S. Steel's proposal as follows:

> For PM, an emission factor of 0.01986 pounds/ton is proposed as a prescribed factor, compared to the current emission factor limit of 0.0987 pounds/ton; for filterable PM_{10}, an emission factor of 0.0296 pounds/ton is proposed, compared to the current emission factor limit of 0.06614 pounds/ton.

This misstates U. S. Steel's proposal as presented in Section 5.5.2.2 of the permit application:

> For BOF Shop Roof Monitor, use PM emission factor of 0.0296 lb/ton and filterable PM10 emission factor of 0.0198 lb/ton.

Illinois EPA's mischaracterization of U. S. Steel's proposed emission factors for the Basic Oxygen Furnace Shop Roof Monitor is likely a scrivener's error in Attachment 1 to the draft denial letter.

Illinois EPA acknowledges in Attachment 1 to the draft denial letter that the emission factors proposed by U. S. Steel are representative of the current configuration of the Basic Oxygen Furnace Shop, but then asserts that U. S. Steel's permit application is deficient as relating to these emission factors because "those prescribed factors would not be representative of emissions before the new baghouse system was installed" and further asserts that "particulate emissions factors that are representative of particulate emissions circa 1996, before installation of the baghouse system on the furnaces, should be used in the revised netting analyses for PM and PM_{10}."

These assertions are without merit. Although this information may be relevant to an evaluation of whether the Production Increase Project as authorized by Illinois EPA and as implemented by National Steel Corporation prior to U. S. Steel's ownership was a major modification subject to the substantive requirements of the PSD and NNSR programs, it is not relevant to the "source obligation" analysis and demonstration that are required here. As discussed in Section VIII.B above, these analyses are prospective, not retrospective; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time.

J. The Permit Application Includes Adequate Explanation of Projected Post-Project Actual Emissions from Fuel Combustion Units and Does Not Diminish Illinois EPA's Authority to Impose Enforceable Limits

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application represents the maximum total post-project actual NOx emissions from certain fuel combustion units affected by the

Production Increase Project will be 706 tpy and that the application also requests elimination of the gaseous fuel usage limits for these units. These statements are correct.

Illinois EPA then asserts that the permit application is deficient because it "does not explain why actual NO_X emissions of the subject units would not exceed this amount going forward if the permit were revised" as proposed. This assertion is without merit. The explanation is provided in Table 6-7 of the permit application supplement submitted in October 2022: The maximum potential emissions of the affected fuel combustion units are less than 706 tons NO_X per year.

Illinois EPA further asserts as follows:

> While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the 2022 application does not show that new limits for fuel usage and emissions would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels and emissions should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shutdown. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown. (Internal footnote omitted.)

A brief recap of the history of U. S. Steel's approach with respect to this issue is in order. In the construction permit application submitted in March 2020, U. S. Steel expressly requested enforceable emission caps for emissions of NO_X and other pollutants from the fuel combustion units affected by the Production Increase Project and provided emission calculations supporting these proposed emission caps. Among Illinois EPA's informal comments regarding that permit application submittal, Illinois EPA's permit application reviewer correctly pointed out that enforceable emission caps are superfluous and unnecessary where the maximum potential emissions of the affected unit or units is less than or equal to the emission caps under consideration. Accordingly, in the permit application supplement submitted in October 2022, U. S. Steel omitted the express request for enforceable emission caps for the affected fuel combustion units.

Notwithstanding this history, it remains the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate. If Illinois EPA is not persuaded that the future actual emissions from the fuel combustion units affected by the Production Increase Project will be less than or equal to the values represented in the permit application in the absence of enforceable limits on fuel usage in, or an enforceable emission caps for, these units, then the agency undisputedly has the discretion and authority to impose such limits in the permit. The permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters. That should be especially true where, as here, the agency conveys its preliminary judgment, the applicant revises its permit application to be consistent with that representation, and then the agency vacillates.

With regard to Illinois EPA's suggestion that the limits the agency is now considering may need to "address fuel burning units other than the Project-affected units currently addressed by the permit," such as the slab reheat furnaces and cogeneration boiler at the Granite City Works, U. S. Steel disagrees that such limits would be appropriate. As these emissions units were not among the units affected by the Production Increase Project, the emissions from these units are not relevant to the "source obligation" analysis and demonstration that are required here, as discussed in Section VIII.B above.

K. NO_X Emissions Associated with a Facility Configuration No Longer Authorized or Under a Counterfactual Hypothetical Are Immaterial to the "Source Obligation" Demonstration

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application represents the maximum total post-project actual NO_X emissions from certain fuel combustion units affected by the Production Increase Project will be 706 tpy. This statement is correct.

Illinois EPA then asserts that the permit application is deficient because it does not "demonstrate that actual emissions have not exceeded this amount historically" nor does it demonstrate that actual emissions would not have exceeded this amount at any point in time since Permit No. 95010001 was issued in 1996 under the hypothetical scenario where "production of iron and steel by the source was at the levels allowed by this permit."

This assertion is without merit. The purportedly missing information relating to historical actual emission levels may be relevant to an evaluation of whether the Production Increase Project as authorized by Illinois EPA and as implemented by National Steel Corporation prior to U. S. Steel's ownership was a major modification subject to the substantive requirements of the PSD and NNSR programs, but it is not relevant to the "source obligation" analysis and demonstration that are required here. As discussed in Section VIII.B above, these analyses are prospective, not retrospective; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time. The purportedly missing information relating to a hypothetical is not relevant to any demonstration or analysis that is a required element of the permit application submitted in 2020 and supplemented in 2022.

XIII. THE PERMIT APPLICATION INCLUDES ALL INFORMATION NECESSARY FOR INTEGRATED PROCESSING UNDER THE CAAPP OR, IN THE ALTERNATIVE, ANY DEFICIENCIES DO NOT FORM A BASIS FOR DENYING THE CONSTRUCTION PERMIT APPLICATION

A. Claimed Deficiencies in the Permit Application As Related to Integrated Processing Under the CAAPP Do Not Form a Basis for Denying the Construction Permit Application

As correctly noted by Illinois EPA in the draft denial letter, U. S. Steel requested that the revised construction permit be subjected to "integrated processing," as provided by subsections 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act, which would allow the changes to Permit No. 95010001 to be incorporated into the facility's CAAPP permit using the administrative amendment process.

Numerous purported deficiencies in the permit application listed by Illinois EPA in Attachment 1 to the draft denial letter are claimed to be deficient only because of the request for integrated processing. U. S. Steel generally does not agree with Illinois EPA regarding these claimed deficiencies, as discussed in Sections XIII.B through XIII.I below. In addition, U. S. Steel emphasizes that none of these issues would form a valid basis for denying the construction permit application; even if Illinois EPA were correct that these deficiencies would prevent the use of integrated processing, that would only provide a valid basis for denial of the request for integrated processing of the revised construction permit and associated revisions of the CAAPP permit.

B. The Permit Application Includes All Necessary Information Relating to General Provisions in the CAAPP Permit Governing Selection of Emission Factors

In Attachment 1 to the draft denial letter, Illinois EPA states that Permit No. 95010001 does not specify how emissions are to be quantified for purposes of demonstrating compliance with the permitted emission caps and that, in the absence of such compliance demonstration requirements, Illinois EPA imposed monitoring and recordkeeping requirements in the facility's CAAPP permit sufficient to assure compliance with applicable emission limits as required by subsection 39.5(7)(p) of the Illinois Environmental Protection Act. These statements are correct.

Illinois EPA then asserts that the pending permit application does not request revisions to Permit No. 95010001 "that would enable revisions to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by administrative amendment." This assertion is incorrect. U. S. Steel requested that the construction permit be subjected to "integrated processing," which requires that Illinois EPA process the permit application and draft the permit using a program that "meets procedural and compliance requirements substantially equivalent to those" imposed in the CAAPP program. Although this request was stated generally, and the permit application did not specify with precision the monitoring and recordkeeping requirements to be imposed in the revised construction permit and the amended CAAPP permit, that approach is appropriate: It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters. Inherently subsumed in a request for integrated processing is an implied request that Illinois EPA satisfy its mandate to draft a permit or permit revision that includes the minimum elements of a CAAPP permit—including monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with applicable emission limits—and to remove or revise conflicting or redundant permit terms.

C. The Permit Application Includes All Required Information In Conjunction with the Request for Changes to Emission Point Naming

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the permit application, U. S. Steel requested that the emission point currently identified as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" in Permit No. 95010001 be renamed and identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." This statement is correct.

Illinois EPA then asserts that, for the following reasons, the pending permit application is deficient.

> However, the application does not actually identify the specific units that would be addressed

> by the proposed new term. In this regard, the application is not accompanied by an itemized list of the equipment and activities that would be covered by this new term or a diagram that identifies this equipment and activities. US Steel's request also does not explain how the requested revision to Permit 95010001 would do what has generally been requested as the proposed new term would refer to a "Material Handling Tripper." As the 2022 application requests changes to terminology in Permit 95010001, the changes should act to better identify the emissions units that would be addressed, improving the specificity and clarity of the revised permit.[51, 52]
>
> [51] For example, the proposed new term would not make clear that the basic oxygen furnace shop actually has two ladle stirring stations and one ladle metallurgy furnace, all served by Baghouse 2.
>
> [52] The requested change to the terminology for these emissions unit(s) is also problematic as it would refer to a control device, Baghouse 2, rather than to the equipment or activities that generate emissions. Applied literally, the proposed term would only address captured emissions; it would not address the uncaptured emissions, which elude capture for control by the baghouse.

This assertion is without merit. As an initial matter, U. S. Steel has not characterized the listed item as an emissions unit, regardless of naming convention. It is an emission point, and that is how U. S. Steel correctly characterized it in the permit application. The only condition in Permit No. 95010001 that applies to this emission point is a particulate matter emission limit of 12.8 tons per year, which applies solely to the emission point and not separately to "the equipment or activities that generate emissions." Any uncaptured emissions from that equipment or activities are routed to atmosphere through the Basic Oxygen Furnace Shop Roof Monitor. Those emissions are subject to the separate emission limits for the item referenced as "BOF Roof Monitor." This is consistent with the overall structure of Permit No. 95010001, which was issued by Illinois EPA many years prior to U. S. Steel's ownership, in which the emission limits for non-fugitive emissions are applicable to emission points (e.g., "Casthouse Baghouse," "Iron Spout Baghouse," "BOF ESP Stack") rather than emissions units. A similar change to the item naming was effected by Illinois EPA in 2013 when issuing the CAAPP permit for the Granite City Works, where the agency referred to this emission point (i.e., the item to which the particulate matter emission limit of 12.8 tons per year is applicable) as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy Baghouse #2)."[45]

The "list of the equipment and activities that would be covered by this new term" – *i.e.*, Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility – is precisely the same as the list of the equipment and activities that are currently covered by the term "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" as used in Permit No. 95010001 and by the term "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy Baghouse #2)" in the facility's CAAPP permit. U. S. Steel reasonably concluded that Illinois EPA would understand this fact because the permit application requested and enumerated only discrete changes to Permit No. 95010001, none of which related to reconfiguring the equipment and activities venting to this emission point. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a straightforward request for revision of the name of an emission point be accompanied by a list of the equipment and activities venting to that emission point, nor does the

[45] *See*, CAAPP Permit No. 96030056 at Condition 7.5.6.g.

agency point to even an application form or guidance document suggesting that such information be provided. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[46] but that was not done here.

Notwithstanding all of the above, it remains the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate. If Illinois EPA wishes to revise the permit to "improv[e] the specificity and clarity of the revised permit better" or to "identify the emissions units that would be addressed" by a particular emission limit, Illinois EPA has the discretion and authority to make such revisions. The permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

D. The Permit Application Includes All Required Information Relating to the Steel Slag Removal Station and the Handling Operation for Raw Materials Used in Ladle Metallurgy

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the permit application, U. S. Steel "does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS." Although U. S. Steel did not request any permit revisions with respect to this item that it considers to be substantive, the absolute statement is incorrect, as U. S. Steel indicated in the permit application that this item should be renamed as "Baghouse 1 for Material Handling." This revision was suggested by U. S. Steel for two reasons: First, renaming this item based on the emission point rather than the emitting activity is more consistent with the naming convention generally used in Permit No. 95010001, as discussed in Section XIII.C above. Second, the historical naming of this item is misleading, as this baghouse does not serve to control emissions from any slag removal operation; the steel slag removal station at Granite City Works is not served by any capture system or baghouse.

The requested renaming is consistent with the approach taken by Illinois EPA in Attachment 3 of the CAAPP for the facility, which refers to this item as "Baghouse #1."

Illinois EPA then asserts that the pending permit application is deficient in two respects relating to the steel slag removal station (i.e., the activity identified as "deslagging station" in historical permitting documents). This assertion is without merit as discussed below.

First, Illinois EPA states that the permit application "does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop." U. S. Steel has claimed neither that the steel slag removal station should not appropriately be categorized as slag skimming nor that it should not be addressed with the other slag skimming operations in the basic oxygen furnace shop. Plainly, U. S. Steel was under no obligation to offer, as part of the permit application or otherwise, a justification for a claim that it was not making.

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[46] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

Second, Illinois EPA states that the permit application "does not request revisions to Permit 95010001 to facilitate amendment of the CAAPP permit to appropriately address the emissions of this deslagging station and the associated material handling system." Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, include a request for revisions "to facilitate amendment of the CAAPP permit" for the facility. It is the responsibility of Illinois EPA to draft both a construction permit and a CAAPP permit with conditions it judges to be suitable and appropriate. The permit applicant has no obligation to reflect in the permit application a correct guess as to what revisions to one permit would be viewed by the permitting authority as facilitating revisions to another permit.

E. The Permit Application Includes All Required Information Relating to the Ladle Drying Preheaters

In Attachment 1 to the draft denial letter, with respect to the Ladle Drying Preheaters, Illinois EPA states that the permit application is deficient because U. S. Steel "does not request any changes to Permit 95010001 to maintain consistency with the approach to these units in the CAAPP permit."

This assertion is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, include a request for revisions "to maintain consistency with the approach to these units in the CAAPP permit" for the facility. It is the responsibility of Illinois EPA to draft both a construction permit and a CAAPP permit with conditions it judges to be suitable and appropriate. The permit applicant has no obligation to reflect in the permit application a correct guess as to what revisions to one permit would be viewed by the permitting authority as maintaining consistency with another permit.

F. The Permit Application Includes All Required Information Relating to Identification of the CAAPP Permit to be Administratively Amended Following Integrated Processing of the Construction Permit Application

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application is deficient because it "does not identify the version of the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment" under the integrated processing provisions. Relatedly, Illinois EPA asserts that U. S. Steel "has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006."

These assertions are without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, specify the "version" of the CAAPP permit for the facility that should be amended. It is solely the responsibility of Illinois EPA to make revisions and amendments to CAAPP permits in conformance with applicable rules and laws.

Regarding whether U. S. Steel has initiated the process of incorporating the provisions of Permit No. 11050006 into the facility's CAAPP permit, U. S. Steel responds further as follows: In November

2013, U. S. Steel submitted an application to renew the CAAPP permit for Granite City Works. In this permit application, U. S. Steel expressly requested that Illinois EPA incorporate the conditions of Permit No. 11050006 into the CAAPP permit and noted that "the Basic Oxygen Furnace process described in the CAAPP permit condition 7.5 needs to be updated with the new secondary baghouse added as part of the Emission Reduction Project (Construction Permit No. 11050006)."[47] That application was deemed complete by operation of law in January 2014.[48] Illinois EPA retains authority to request additional information in conjunction with a CAAPP permit application,[49] but the agency has not done so.

G. The Permit Application Includes All Required Information Relating to the Relationship Between Fugitive Dust Control Measures Required by Permit No. 95010001 and Requirements of 35 Ill. Adm. Code Part 212

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application is deficient because it "does not make clear the relationship between these requirements established by permit [relating to emissions of fugitive dust from roadways, parking areas, and open access areas] and state regulatory requirements for fugitive emissions in 35 IAC Part 212 Subpart K."

This assertion is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, specify the relationship between existing permit terms and applicable rule requirements. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate and in conformance with applicable rules and laws.

H. The Permit Application Includes All Required Information Relating to Applicable Provisions of 40 CFR Part 63 Subpart FFFFF

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it "does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020." Relatedly, in Attachment 1, Illinois EPA makes the observation:

> These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the 2022 application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the basic oxygen furnaces and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate.

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[47] *See*, CAAPP permit renewal application at pp. 2-1 and 4-1.
[48] *See*, subsection 39.5(5)(f) of the Illinois Environmental Protection Act ("Unless the Agency notifies the applicant of incompleteness, within 60 days of receipt of the CAAPP application, the application shall be deemed complete.").
[49] *See*, subsection 39.5(5)(g) of the Illinois Environmental Protection Act ("If after the determination of completeness the Agency finds that additional information is necessary to evaluate or take final action on the CAAPP application, the Agency may request in writing such information from the source with a reasonable deadline for response.").

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, include suggested bases upon which Illinois EPA might reopen the facility's CAAPP permit. It is solely the responsibility of Illinois EPA to reopen the CAAPP permit where the agency determines that the permit must be revised or revoked to assure compliance with all applicable requirements.[50]

U. S. Steel generally agrees with Illinois EPA's observation regarding the relevance of the NESHAP requirements and responds further as follows: The applicable requirements of the NESHAP as currently codified are legally enforceable, and the monitoring, testing, recordkeeping, and work practice requirements of that rule provide a sound technical basis for demonstration of compliance with particulate matter emission limits, regardless of whether Illinois EPA satisfies the mandate to reopen the CAAPP permit where such reopening is required to assure compliance with all regulatory requirements.

I. The Permit Application Includes All Required Information Relating to Equipment that is Listed in the CAAPP Permit and Has Been Permanently Shut Down

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it "does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emissions units" and further asserts that "[t]he responsibility to identify provisions in the CAAPP permit that should not be carried forward initially falls on US Steel as it is the CAAPP Permittee for the Granite City Works."

These assertions are without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, request changes to the facility's CAAPP permit other than those directly resulting from the requested revisions of the underlying construction permit. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate and in conformance with applicable rules and laws.

The pending permit application was submitted for the narrow and specific purpose of addressing the outstanding appeal items and the underlying PSD and NNSR applicability evaluations relating to the Production Increase Project implemented by National Steel Corporation. This application was not intended to address changes that are not directly relevant to that purpose.

In November 2013, U. S. Steel submitted an application to renew the CAAPP permit for Granite City Works. That application was deemed complete by operation of law in January 2014.[51] Illinois EPA

[50] *See,* subsection 39.5(15)(a)(iv) of the Illinois Environmental Protection Act.
[51] *See,* subsection 39.5(5)(f) of the Illinois Environmental Protection Act ("Unless the Agency notifies the applicant of incompleteness, within 60 days of receipt of the CAAPP application, the application shall be deemed complete.").

retains authority to request additional information in conjunction with the CAAPP permit application,[52] but the agency has not done so.

[52] *See*, subsection 39.5(5)(g) of the Illinois Environmental Protection Act ("If after the determination of completeness the Agency finds that additional information is necessary to evaluate or take final action on the CAAPP application, the Agency may request in writing such information from the source with a reasonable deadline for response.").

EXHIBIT 1

Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.:
	Appl. No.:
	Date Rec'd:
	Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
1996 Construction Permit Revision

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 119813AAI

3. Does this application request a revision to an existing construction permit issued by the BOA?
☐ No ☒ Yes If Yes, provide Permit Number: 95010001

4. Brief Description of Proposed Project:
This application proposes revisions to certain emission limits and other requirements in the 1996 Construction Permit for the U.S. Steel Granite City facility.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER

6. Is the source located within city limits? ☐ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: _____ or NAICS: _____
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☐ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☒ Owner ☐ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Krista Armentrout - Environmental Manager

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

EXHIBIT 1

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☒ Yes ☐ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☒ Yes ☐ No ☐ N/A* * Source not major ☐ Project not major ☐
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

EXHIBIT 1

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: Michael C. Patton

AUTHORIZED SIGNATURE

Michael Patton

TYPED OR PRINTED NAME OF SIGNATORY

General Manager - Granite City Works

TITLE OF SIGNATORY

9 - 8 - 23

DATE

The above certification pertains to the application supplement signed, dated and previously submitted on October 3, 2022.

Washington University in St. Louis
SCHOOL OF LAW

Interdisciplinary Environmental Clinic

RECEIVED
STATE OF ILLINOIS
SEP 01 2023
Environmental Protection Agency
BUREAU OF AIR

August 21, 2023

Illinois Environmental Protection Agency
P.O. Box 19276
Springfield, IL 62704-9276

Re: Comments on Draft Denial of an Application to a Construction Permit, Permit No. 95010001 for U.S. Steel Corporation Granite City Works

Dear Sir or Madam:

On behalf of the American Bottom Conservancy (ABC), the Interdisciplinary Environmental Clinic at Washington University School of Law submits the following comments regarding the July 21, 2023 draft Notice of Intent to Deny Application to a Construction Permit, Permit No. 95010001 for U.S. Steel Corporation Granite City Works.

ABC is a grassroots organization based in the Metro-East St. Louis region. ABC seeks to improve and protect air quality and human health in the Granite City and Metro-East areas. ABC supports the denial largely for the reasons given by IEPA in its proposed denial documents, but writes to emphasize a few points.

Granite City, and in particular, the area immediately surrounding the US Steel facility, is an environmental justice community. It contains a high density of low-income and minority populations, some of whom live adjacent to the facility's fence line. Granite City, and the north part of Metro East contain a high concentration of heavy industrial activity. Ensuring that US Steel operates under a permit that protects air quality is especially important in these circumstances and given the current EPA emphasis on protecting overburdened communities.

History of ABC Involvement

ABC has a long history with United States Steel Corporation's Granite City Works and its air permits, including some of the specific issues involved in the Draft Denial. Since 2009, ABC has insisted that any Clean Air Act Permit Program (CAAPP) permit issued to the Granite City Works have protective emission limits for particulate matter, CO, and NOx, as well as sufficient monitoring to ensure compliance with those limits.

ABC's involvement began with IEPA's first draft CAAPP permit, Permit No. 96030056. It continued through the revised permit, two petitions to object, the second revised permit, and US Steel's appeal of the of the second revised CAAPP permit. The appeal has been pending (but

stayed) since 2013.[1] ABC intervened in the appeal in order to ensure that the permit would maintain protective emissions limits and caps as well as a means of ensuring compliance with those limits.

US Steel's appeal was based on its belief that it "cannot comply with certain permit requirements" associated with IEPA's use of "emission factors" as "emission factor *limits*" in the second revised CAAPP permit because they were incorrect, unreliable, and/or outdated. US Steel's solution to its inability to satisfy emission factor limits was to increase the amount of pollution it would be allowed to emit by changing the emission factors. It would accomplish this change in the CAAPP permit by performing additional testing and modifying the 1995 production increase permit, Permit No. 95010001 that was the source of the emission factor limits. It is this latter permit that is the subject of this comment.

US Steel first applied to modify permit 95010001 in February 2020. After discussions with IEPA, it filed a revised application to modify the permit in October 2022. This revised application is what IEPA proposes to deny in this current action. ABC is aware that IEPA and US Steel have been in discussions about the permit since the mid 2010s, but has not been a party to those discussions.

Emission Factors and Group Emission Limits

The original 1996 permit included emission factor limits and maximum emission limits for PM and PM 10, NOx, and VOM in order to enable US Steel to avoid being considered a major source of these pollutants for purposes of the Prevention of Significant Deterioration (PSD) program. Without the emission limits, the Granite City facility would emit pollutants in sufficient quantity to be considered a major source. With the limits, it is a "synthetic minor source."

ABC objects to any use in a Granite City Works permit of what IEPA calls "group limits" to control the plant's potential to emit PM, PM10, NOx, and VOM. In the 1996 permit, the facility was broken down into six major processes and activities: Blast Furnace, Basic Oxygen Furnace (BOF) Shop, Continuous Casting, Certain Fuel Combustion Units, Roadways, and Material Handling. Each major process had an emissions limit in tons per year. In turn, each of these major processes was also broken down into subprocesses. The BOF Shop was divided into six subprocesses: BOF ESP Stack, BOF Roof Monitor, Desulfurization and Reladling, BOF Additive System, Flux Conveyor and Transfer Pits, and Hot Metal Charging Ladle Slag Skimmer. Each subprocess was assigned two limitations: an emission factor limit and a maximum emissions limit.

In the 2022 application, US Steel proposed eliminating both limits for the subprocesses. Instead, it would have limits for each of the major processes and activities. Those limits would be calculated as a monthly rolling 12-month total. These changes allow for substantial variation in

[1] A description of the appeal (PCB 2013-53) can be found on page 18 n.31 of the Proposed Denial of An Application for Revisions to a Construction Permit / PSD Approval ("Draft Denial") and at page 9 n.21 and page 11 n.25 of the Project Summary for the Draft Denial.

emissions over the short-term and at the subprocessing level, leading to a less stringent permit than the existing permit.

In its application, US Steel points to several EPA decisions, which it claims support its application.[2] Those cases are readily distinguishable. For example, in *In re Shell Offshore, Inc.*, Region 10 made clear that group limits and a longer rolling emissions period were appropriate only where the "unique" and "atypical" variability made individual limits for the subprocesses too difficult to determine.[3] The *Shell Offshore* source, the ill-fated Kulluk oil rig moved from place to place, each with differing environmental conditions, and engaged in different types of activities depending on its location, i.e., it was not always deep-sea drilling. Likewise, in *In re Tucson Electric Power,*[4] the new units were to be used to "compensate for the variability of wind and solar power," meaning that they would operate on an as-needed basis that could not be predicted ahead of time. The Masada facility[5] was unique and unpredictable because it was the first of its kind. US Steel did not make a similar showing with regard to its operations in Granite City. It has been at this location engaged in the same industry for more than 100 years. The special circumstances allowing for group limits are not present.

In addition, ABC has long been concerned about the use of emissions factors to determine compliance, and has repeatedly argued for the use of continuous emissions monitoring or some form of testing the actual emissions. For example, in ABC's most recent comments on the second revised CAAPP permit, ABC noted that the emission factor limits from Permit 95010001 that were incorporated into the CAAPP permit did not accurately represent the emissions from the plant. Those emission factors were a combination of two-thirds generic emission factors, derived from a third-party source like AP-42, and one-third site-specific emission factors, based on infrequent stack testing. The maximum emissions limits and emissions factor limits were both generated through the application of emissions factors, making compliance determination a circular process.

In the 2022 application, US Steel likewise proposes a mix of generic emission factors and site-specific emission factors for the changes it proposes. The site-specific emission factors are to be created through "periodic" stack testing. Again, it refers to *Shell Offshore*, *Tuscon Electric*, and *Masada* to support its use of emission factors to determine compliance.

In *Shell Offshore,* the Board noted that the use of generic emissions factors was a "last resort method" for calculating compliance appropriate only in "limited circumstances."[6] The generic emissions factors were used sparingly, as more than 90% of emissions were subject to site-specific factors.[7] The other sources in the cited cases also used real-time monitoring of actual

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[2] 2022 Application, at Section 3. The IEPA discussion is on pages 18-22 of the draft denial.
[3] *In re Shell Offshore, Inc.*, 15 E.A.D. 536, 554, 555 (Mar. 30, 2012).
[4] *In re Tucson Electric Power*, 17 E.A.D. 675, 681 (Dec. 2, 2018).
[5] *In re matter of Organic Recycling and Ethanol Production Facility, Pencor-Masada Osynol, LLC,(Masada)*, 2001 Westlaw 36294221, *21 (May 2, 2001) (order granting in part and denying in part petition for objection to permit).
[6] 15 E.A.D. at 559 n25.
[7] *Id.* at 560.

emissions as an additional means of ensuring that the sources did not exceed the synthetic minor limits. The *Masada* equipment used continuous emissions monitoring to ensure compliance,[8] and the *Tucson Electric* units used continuous monitoring of the pollution control equipment.[9] This kind of real-life monitoring is not what US Steel proposed for the provisions that it sought to change. ABC continues to maintain that US Steel should using continuous monitoring to ensure compliance with emission limits.

ABC is glad to see that IEPA has taken a close and careful look at US Steel's proposed use of emission factors, netting, and group emission limits, and concluded that there is a lack of support for US Steel's proposed changes to Permit 95010001. It urges EPA to either finalize its denial or issue a permit that makes up for the shortcomings identified in the Draft Denial.

Thank you for the opportunity to comment.

Sincerely,

/s/ Elizabeth Hubertz

Elizabeth Hubertz
Interdisciplinary Environmental Clinic
Washington University School of Law
One Brookings Drive • Box 1120-250-102
St. Louis, MO 63130

Attorney for American Bottom Conservancy

[8] 2001 Westlaw 36294221, at * 21.
[9] 17 E.A.D. at 689-92.

Carter, Sally

From: Frost, Brad
Sent: Thursday, August 24, 2023 2:09 PM
To: Carter, Sally; Romaine, Chris
Cc: Armitage, Julie; Schnepp, Jason; Marr, Bill
Subject: FW: [External] Comments: Permit/Application No.: 95010001 I. D. No.: 119813AAI
Attachments: Final Comment_IEPADenyUSSteel .docx (1).pdf

Note there is a request for a meeting to learn more about the denial.

From: Virginia Woulfe-Beile <virginia.woulfe-beile@sierraclub.org>
Sent: Thursday, August 24, 2023 1:49 PM
To: Frost, Brad <Brad.Frost@Illinois.gov>
Cc: Toni Oplt <opltocc@ezl.com>
Subject: [External] Comments: Permit/Application No.: 95010001 I. D. No.: 119813AAI

Greetings Brad,
Please find the joint comments form the Piasa Palisades Sierra Club and The Metro East Green Alliance copied and pasted in this email and attached as a PDF document.
Thank you,
Virginia

August 17, 2023
ID #: 119813AAI
Permit #: 95010001
Source: U.S. Steel

The Matter of Intent to Deny an Application to Revise a Construction Permit/PSD Approval US Steel Corporation in Granite City
The Piasa Palisades Group (PPG) of Sierra Club Illinois and the Metro East Green Alliance (MEGA) thank the Illinois Environmental Protection Agency for embracing the responsibility of protecting the community of Granite City by denying the APPLICATION FOR REVISIONS TO A CONSTRUCTION PERMIT/PSD APPROVAL, Permit/Application No.: 95010001 I. D. No.: 119813AAI permit put forth by US Steel.
PPG and MEGA strongly support this decision to deny the permit given the lack of supporting documentation of the baseline usage of coke oven gas (COG) and the increased NOx emissions US Steel emits.
While we feel this decision is the right one and that community health and wellness, as well as the mitigation of climate change through ongoing reductions in fossil fuel emissions across all industries, should always be the top priority of government agencies charged with protecting the environment, we acknowledge that with every good act comes consequences.
If US Steel should determine to use the denial of this permit as a window of opportunity to close Granite City Steel, pointing to unacceptably higher costs of doing business with the potential loss of profit, they will become part of the unfolding story of an unjust transition that is being told across the globe as countries, regions, and our local communities fall victim to the fossil fuel industry bailout. After decades of ruling the economy, fossil fuel-driven industries

would rather cut losses and sacrifice communities than work with agencies such as the Illinois EPA to innovate and find better solutions—solutions like the investment and development in green steel.

We know that just transition is outside the scope of Illinois EPA's responsibility. Still, it is time to reimagine how we will work together to help everyone succeed in building local wealth and prosperity in ways that also secure clean air, clean water, and local pride. We must all come to the table as co-conspirators, yes?

We request the Illinois EPA meet with local citizens, labor groups, and those of us fighting for a just transition to a cleaner, safer, more sustainable world to begin a serious discussion. The Inflation Reduction Act and the Infrastructure and Investment Jobs Act provide new, substantial funding sources for corporations such as US Steel to invest in near-zero-emissions steel. Because a high percentage of the green steel must be produced in the USA to qualify for these funds the market is there and waiting, and the buyers are there: The Rocky Mountain Institute

(RMI) says that "corporations across the economy are calling for cleaner steel to address emissions from their supply chains" so that they, too, will qualify for government funding and meet their climate commitments. Funding and demand, two essential elements of any good business plan are on the table. If the fossil fuel industries go on trying to cut costs by closing plants and producing dirty steel as long as possible, however, RMI makes the future clear: "American steelmakers are at a critical investment juncture: build near-zero emissions steel plants now or miss the boat by forcing US companies to import to meet their near-zero emissions steel needs."

As we all move to a broader definition of what it means to build a safe environmental future, we'd like to request a meeting for the community to understand better the reason for this denial and the public health impacts increased emissions would have created. A meeting would be an opportunity for Illinois EPA to educate the community on why this denial is in the best interests of human health.

Our support of this denial is firm. Our commitment to healthy people and a healthy planet could not be more substantial. Even though we support your draft letter, we have many questions about the next steps—those taken by US Steel, those taken by the Illinois EPA, the community of Granite City, and the workers who may face job loss. It seems a shame to squander this moment of engagement and decision—of "critical investment juncture". Real solutions come from honest, sincere engagement as we move beyond knowing what won't work to figuring out what will.

Regards,

Virginia Woulfe-Beile, Sierra Club, Piasa Palisades Group
Three Rivers Project Co-Coordinator
Alton, Illinois
Toni OpltMetro East Green Alliance, Chair
Edwardsville, Illinois

Virginia Woulfe-Beile
Three Rivers Project Co-Coordinator
Sierra Club Illinois Chapter
Pronouns: she/her/hers
Phone: 618-977-2319 | Time Zone
virginia.woulfe-beile@sierraclub.org

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August 17, 2023

ID #: 119813AAI
Permit #: 95010001
Source: U.S. Steel

The Matter of Intent to Deny an Application to Revise a Construction Permit/PSD Approval US Steel Corporation in Granite City

The Piasa Palisades Group (PPG) of Sierra Club Illinois and the Metro East Green Alliance (MEGA) thank the Illinois Environmental Protection Agency for embracing the responsibility of protecting the community of Granite City by denying the APPLICATION FOR REVISIONS TO A CONSTRUCTION PERMIT/PSD APPROVAL, Permit/Application No.: 95010001 I. D. No.: 119813AAI permit put forth by US Steel.

PPG and MEGA strongly support this decision to deny the permit given the lack of supporting documentation of the baseline usage of coke oven gas (COG) and the increased NOx emissions US Steel emits.

While we feel this decision is the right one and that community health and wellness, as well as the mitigation of climate change through ongoing reductions in fossil fuel emissions across all industries, should always be the top priority of government agencies charged with protecting the environment, we acknowledge that with every good act comes consequences.

If US Steel should determine to use the denial of this permit as a window of opportunity to close Granite City Steel, pointing to unacceptably higher costs of doing business with the potential loss of profit, they will become part of the unfolding story of an unjust transition that is being told across the globe as countries, regions, and our local communities fall victim to the fossil fuel industry bailout. After decades of ruling the economy, fossil fuel-driven industries would rather cut losses and sacrifice communities than work with agencies such as the Illinois EPA to innovate and find better solutions—solutions like the investment and development in green steel.

We know that just transition is outside the scope of Illinois EPA's responsibility. Still, it is time to reimagine how we will work together to help everyone succeed in building local wealth and prosperity in ways that also secure clean air, clean water, and local pride. We must all come to the table as co-conspirators, yes?

We request the Illinois EPA meet with local citizens, labor groups, and those of us fighting for a just transition to a cleaner, safer, more sustainable world to begin a serious discussion. The Inflation Reduction Act and the Infrastructure and Investment Jobs Act provide new, substantial funding sources for corporations such as US Steel to invest in near-zero-emissions steel. Because a high percentage of the green steel must be produced in the USA to qualify for these funds the market is there and waiting, and the buyers are there: The Rocky Mountain Institute (RMI) says

that "corporations across the economy are calling for cleaner steel to address emissions from their supply chains" so that they, too, will qualify for government funding and meet their climate commitments. Funding and demand, two essential elements of any good business plan are on the table. If the fossil fuel industries go on trying to cut costs by closing plants and producing dirty steel as long as possible, however, RMI makes the future clear: "American steelmakers are at a critical investment juncture: build near-zero emissions steel plants now or miss the boat by forcing US companies to import to meet their near-zero emissions steel needs."

As we all move to a broader definition of what it means to build a safe environmental future, we'd like to request a meeting for the community to understand better the reason for this denial and the public health impacts increased emissions would have created. A meeting would be an opportunity for Illinois EPA to educate the community on why this denial is in the best interests of human health.

Our support of this denial is firm. Our commitment to healthy people and a healthy planet could not be more substantial. Even though we support your draft letter, we have many questions about the next steps—those taken by US Steel, those taken by the Illinois EPA, the community of Granite City, and the workers who may face job loss. It seems a shame to squander this moment of engagement and decision—of "critical investment juncture". Real solutions come from honest, sincere engagement as we move beyond knowing what won't work to figuring out what will.

Regards,

Toni Oplt

Metro East Green Alliance, Chair

Edwardsville, Illinois

Virginia Woulfe-Beile

Sierra Club, Piasa Palisades Group

Three Rivers Project Co-Coordinator

Alton, Illinois

RTP ENVIRONMENTAL ASSOCIATES INC.
AIR · WATER · SOLID WASTE CONSULTANTS
304 - A West Millbrook Road
Raleigh, NC 27609
(campbell@rtpenv.com)
(919) 845-1422
Fax: (919) 845-1424

VIA CERTIFIED MAIL

RECEIVED
STATE OF ILLINOIS
JAN 12 2024
ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR

January 8, 2024

Mr. Brad Frost
Office of Community Relations
Illinois Environmental Protection Agency
PO Box 19506
Springfield, Illinois 62794-9506

Re: United States Steel Corporation—Granite City Works
Notice of Intent to Deny Application for Revision to
Construction Permit/PSD Approval (Permit Application No. 95010001)
ID No. 119813AAI

Dear Mr. Frost:

Attached to this letter are comments prepared by my client, U. S. Steel Corporation, in response to the referenced public notice posted to Illinois Environmental Protection Agency's internet website on December 8, 2023. The public notice indicates comments "must be postmarked by 11:59 pm, January 8, 2024." The comments attached to this letter are therefore timely submitted.

We appreciate the opportunity to submit comments on the Notice of Intent, as well as the agency's careful consideration of our comments.

Very truly yours,

RTP ENVIRONMENTAL ASSOCIATES, INC.

Colin M. Campbell
Principal

Comments of the United States Steel Corporation - Granite City Works

Revised Draft Denial Letter Dated December 8, 2023:
Notice of the Intent to Deny Application for Revision to Construction Permit/PSD Approval
Permit Application No. 95010001

While it is with great disappointment that U. S. Steel received Illinois EPA's notice of intent to deny the pending permit application, we respectfully request that the Agency reconsider its preliminary decision and work with U. S. Steel on resolving any outstanding issues. We also request to meet with Illinois EPA in the interest of reaching resolution considering many of the reasons that Illinois EPA raises in its proposed denial were not known to U. S. Steel until it received the notice (or very shortly beforehand) notwithstanding the parties met several times to discuss the permit application. U. S. Steel also notes that Illinois EPA did not notify U. S. Steel of any deficiency in the application or information submitted in such application pursuant to 35 Ill. Admin. Code 201.158 and 204.1300 or 415 ILCS 5/39.5(5). We are greatly disappointed that the Agency took this path, when many of the issues, as explained herein, could have been efficiently resolved if the Illinois EPA raised them during the years while the permit application was pending as is customary. U. S. Steel also notes that the permit application is for a revision to a previously issued PSD permit (as issued to National Steel Corporation in 1996) to a source that has been and continues to operate; and is not a request for a new major modification – and, therefore, the scope of the review is more limited and the process is substantially different than when compared to a major modification or a revision to a PSD permit for a source that has yet to operate.

U. S. Steel also respectfully notes that Illinois EPA does more than "clarify" its previous notice of intent to deny the application; but instead raises new bases for its objections. Instead of working with the applicant on addressing any concerns, Illinois EPA appears to be doubling down on its insistence to deny the permit. In response to comments, Illinois EPA's bases for intending to deny the permit have changed and have become a moving target. U. S. Steel respectfully notes that it would prefer to work with Illinois EPA collaboratively to address Illinois EPA's concerns and to work collaboratively on issuing a permit that complies with statutory and regulatory requirements; not searching for hypothetical and potential reasons why it should not be issued.

The PSD regulations are forward looking. However, in its proposed notice of intent to deny the permit, Illinois EPA is pursuing a path that would make U. S. Steel retroactively address all potential operating scenarios under the facility's prior ownership and footprint, for which U. S. Steel does not have the requisite information and for which U. S. Steel is not responsible. Such an approach is inconsistent with the Clean Air Act and legal precedent.

In Section I below, U. S. Steel addresses Illinois EPA's stated reasons for its proposed denial of the pending permit application In Sections II through XIII below, U. S. Steel addresses the denial points listed in Attachment 1 to the draft denial letter.

I. U. S. Steel Disagrees with Illinois EPA Regarding Whether Issuance of the Requested Permit Revision Would Violate Provisions of the Illinois

ENVIRONMENTAL PROTECTION ACT OR THE REGULATIONS OF THE POLLUTION CONTROL BOARD

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that Section 39(a) of the Illinois Environmental Protection Act *might be violated*. Section 39(a) states that "it shall be the duty of the Agency to issue …a permit upon proof by the applicant that the facility, equipment, vehicle, vessel, or aircraft will not cause a violation of this Act or of regulations hereunder." As set forth further herein, U. S. Steel maintains that its application demonstrates that the facility and equipment at issue in the application will not cause a violation of the Illinois Environmental Protection Act or the regulations thereunder. Therefore, it is Illinois EPA's duty, under the statute, to proceed with permit issuance.

For the various reasons set forth herein, U. S. Steel maintains that Illinois EPA is incorrect that any provisions of the Illinois Environmental Protection Act or the regulations thereunder would be violated if the permit were granted; where the Illinois EPA has asserted that information was not provided to the Agency, U. S. Steel is providing that information here, is directing the Illinois EPA to the information in the application, or describes why such information is not pertinent to the issues at hand. Accordingly, Illinois EPA should not issue the proposed permit denial. As stated herein, U. S. Steel stands ready to work with Illinois EPA to resolve any remaining concerns for permit issuance.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA has now preliminarily determined that subsections 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv), 39.5(13)(a), and 39.5(c)(v) of the Illinois Environmental Protection Act, pertaining to administrative amendments of Clean Air Act Permit Program ("CAAPP") permits, might be violated. U. S. Steel notes that, because the listed subsections of the Illinois Environmental Protection Act relate only to the CAAPP, it would be inappropriate to deny the application for a revision of the construction permit and PSD approval based on a failure to satisfy these statutory provisions, as discussed in Section XIII.A herein.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that subsection 39.5(5)(e) of the Illinois Environmental Protection Act might be violated. This provision requires a certification of truth, accuracy, and completeness. This is not a valid basis for denial of the permit application for the reasons discussed in Section III herein.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that 35 Ill. Adm. Code Sections 203.128 and 204.560 might be violated. The cited rule provisions are definitions, not affirmative requirements, and cannot be violated.

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that 35 Ill. Adm. Code Sections 201.160, 203.601, 203.602, 204.1100, 204.1110, 204.1120 and 204.1130 might be violated. These claims, which relate to the Prevention of Significant Deterioration ("PSD") and Nonattainment New Source Review ("NNSR") programs under the federal Clean Air Act, are without merit for the reasons discussed in Sections VI through VIII below.

II. THE PERMIT APPLICATION SATISFIES 35 ILL. ADM. CODE SECTION 201.159

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the pending permit application "does not include a signed certification for the truth, accuracy and completeness of this application as

it was actually submitted in October 2022, as required by 35 IAC 201.159" and that "the 2022 application includes a photocopy of an earlier certification, dated February 25, 2020, which was submitted with a prior application." These assertions are incorrect in several respects.

First, the agency misrepresents the requirements of the cited rule provision, which are as follows. There is no requirement for a certification of truth, accuracy, and completeness.

> All applications and supplements thereto shall be signed by the owner and operator of the source, or their authorized agent, and shall be accompanied by evidence of authority to sign the application.

Second, the application that the agency refers to as the "2022 application" is actually a construction permit application submitted on March 2, 2020. This permit application includes a completed 199-CAAPP form, with a certification signed and dated February 25, 2020, and a completed 197-FEE form, with a check for the application fee of $23,000 and a certification signed and dated February 25, 2020.

A supplement to the permit application was submitted in October 2022. As required by 35 Ill. Adm. Code Section 201.159, the supplement was signed by Michael Patton, the General Manager of the Granite City Works. No application fee was provided, as is appropriate for a supplement to a pending application for a construction permit.

Furthermore, U. S. Steel notes that, while Illinois EPA had the permit application supplement for months, and virtually met with U. S. Steel to discuss the pending permit application and the supplement, the Agency never requested such a new signature or certification.

III. U. S. Steel Provided a Signed Certification of Truth, Accuracy, and Completeness for the Permit Application Supplement Submitted in October 2022

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the pending permit application "does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022" and that such a certification is required by Section 39.5(5)(e) of the Illinois Environmental Protection Act. This is not a valid basis for denial of the permit application for the following reasons.

As noted in Section II above, the agency mischaracterizes the October 2022 submittal as a new or separate permit application, as it is merely a supplement to the permit application submitted in March 2020. In the transmittal letter for the supplement, and for administrative convenience U. S. Steel suggested that Illinois EPA refer to the supplement rather than to the initial submittal from March 2020 because, as requested by Illinois EPA staff following review of the initial permit application submittal, the sections of the permit application were reordered.[1] The cited provision of the Illinois Environmental Protection Act requires that each submitted permit application include a certification, but it does not expressly require a separate certification for each supplement to a permit application.

[1] For example, the sections summarizing changes to CO emissions and presenting proposed Best Available Control Technology ("BACT") determinations for CO emissions were sections 3 and 4 of the initial permit application and were sections 4 and 8 of the supplement, and these sections were cross-referenced in sections 1 and 2 of each submittal.

Nonetheless, and without waiving any rights or defenses, U. S. Steel provided to Illinois EPA in September 2023 a new certification of the truth, accuracy and completeness of the supplement that was submitted in October 2022. Accordingly, even if Illinois EPA's interpretation of Section 39.5(5)(e) of the Illinois Environmental Protection Act were correct and a separate certification is required for each supplement to a pending permit application, that requirement was satisfied prior to the proposed denial and this claimed deficiency cannot form a valid basis for denial of the permit application. Furthermore, this issue could easily have been avoided if Illinois EPA simply made a request to certify the supplement, which we subsequently completed, yet Illinois EPA inexplicably asserts that this was not sufficient, basclessly claims the application is under a cloud, and further asserts that the certification or application is somehow fraudulent (Per Illinois EPA, "[t]hus, even if the certification had been submitted as a supplement to the 2022 application, its truthfulness and validity would be questionable.") U. S. Steel is unable to respond to these assertions because, frankly, they are absurd and are without merit. U. S. Steel has worked collaboratively with Illinois EPA in responding to inquiries and requests.

IV. Purported Failure to be Consistent with Pending Board Appeals

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the application must be denied because it does not individually address all items that are currently under appeal with the Illinois Pollution Control Board. In particular, Illinois EPA claims, "the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62." Quite strikingly, Illinois EPA cites to no Board order or regulatory or statutory citation to support its assertion. This is for good reason, as there is none. The assertion is without merit. Although it is logical that Illinois EPA might inquire about contested provisions in the appeals before the Board that may appear to be absent in the application, the absence of such mention is not grounds for denying the permit application. Furthermore, the permit application submitted in March 2020 and supplemented in October 2022 has been pending for nearly four years, during which time Illinois EPA and U. S. Steel met in person and virtually on several occasions to discuss the PSD permit revisions, yet only in the proposal to deny the permit application did U. S. Steel learn of Illinois EPA's apparent contention that U. S. Steel was obligated to address individually in its permit application all items that are currently under appeal with the Illinois Pollution Control Board. U. S. Steel's understanding from these discussions was that, with satisfactory issuance of the revised permit, the pending appeals could be dismissed in their entirety. U. S. Steel would be pleased to discuss Illinois EPA's concerns in the context of the appeal before the Board, but the Agency cannot claim these differences as a basis to deny the permit application.

V. Purported Inconsistency Between This Permit Application and the Permit Application Submitted in 2008 Requesting Revisions Relating to SO_2 Emissions

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the application must be denied because it "is inconsistent with" a separate permit application submitted in 2008.

Unfortunately, the Illinois EPA has not acted on the 2008 application. That application was submitted in accordance with the Consent Decree between U. S. Steel and the Illinois EPA. (*See, People of the State of Illinois v. United States Steel Corporation*, No. 05-CH-750, Third Judicial Circuit, Madison County.) The 2008 application was submitted based on limited information that was available at the time, and subsequent information indicates that when averaged over the year, the emission factor in

the existing permit is appropriate. This topic was discussed with the Illinois EPA as the permit application submitted in 2020 was pending; and the Illinois EPA did not object to this development at the time. To now claim that this discrepancy serves as a basis to deny the PSD application is disingenuous. U. S. Steel cannot simply withdraw the 2008 permit application at this time but would do so following issuance of the revised PSD permit, pursuant to the permit application submitted in 2020 and supplemented in 2022, and termination of the Consent Decree. U. S. Steel has indicated it would work with Illinois EPA on that process and remains committed and willing to do so.

In its explanation of how the claimed inconsistency between the permit applications submitted in 2008 and 2020 purportedly represents a deficiency in the permit application submitted in 2020, Illinois EPA asserts that the more recent permit application "does not meet the standards for issuance of a construction permit" because it does not "show compliance with the SO_2 emission limits for burning BFG that are currently in Permit 95010001." U. S. Steel admits that the permit application submitted in 2020 and supplemented in 2022, which does not request any changes to any SO_2 emission limits, does not include a demonstration of compliance with the referenced SO_2 emission limits, nor does it include demonstrations of compliance with any of the dozens of other emission limits that apply to the Granite City Works and are unrelated to the present application. There is no provision in the Illinois Environmental Protection Act or the regulations thereunder requiring that an application for a construction permit include such compliance demonstrations.

VI. The Permit Application is Sufficient as to the PSD Air Quality Impacts Analysis for Carbon Monoxide

The Production Increase Project was a major modification under the preconstruction PSD permitting program because it involved physical and operational changes that would result in a significant net increase in emissions of carbon monoxide (CO). National Steel Corporation, then the owner and operator of Granite City Works, submitted a PSD permit application for this project in 1995. Illinois EPA determined that this PSD permit application included all necessary information and granted PSD approval for the project in conjunction with issuance of Permit No. 95010001 on Jan. 25, 1996. One of the key requirements of the preconstruction PSD permitting program, which Illinois EPA determined had been satisfied by National Steel Corporation's 1995 permit application, is an air quality impact analysis—a demonstration by the applicant that the project will not cause or contribute to a violation of any national ambient air quality standard for CO. 40 CFR § 52.21(k).

As explained in the permit application submitted by U. S. Steel in March 2020 and supplemented in October 2022, recent information suggests that some of the emissions data relied upon by Illinois EPA in issuing Permit No. 95010001 in 1996 are not representative. Therefore, during informal discussions between Illinois EPA and U. S. Steel, the parties agreed that corrective updates to these data and to the CO air quality impact analysis are appropriate. The pending permit application includes such updated analysis.

In Attachment 1 to the draft denial letter, Illinois EPA indicates that a basis for the denial of the permit application is that the updated CO air quality impact analysis "cannot be relied upon because the inventory for the CO emissions of the source with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered." In particular, Illinois EPA indicates it has "concern" there may be some CO emissions from the Basic Oxygen Furnace Shop Roof Monitor which are not reflected in the air quality impact analysis and also

suggests that the analysis should "consider the CO emissions of the former by-product coke oven batteries at the source." In addition, Illinois EPA asserts that the ambient background CO concentration data used by U. S. Steel, gathered by Illinois EPA during the period of three calendar years from 2016 through 2018, are "not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted."

None of the concerns listed by Illinois EPA are deficiencies warranting denial of the permit application. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a request for revision of a PSD approval include any of the listed information, nor does the agency point to even an application form or guidance document suggesting that such information be provided. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[2] but that was not done here.

As it relates to the possibility of CO emissions from the Basic Oxygen Furnace Shop Roof Monitor, U. S. Steel responds further as follows: Illinois EPA's prior determination that the Production Increase Project would not cause or contribute to a violation of any national ambient air quality standard for CO was based on the agency's assumption that there are no CO emissions from this point. In the pending permit application, U. S. Steel did not request any changes to existing permit terms relating to this emission point. Illinois EPA has neither requested that U. S. Steel's updated CO air quality impacts analysis include any emissions from this emission point, nor has the agency provided a quantitative estimate of those emissions. In the absence of such a request, U. S. Steel had no reasonable basis to conclude that the agency had reconsidered its prior determination as relating to CO emissions from the Basic Oxygen Furnace Shop Roof Monitor; it was therefore reasonable for U. S. Steel to conclude that its updated CO air quality impacts analysis, with revisions to the CO emission rates only for those emission points where the parties agreed that National Steel Corporation's modeled rates should be corrected, was sufficient for the purpose of requesting revisions to the permitted CO emissions from certain combustion units burning blast furnace gas and/or natural gas and affected by Production Increase Project.

As it relates to historical CO emissions from the by-product coke oven batteries that were operated by National Steel Corporation at the time the PSD approval was granted by Illinois EPA in 1996, U. S. Steel responds further as follows: It is unclear to U. S. Steel whether this observation relates to the demonstration that was approved by Illinois EPA in 1996 or to the demonstration submitted by U. S. Steel in March 2020 and supplemented in October 2022. If the former, then U. S. Steel notes that those emissions were, in fact, included.[3] If the latter, then U. S. Steel notes that it is not requesting PSD approval or other authorization for CO emissions from by-product coke oven batteries and that there is no basis for considering emissions under a counterfactual scenario in evaluating whether a requested change will cause or contribute to a violation of any national ambient air quality standard.[4]

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[2] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[3] *See, e.g.*, permit application supplement submitted by National Steel Corporation Jan. 16, 1996, at Table 5-8.

[4] This is one of several instances where Illinois EPA appears to be asserting that the present permit application is deficient because it does not address a set of facts and circumstances that may have existed at some point in history but do not exist

Finally, as it relates to the use of 2016-2018 background CO concentration data, U. S. Steel responds further as follows: These data were the most current quality-assured data available at the time of U. S. Steel's submittal of the pending permit application in March 2020 and use of these data was approved by Illinois EPA following its review of U. S. Steel's dispersion modeling protocol in February 2020. U. S. Steel agrees that the 2016-2018 background CO concentration data are less current now than they were at the time of permit application submittal. Currentness of air quality data is one aspect of the permit application review process that is ensured by compliance with the procedural requirements relating to timely processing of permit applications.[5]

VII. The Permit Application is Sufficient as to Best Available Control Technology

A. Introduction

The pertinent provision of the PSD rule governing the required contents of the permit application pertaining to establishment of Best Available Control Technology ("BACT") is a requirement to include in the application:

> A detailed description as to what system of continuous emission reduction is planned for the source or modification, emission estimates, and any other information necessary to determine that best available control technology would be applied. 40 CFR § 52.21(n)(1)(iii).[6]

It is undisputed that the permit application includes estimates of the CO emissions from the casthouse and the blast furnace stoves as well as a detailed description of the systems of continuous emission reduction that U. S. Steel plans to use to control these emissions.

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the application "lacks necessary information" for the agency to make BACT determinations for the casthouse and the blast furnace stoves.

B. CO Emissions from Blast Furnace Casthouse

For the casthouse, as discussed in Section 8.2.3 of the permit application, the only control options identified by U. S. Steel for potential consideration in a BACT determination by Illinois EPA are add-on air pollution control equipment options—specifically, installation and use of a capture system and some type of incinerator. Illinois EPA asserts that this part of the permit application is deficient because it provides neither an explanation of "why process-related control options are not available" nor, with respect to the literature search conducted by U. S. Steel that did not identify any process-related control options for CO emissions from blast furnace casthouses, "documentary support for the review of available control options that was conducted." It is unclear to U. S. Steel how it would be helpful to Illinois EPA's BACT determination to have copies of reports that contain no pertinent

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presently or in the future. To the extent that Illinois EPA is making such claims, they are without merit, as the requested approval is forward-looking, *i.e.*, is based on the applicable regulations and other circumstances as they exist or will exist at the time of permit issuance. 42 U.S.C. § 7410(j). *See, e.g., United States v. EME Homer City Generation, L.P.*, 727 F.3d 274 (3rd Circuit, 2013)

[5] *See,* 35 Ill. Adm. Code Section 201.158 (providing that a permit application shall be deemed to have been filed 30 days after submittal if Illinois EPA has not notified the applicant that it is incomplete) and 42 U.S.C. § 7475(c) (requiring final action on a PSD permit application not later than one year after filing).

[6] *See, also,* the current PSD rule at 35 Ill. Adm. Code Section 204.810(a)(3).

information, and it is even more unclear how U. S. Steel might be expected to know, without receiving from Illinois EPA a request for specific additional information, which reports containing no pertinent information would be most valuable for this purpose. As to the first of the purported deficiencies listed by Illinois EPA—the failure to explain why no process-related control options are available for controlling CO emissions from the blast furnace casthouse—U. S. Steel notes that Illinois EPA is familiar with the chemical reaction that is intentionally forced to occur in the casthouse as an inherent part of the ironmaking process.[7] Having not received from Illinois EPA a request for specific additional information, U. S. Steel had no way to know that it was necessary to explain in the permit application that the partial combustion of coke inevitably yields carbon monoxide as a reaction product.

U. S. Steel also notes that, as it pertains to CO emissions from the casthouse, U. S. Steel has not requested any changes to its current permits and is currently subject neither to any numeric emission limitations nor to any work practice requirements other than those in 40 CFR part 63, subpart FFFFF. U. S. Steel did not include any information pertaining to BACT for CO emissions from the casthouse in the initial permit application submitted in March 2020; at the request of Illinois EPA, although under no obligation to do so,[8] U. S. Steel voluntarily provided a proposed BACT analysis for CO emissions from the casthouse in the permit application supplement submitted in October 2022. Illinois EPA's proposed denial of the permit application will simply ensure the status quo is maintained, *i.e.*, that U. S. Steel is not subject to any limitations on CO emissions from the casthouse.

C. CO Emissions from Blast Furnace Stoves

In the permit application it submitted in 1995, National Steel Corporation made the following proposal:

> Therefore the BACT recommendation for control of CO emissions from the blast furnace stoves is the maintenance of good combustion practices.[9]

As described in Section 8.1 of the permit application, Illinois EPA reviewed this proposal and agreed with it, determining that work practices constitute BACT for CO emissions from the blast furnace stoves at Granite City Works.

As discussed in Section 8.2.1.1 of the permit application, this determination is consistent with the PSD rule requirements, which expressly provides for a PSD permit to prescribe work practices to satisfy the BACT requirement where the permitting authority "determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible." 40 CFR § 52.21(b)(12).[10]

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[7] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 4 ("The charge materials (iron ore, coke, limestone and other flux material) are fed into the furnace at the top through a double-bell lock system. Heated air is blown into the furnace through nozzles or tuyeres near the bottom of the furnaces. In the furnaces, the coke undergoes partial combustion to carbon monoxide providing the heat to melt the charge as well as reducing the iron ore to elemental iron.")

[8] *See, e.g., U.S. v. Midwest Generation, LLC*, 781 F. Supp. 2d 677 (N.D. Ill. 2011)(holding that source owner's obligations with respect to BACT are limited to those imposed in a PSD permit).

[9] *See,* permit application supplement submitted by National Steel Corporation Oct. 30, 1995, at p. 4-11.

[10] *See, also,* the current PSD rule at 35 Ill. Adm. Code Section 204.280.

In 2013, when issuing the CAAPP permit for the Granite City Works, Illinois EPA again determined that work practices suffice for purposes of demonstrating compliance with the applicable requirements of Permit No. 95010001.[11]

In Section 8.2.2.6 of the permit application, in the discussion of step 5 of the proposed BACT analysis for CO emissions from the blast furnace stoves, U. S. Steel stated as follows:

> USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions—*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel emissions units subject to the BACT requirements for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves there is no sampling port satisfying the location requirement in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.
>
> For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves.

Footnote 45. For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.

Footnote 46. Appendix A-1 to 40 CFR part 60.

In Attachment 1 to the draft denial letter, Illinois EPA makes the following assertion:

> Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. For example, the application does not include diagrams for the existing ductwork of the stoves to address whether the configuration of this ductwork would accommodate installation of test ports at a location that would satisfy USEPA Reference Method 1. The application also does not show how the refractory lining on the stacks or their age, approximately one hundred years old, would present significant technical challenges and costs so that the installation of test ports at a suitable location should be considered infeasible. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

With respect to both Illinois EPA's general suggestion that "further support" is needed and its list of specific examples, Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance

[11] *See,* CAAPP Permit No. 96030056 at Condition 7.4.12.b, stipulating that compliance with all applicable requirements for the stoves and certain other processes are demonstrated by meeting "the work practices, testing, monitoring, recordkeeping, and reporting requirements in Sections 7.4 and 5 of this permit;" note that the permit does not include any testing, monitoring, recordkeeping, or reporting requirements specific to the blast furnace stoves.

document suggesting that such documentation or additional explanation be provided. Notably, the documentation provided in the permit application supplement submitted in October 2022 regarding infeasibility of emissions testing is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. U. S. Steel's permit application includes all information required by the applicable permitting rules—including the PSD rule—relating to BACT for CO emissions from the blast furnace stoves at Granite City Works. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[12] but that was not done here.

D. Emissions Associated with Combustion of Coke Oven Gas

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it "does not demonstrate that prior to February 2015, when the by-product recovery coke oven batteries at the Granite City Works were shut down and [coke oven gas] ceased to be available, BACT was being utilized for the SO_2 and CO emissions from use of [coke oven gas] in the stoves." U. S. Steel acknowledges that the BACT determination made by Illinois EPA in 1996, in response to the permit application submitted by National Steel Corporation in 1995, may have been deficient in this regard. Nonetheless, Illinois EPA's assertion that any such historical deficiency is relevant to U. S. Steel's pending permit application is entirely without merit.[13]

VIII. PSD AND NNSR APPLICABILITY WITH RESPECT TO NO_X EMISSIONS

A. Illinois EPA's Claims Are Based on Emissions Increases Previously Authorized

Attachment 1 to the draft denial letter suggests that the permit application is deficient because it does not include or otherwise address the substantive requirements of the PSD and NNSR programs with respect to NO_X emissions. However, in its evaluation of whether the Production Increase Project would become a major modification, Illinois EPA improperly considers emissions and emissions increases that were authorized by Illinois EPA at the time Permit No. 95010001 was issued to National Steel Corporation but will not occur in the future. As shown in the following table, the net NO_X emissions increase from the Production Increase Project authorized by Illinois EPA prior to U. S. Steel's ownership, during the period when National Steel Corporation owned and operated the Granite City Works, is greater than that with the revisions proposed by U. S. Steel.

Permit Date	Permitting Authority	Owner/Operator	Net NO_X Emissions Increase (TPY)
Jan. 25, 1996	Illinois EPA	National Steel Corporation	38.3
Jan. 5, 1999	Illinois EPA	National Steel Corporation	70.1
Pending	Illinois EPA	U. S. Steel	- 237.3 (decrease)

In summarizing its review of the updated NO_X net emissions increase ("netting") analysis provided in the permit application, Illinois EPA conspicuously avoids using the controlling language of the source

[12] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[13] *See, e.g., U.S. v. Midwest Generation, LLC*, 781 F. Supp. 2d 677 (N.D. Ill. 2011)(holding that source owner's obligations with respect to BACT are limited to those imposed in a PSD permit).

obligation provisions, discussed in detail in Section VIII.B below, but rather states that the application "does not show that the Project would still not be a major modification for NO_X." With this ambiguous language, Illinois EPA appears to be attempting improperly to shift to U. S. Steel a burden that is not U. S. Steel's. U. S. Steel has demonstrated in the permit application that the Production Increase Project would not become a major modification solely by virtue of the relaxations and other revisions requested by U. S. Steel. This is the only demonstration required of U. S. Steel as it relates to applicability of the PSD and NNSR programs with respect to NO_X emissions. Illinois EPA complains that the permit application submitted by U. S. Steel in 2020 and supplemented in 2022 "does not show that the actual NO_X emissions of the subject units in the period from 1996 to the present have not exceeded" the emission rates now proposed by U. S. Steel, but U. S. Steel has no obligation under the rules to make such a showing.[14]

Illinois EPA's improper claims regarding U. S. Steel's obligations with respect to PSD and NNSR with respect to NO_X emissions are contrary to law. The claim that Illinois EPA makes here—that the permits for the Granite City Works must obligate U. S. Steel to comply with the substantive requirements of these major NSR programs because of emissions increases that may have occurred many years ago, prior to U. S. Steel's ownership—is the same claim previously made by the State of Illinois made and rejected by both the U.S. District Court for the Northern District of Illinois and the U.S. Court of Appeals for the 7th Circuit.[15,16]

B. Source Obligation

Under the PSD and NNSR programs as in effect at the time of the Production Increase Project, where the project involved changes to existing emissions units that are so significant that the emissions unit was deemed not to have begun normal operation, the post-change actual emissions of that unit are assumed equal to its potential to emit. 40 CFR § 52.21(b)(21).[17] The major modification applicability test was therefore based on a comparison of the pre-project actual emissions and the post-project potential to emit of the emissions unit or group of units. 40 CFR §§ 52.21(b)(2)-(3). An emissions unit's potential to emit is its maximum capacity to emit a pollutant under its physical and operational design. 40 CFR § 52.21(b)(4). Limitations on the capacity to emit a pollutant are treated as part of the design of an emissions unit or group of units if the limitation or the effect it would have on emissions is legally enforceable and enforceable as a practical matter. Where the potential to emit of a unit or

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[14] Illinois EPA appears to suggest it has already been determined the Production Increase Project as authorized prior to U. S. Steel's ownership of the Granite City Works was a major modification. Attachment 1 to the draft denial letter at footnote 3 (asserting that an analysis of alternatives would have been required of National Steel Corporation "if it had been recognized in 1996 that the Project was a major modification for NO_X"). U. S. Steel is unaware of any such final determination or adjudication.

[15] *See, U.S. v. Midwest Generation, LLC*, 781 F. Supp. 2d 677 (N.D. Ill. 2011)(holding that, where a facility should have been subjected to BACT and other substantive requirements of the major NSR permitting programs due to modifications implemented by a prior owner, Section 9.1(d) of the Illinois Environmental Protection Act does not obligate a subsequent owner to come into compliance with those requirements).

[16] Illinois EPA is well aware of the case law, as in recent years the agency has repeatedly issued construction permits for the very emissions units that were the subject of that decision. *See, e.g.*, Construction Permit No. 15030051, issued Oct. 16, 2015 (authorizing operation of the modified units and not imposing BACT or other major NSR obligations); Construction Permit No. 15030051, revised July 15, 2016 (same); Construction Permit No. 15030051, revised May 9, 2017 (same); Construction Permit No. 15030051, revised July 9, 2020 (same).

[17] Except as noted, all citations to the applicable PSD rules herein are to the federal PSD rule as codified and in effect at the time of issuance of Permit No. 95010001 in 1996; where the corresponding provision of the then-effective NNSR rule is equivalent, separate citations are not provided.

group of units is governed by enforceable limitations rather than by the unrestricted physical capacity of that unit or those units, and where those limitations were necessary to a determination that a project was not a major modification, the term "synthetic minor" is commonly used to describe the project and the associated limitations.

As explained in detail in Section 2.2.4 of the permit application, the PSD and NNSR rules provide that after-the-fact PSD or NNSR permitting is required when a project becomes a major modification "solely by virtue of a relaxation in" a synthetic minor limitation. 40 CFR § 52.21(r)(4).[18] These "source obligation" provisions effectively require updated PSD and NNSR applicability analyses in situations where the applicant proposes to relax a synthetic minor limitation in a permit.

Applicability analyses performed in order to determine whether the source obligation provisions apply in conjunction with a requested relaxation are prospective, not retrospective. All of the facts as they will exist at the time of the requested relaxation are considered in the updated emissions increase calculations; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time.[19]

The updated NO_X emissions increase calculations presented in the permit application fully conform to and satisfy the source obligation provisions of the PSD and NNSR rules. U. S. Steel's prospective calculation of potential NO_X emissions from the certain fuel combustion units affected by the Production Increase Project includes zero emissions from Boilers 1 through 10, which accurately represents the future potential to emit of those boilers because they no longer exist; does not include the greater NO_X emission rates of Boilers 11 and 12 prior to the required retrofit of flue gas recirculation in those boilers; and includes zero emissions from combustion of coke oven gas as fuel, which accurately represents the future emissions of units that previously burned coke oven gas because coke oven gas is no longer an available fuel at the facility. As discussed further in Sections VIII.C and VIII.E below, if Illinois EPA revises Permit No. 95010001 with the requested relaxations and other changes to the limitations in the permit currently in effect, the Production Increase Project will not become a major modification solely due to those relaxations.

C. NO_X Emissions Associated with a Facility Configuration No Longer Authorized or Under a Counterfactual Hypothetical Are Immaterial to the "Source Obligation" Demonstration

Contrary to the plain language of the source obligation provisions, Illinois EPA suggests that the updated NO_X netting analysis provided in the permit application is deficient because it reflects the prospective reality for the fuel combustion units at the Granite City Works, not any counterfactual

[18] *See, also,* the current PSD rule at 35 Ill. Adm. Code Section 204.850.

[19] *See, e.g.,* letter from S.C. Riva, U.S. EPA, to R. Frontanes, Pfizer Pharmaceuticals LLC (Sept. 23, 2015), conveying U.S. EPA's non-applicability determination for proposed relaxation of synthetic minor limitations that had been imposed in 1994 in order to establish synthetic minor status with respect to NO_X emissions from a project that involved installation of five diesel generators and two boilers. The synthetic minor limitations imposed in 1994 established the combined potential to emit NO_X from the seven new units at 56 tons per year; if the combined potential to emit had been 65 tons per year or more, the project would have been a major modification. U.S. EPA's 2015 applicability determination allowed relaxation of the limitations such that the new potential to emit would be 90 tons per year; the agency's source obligation analysis relied on the fact that other facts had changed during the intervening time period and it gave no consideration to the fact that, had the combined potential to emit been 90 tons per year historically, the project would have been a major modification.

hypothetical. Illinois EPA theorizes that "the NO_X emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions" and that "the future NO_X emissions of the fuel burning units for purposes of any revised netting analysis should be expected to be substantially greater than their baseline emissions."[20] For purposes of the source obligation analysis, this is plainly untrue, as the total baseline NO_X emissions of these units are 956 tons per year and the total maximum future emissions are 706 tons per year. The draft denial letter does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring an applicant to anticipate, address, or refute the unsupported expectations of Illinois EPA staff as part of the construction permit approval process.

D. Project Emissions Increases and Net Emissions Increases

By definition, the net emissions increase from a project is the sum of two values: The increase in actual emissions from the project and "[a]ny other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable." 40 CFR § 52.21(b)(3)(i).

Illinois EPA proposes to deny the permit application, at least in part, because Illinois EPA preliminarily determined that "additional decreases in NO_X emissions that would now be proposed to be relied upon" by U. S. Steel are not contemporaneous and otherwise creditable.[21] This preliminary determination is erroneous for three reasons.

First, to the extent that Illinois EPA's analysis includes separate calculations of increases and decreases based on specific fuels and changes in fuels, those calculations are inconsistent with the PSD and NNSR rule requirements. As described previously, the major modification applicability test requires a comparison of the pre-project actual emissions of the emissions unit or group of units with the post-project actual emissions (or potential to emit) of that emissions unit or group of units; the applicable definition of actual emissions does not provide for a calculation that considers only some portions of the units' emissions. For the certain fuel combustion units affected by the Production Increase Project, the change in actual NO_X emissions is properly calculated as the total post-project actual NO_X emissions, regardless of the fuel or fuels being burned to generate those emissions, minus the total pre-project actual NO_X emissions, regardless of the fuel or fuels that were burned to generate those emissions. This is the basis for the values shown in Table 6-8 of the permit application.

Second, the emissions changes at issue are at certain fuel combustion units affected by the Production Increase Project. Emissions changes at these emissions units must be included in the calculation of the emissions increase that will occur as a result of the project, under the first clause in the definition of

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[20] Attachment 1 to the draft denial letter at footnote 11. *See, also,* Attachment 1 at pp. 5 and 11, suggesting that the updated applicability analysis should include "'future' NO_X emissions" greater than zero from Boilers 1 through 10, notwithstanding the fact that those boilers are prohibited from operating currently and in the future; at p. 5, suggesting that the updated applicability analysis should include greater NO_X emission rates from Boilers 11 and 12 based on the configuration of those boilers as they existed at the time the Production Increase Project was implemented by National Steel Corporation, notwithstanding the fact that the Boilers are prohibited from operating at those emission rates currently and in the future; at p. 5, suggesting that the updated applicability analysis should include greater NO_X emission rates from Boilers 11 and 12 and from the blast furnace stoves based on the use of coke oven gas as fuel in those units, notwithstanding the fact that coke oven gas is not an available fuel at the facility currently or in the future. Each of these suggestions is demonstrably inconsistent with the current and future operation of the Granite City Works and is not properly considered in the source obligation analysis.

[21] Attachment 1 at p. 4.

the term "net emissions increase."[22] Therefore, it was proper to include the emissions changes at the certain fuel combustion units affected by the Production Increase Project in the updated calculation of the NO_X emissions increase from the project, -10.7 tons per year, as calculated in Table 6-8 of the permit application and as shown in Table 6-9 of the permit application. These tables are repeated here for the convenience of the reviewer:

Table 6-8. NO_X Project Emissions Increase Analysis

	NO_X Pre-Project Actual Emissions (TPY)	Proposed Revised NO_X Emissions Caps (TPY)	NO_X Change (TPY)
Blast Furnace Operations	4.6	24.0	19.4
BOF Shop	179.8	400.0	220.2
Continuous Casting Operations	0.0	0.0	0.0
Certain Fuel Burning Units	956.3	706.0	-250.3
Total	1140.7	1130	-10.7

Table 6-9. Updated Net Emissions Increases for NO_X for the 1996 Project

		NO_X
Start of Contemporaneous Period		Jan 1990
End of Contemporaneous Period		Jan 1996
Project Emissions Increases		239.6
Significant Emission Rates		40
Whether Significant?		Yes
Project Emissions Changes (includes decreases at the fuel combustion units)		-10.7
Contemporaneous Emissions Increases	Date	
Installation of #8 Galvanizing Line	Mar-1996	n/a
Contemporaneous Emissions Decreases		
Blooming Mill Shutdown	Apr-1991	-217.8
Batch Annealing Shutdown	Dec-1991	-8.7
Net Emissions Increase		**-237.3**
Whether Significant?		No

Third, even if the contribution of the certain fuel combustion units affected by the Production Increase Project were properly considered as among the other decreases under the second clause of the definition rather than a contribution to the emissions increase from the project under the first clause of the definition, it is not relied upon for the non-applicability determination. The net NO_X emissions increase from the project as presented in Table 6-9 of the permit application is -237.3 tons per year; even if the decrease of 250.3 tons per year as calculated by Illinois EPA is omitted from the calculation, the net emissions increase is 13 tons per year (-237.3+250.3), which is less than the significant level of 40 tons per year and therefore sufficient to demonstrate that the Production

[22] Contrast this with the emissions changes at the blooming mill and galvanizing line shown in Table 6-9. Because these are emissions units not affected by the Production Increase Project, increases and decreases in actual emissions at these units are among the other changes that are considered under the second clause in the definition.

Increase Project would not become a major modification solely by virtue of the relaxations requested by U. S. Steel. The calculations under this hypothetical scenario are illustrated in the following tables.

Table 6-8a. NO_X Project Emissions Increase Analysis

	NO_X Pre-Project Actual Emissions (TPY)	Proposed Revised NO_X Emissions Caps (TPY)	NO_X Change (TPY)
Blast Furnace Operations	4.6	24.0	19.4
BOF Shop	179.8	400.0	220.2
Continuous Casting Operations	0.0	0.0	0.0
Certain Fuel Burning Units	956.3	706.0	0.0*
Total	1140.7	1130	239.6*

* This Table 6-8a shows a counterfactual hypothetical where the NO_X emissions decrease of 250.3 TPY from the fuel combustion units is not counted because it is determined not to be a creditable or contemporaneous decrease.

Table 6-9a. Updated Net Emissions Increases for NO_X for the 1996 Project

		NO_X
Start of Contemporaneous Period		Jan 1990
End of Contemporaneous Period		Jan 1996
Project Emissions Increases		239.6
Significant Emission Rates		40
Whether Significant?		Yes
Project Emissions Changes (excludes decreases at the fuel combustion units)		239.6*
Contemporaneous Emissions Increases	Date	
Installation of #8 Galvanizing Line	Mar-1996	n/a
Contemporaneous Emissions Decreases		
Blooming Mill Shutdown	Apr-1991	-217.8
Batch Annealing Shutdown	Dec-1991	-8.7
Net Emissions Increase		**13.1**
Whether Significant?		No

* This Table 6-9a shows a counterfactual hypothetical where the NO_X emissions decrease of 250.3 TPY from the fuel combustion units is not counted because it is determined not to be a creditable or contemporaneous decrease.

E. Substantive Requirements of the PSD and NNSR Programs Are Not Applicable with Respect to NO_X Emissions

Because the Production Increase Project would not become a major modification with respect to NO_X emissions solely by virtue of the relaxations requested by U. S. Steel, the substantive requirements of the PSD and NNSR programs[23] are not required elements of the permit application and the fact that these requirements are not addressed in the permit application is not a valid basis for application denial.

[23] 35 Ill. Adm. Code Sections 203.601, 203.602, 204.1100, 204.1110, 204.1120 and 204.1130.

IX. The Permit Application Includes All Required Information Pertaining to Pre-Project (Baseline) and Post-Project (Future) NO_X Emissions Calculations

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient in that it omits certain information that is purportedly necessary for Illinois EPA to validate the PSD/NNSR non-applicability determinations. As explained below, these assertions are without merit.

A. Volume of Coke Oven Gas Combusted During the Pre-Project Baseline Period

In Attachment 1 to the draft denial letter, Illinois EPA states that the updated calculations of the NO_X emissions change resulting from the Production Increase Project include the difference between the pre-project and post-project actual emissions from certain combustion units and that the calculation of pre-project actual NO_X emissions rates for some of these combustion units includes consideration of NO_X formed from combustion of coke oven gas, among other fuels. These statements are correct.

Illinois EPA then asserts that the pre-project coke oven gas usage rates used in calculating these emission contributions "are not accompanied by any documentation or explanation," suggesting that it is not enough to identify the quantity of coke oven gas consumed in each type of affected combustion unit. With respect to an "explanation," this assertion is incorrect. The permit application includes extensive discussion of the use of coke oven gas as fuel during the pre-project baseline period.[24]

With respect to additional documentation or further explanation, Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular documentation or explanation in conjunction with a historical operational rate or emissions rate, nor do they point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. Notably, the documentation provided for coke oven gas in the permit application supplement submitted in October 2022 is indistinguishable from the documentation provided with respect to other fuels, both in the permit application supplement submitted in October 2022 and in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. In all cases, what was provided was a table of usage values, with no primary source documents such as strip charts, because it is neither required nor customary to provide such documents. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[25] but that was not done here.

B. NO_X Emission Factor for Use of COG in Boilers 11 and 12:

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that Table 6-4 in the permit application indicates the emission factor used in calculating the amount of NO_X formed from combustion of coke oven gas in the boilers during the pre-project baseline period is based on emissions testing performed at a coke oven battery.

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[24] *See, e.g.*, pp. 2-4, 4-2, 5-5, and 11-2 of the body of the permit application. Additional information is provided in the appendices to the application.

[25] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

The emission factor basis listed in Table 6-4 of the permit application is a scrivener's error. The error was pointed out to U. S. Steel by Illinois EPA's permit application reviewer by telephone in January 2023. The factor is actually based on emission testing performed at Boiler #12, which is one of the boilers that is the subject of the calculation. This fact was conveyed to Illinois EPA's permit application reviewer by telephone in January 2023.

C. Emission Factor for Use of Natural Gas in Ladle Preheaters

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the calculations presented in the permit application in support of the pre-project actual NO_X emissions from certain fuel combustion units affected by the Production Increase Project, U. S. Steel used a single emission factor for all such units, including ladle preheaters. This statement is correct.

Illinois EPA then asserts that the permit application "does not show that it is appropriate to utilize this emissions factor for ladle preheaters." Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular documentation or justification for the emission factors used to estimate historical emissions, nor do they point to even an application form or guidance document suggesting that such documentation or justification be provided. Notably, for a period of nearly thirty years, the emission factor at issue has been used consistently for all purposes pertaining to the permitting of the Production Increase Project and has been both accepted and prescribed by Illinois EPA for that purpose.[26] In light of Illinois EPA's repeated acceptance of and reliance on this emission factor for calculating NO_X emissions from combustion of natural gas in ladle preheaters in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application submitted in March 2020 and supplemented in October 2022.

D. Emissions from Use of Natural Gas on the Continuous Casting Lines:

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the calculations presented in the permit application in support of the pre-project actual NO_X emissions from emissions units affected by the Production Increase Project, U. S. Steel indicated there is no NO_X formation from the continuous casting operation other than from combustion of natural gas and, because all natural gas consumption in the continuous casting operation is accounted for elsewhere, U. S. Steel did not account for any additional pre-project actual NO_X emissions from the continuous casting operation. Illinois EPA's statements in this regard are correct.

Illinois EPA then asserts that U. S. Steel's failure to double-count the pre-project actual NO_X emissions from the continuous casting operation is "problematic." This assertion is incorrect. U. S. Steel's election not to overstate the pre-project actual NO_X emissions from emissions units affected by the Production Increase Project is the correct and appropriate approach, as it best represents the

[26] *See, e.g.*, "Calculation Sheet" prepared by Jim Ross of Illinois EPA, Dec. 5, 1995 (summarizing Illinois EPA's review of the construction permit application submitted by National Steel Corporation and received by Illinois EPA on Jan. 3, 1995) at p. 12; permit application supplement submitted by National Steel Corporation Jan. 16, 1996, at p. 3-2; Construction Permit No. 95010001 as issued Jan. 25, 1996, at Table 4 (prescribing use of this factor for ladle preheaters and certain other combustion units); Construction Permit No. 95010001 as revised Dec. 17, 2012, at Table 4 (same).

increases in actual emissions resulting from the project, consistent with the requirements of the PSD and NNSR rules. However, the manner in which U. S. Steel presented in the permit application the natural gas usage rates and associated NO_X emissions contributions during the pre-project baseline period gas is unclear, and that lack of clarity appears to have caused confusion on the part of Illinois EPA's reviewer. The lack of clarity and the correctness of the total pre-project actual NO_X emissions from natural gas consumption in certain fuel combustion units affected by the Production Increase Project is explained below.

Following are the natural gas usage rates during the pre-project baseline period as listed in Table 3-2 of the permit application submitted by National Steel Corporation in 1995[27] and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996.

Source Description	Emission Factor	Base Year Throughput	Actual Emission	Projected Throughput	Projected Emission
Boiler House I (Blrs 1-10) – NG	306 lb/MMcf	361 MMcf	55.23 TPY	included below	
Boiler #11 – NG	306 lb/MMcf	226 MMcf	34.58 TPY	included below	
Boiler #12 – NG	306 lb/MMcf	218 MMcf	33.35 TPY	included below	
BOF Preheaters/Dryers – NG	306 lb/MMcf	283 MMcf	43.30 TPY	included below	
Continuous Caster #1 & #2 – NG	306 lb/MMcf	57 MMcf	8.72 TPY	included below	
Natural gas usage	306 lb/MMcf	1,145 MMcf	inc. above	1,145 MMcf	175.19 TPY

The total natural gas usage in the affected units during the pre-project baseline period is 1,145 million cubic feet per year, including 805 million cubic feet per year from the boilers and 340 million cubic feet per year from the BOF shop and the continuous casting operations. The total associated NO_X contribution during the pre-project baseline period is 175.19 tons per year, including 123.17 tons per year from the boilers and 52.02 tons per year from the BOF shop and the continuous casting operations. National Steel Corporation's projection of the total post-project natural gas usage in the affected units, including the continuous casting operations, was the same as the pre-project amount: 1,145 million cubic feet per year. The total NO_X emissions increase from the Production Increase Project as shown in Table 3-2 of the permit application submitted by National Steel Corporation in 1995 is 238.8 tons per year.

Illinois EPA included in Permit No. 95010001 a limit on total post-project natural gas usage and a limit on total post-project NO_X emissions contribution from this natural gas usage. The limits are 1,145 million cubic feet per year and 175.19 tons per year, respectively.[28] These limits precisely match the values that were presented in Table 3-2 of the permit application submitted by National Steel Corporation in 1995 and that included natural gas usage in the continuous casting operations. Illinois EPA also included in the permit a list of the fuel combustion units to which these limits apply.[29] Likely inadvertently, Illinois EPA omitted the continuous casting operations from this list of fuel combustion units. It is undisputed that Illinois EPA accepted and relied upon both the pre-project baseline information and the projections presented in Table 3-2 of the permit application submitted by

[27] *See,* permit application supplement submitted by National Steel Corporation Jan. 16, 1996, at Table 3-2.
[28] *See, e.g.,* Construction Permit No. 95010001 as issued Jan. 25, 1996, at Special Condition 21 and Table 4.
[29] *Ibid* at Special Condition 21, Special Condition 35, and Table 4.

National Steel Corporation in 1995: The total NO_X emissions increase authorized in the construction permit issued in 1996 is 238.8 tons per year,[30] which precisely matches the value presented in the 1995 permit application.

In the permit application submitted by U. S. Steel in March 2020 and in the supplement submitted in October 2022, the total natural gas usage in the affected units during the pre-project baseline period is documented as 1,145 million cubic feet per year, including 805 million cubic feet per year from the boilers and 340 million cubic feet per year from the BOF shop. The total associated NO_X contribution during the pre-project baseline period is documented as 175.19 tons per year, including 123.17 tons per year from the boilers and 52.02 tons per year from the BOF shop. Consistent with the approach taken by Illinois EPA in drafting Permit No. 95010001, and perpetuating what was likely an inadvertent error, U. S. Steel omitted the continuous casting operations from the list of fuel combustion units burning natural gas and contributing to the total associated NO_X contribution during the pre-project baseline period but included the contribution of the continuous casting operations. However, emissions associated with natural gas combustion in this operation were properly accounted for both in pre-project baseline and the post project emission for the project affected units.

E. Post-Project NO_X Emissions

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it does not include supporting information related to the maximum future NO_X emissions of 706 tons per year from the certain fuel combustion units affected by the Production Increase Project, such as "the maximum annual amounts of fuels burned in these units" and "the emission factors used to calculate annual emissions." As discussed in detail in Section XII.J herein, U. S. Steel included all of this information in the construction permit application submitted in March 2020 but omitted it from the permit application supplement submitted in October 2022 based on Illinois EPA's informal comments regarding the initial submittal. Notably, the permit application at issue does not request a new construction permit; instead, it requests revision of an existing permit, which existing permit has since 1999 limited the maximum NO_X emissions from the fuel combustion units to 706 tons per year. Because the permit application requests no change in the maximum NO_X emissions from the fuel combustion units, U. S. Steel reasonably assumed that no additional information was needed with respect to this calculation. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[31] but that was not done here.

X. There Are No Quantifiable Fugitive Emissions of NO_X or VOM from the Basic Oxygen Furnaces

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application "does not address uncaptured emissions" of NO_X and VOM from the basic oxygen furnaces and that the emissions calculations presented in the permit application reflect an assumption "that all emissions of these pollutants from the basic oxygen furnaces are now captured" and routed to atmosphere through the electrostatic precipitator or baghouse. Illinois EPA also acknowledges that such uncaptured

[30] *Ibid* at Special Condition 42.c and Table 6.

[31] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

emissions, if they exist, are not significant and that, if estimated quantities of such uncaptured emissions were added to the calculations supporting the PSD/NNSR non-applicability demonstrations, would yield smaller (rather than greater) emissions increases.

With one minor exception, Illinois EPA's general statements characterizing the emissions increase calculations presented in the permit application, as summarized above, are correct. The minor exception is this: The permit application does not reflect an assumption that there are zero uncaptured emissions of NO_X and VOM from the basic oxygen furnaces but rather reflects the conclusion that, if there are any such uncaptured emissions, those emissions are fugitive emissions[32] and are not quantifiable. Fugitive emissions are counted for purposes of PSD and NNSR applicability determinations only to the extent that such emissions are quantifiable.[33]

Although Illinois EPA presents speculation regarding possible fugitive emissions of NO_X and VOM from the basic oxygen furnaces, that speculation is not a sufficient basis to determine that such emissions exist and are quantifiable. Neither U. S. Steel nor Illinois EPA has not identified any evidence of such quantifiable emissions in the literature or in the permitting records of other iron and steel mills.

The fact that there are fugitive particulate matter emissions from basic oxygen furnaces is not indicative of the formation of NO_X or VOM emissions. The capture system serving the secondary baghouse at Granite City Works is a large ventilation system that is generally evacuating the space around the basic oxygen furnace vessels during the charging, refining, and tapping operations. The primary mechanism for formation of particulate matter during charging and tapping is the oxidation of molten metal. This formation mechanism cannot be expected to result in the formation of NO_X or VOM.

XI. The Permit Application Includes All Required Information Pertaining to Pre-Project (Baseline) Particulate Matter Emissions Calculations

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient for the following reason:

> With regard to baseline particulate emissions, the determination of baseline emissions from handling of coke, iron pellets and limestone provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not provide needed supporting information for the "corrected" determinations of baseline particulate emissions of

[32] Fugitive emissions are "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening." 40 CFR § 52.21(b)(20). The emissions capture systems serving the basic oxygen furnaces satisfy the stringent requirements of 40 CFR part 63, subpart FFFFF, which reflects U.S. EPA's determination of the maximum degree of reduction in emissions that is achievable for these operations. 42 U.S.C. § 7412(d)(2). It is indisputable that these capture systems reflect the state of the art and that, to the extent there are any uncaptured emissions of NO_X or VOM, those emissions could not reasonably be captured or controlled and thus are fugitive emissions.

[33] *See, e.g.*, 40 CFR § 52.21(i)(4)(vii)(exempting a project from PSD permitting requirements if it would be major "only if fugitive emissions, to the extent quantifiable, are considered" and it would occur at a source that is not in a listed source category); *see, also*, 45 *Fed. Reg.* 52676 at 52692 (Aug. 7, 1980)(EPA explains that it is declining to extend the exemption the exemption at § 52.21(i)(4)(vii) to the listed source categories, such as iron and steel mills, but stated, "EPA emphasizes, however, that fugitive emissions from a source in one of the listed categories will only be included in threshold calculations 'to the extent quantifiable'").

> these operations as it is not accompanied by detailed calculations for the emissions from handling each material.

The assertion regarding a deficiency in the permit application is, for two reasons, without merit. First, Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Second, Illinois EPA's characterization of these pre-project (baseline) emission rates as "corrected" is erroneous: These are the values presented in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. U. S. Steel made no change to these values and is not in possession of information that would allow such change. In light of Illinois EPA's acceptance of and reliance on these values during that prior permitting action, which preceded U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the present permit application. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[34] but that was not done here.

XII. The Permit Application Includes All Required Information Relating to Post-Project Actual Emissions of PM, PM_{10}, NO_X, and VOM and to Enforceable Limitations on Potential to Emit these Pollutants

A. It Is Feasible to Establish Enforceable Emission Caps for Groups of Emissions Units and Emission Points as Proposed in the Permit Application

As correctly described by Illinois EPA in Attachment 1 to the draft denial letter, U. S. Steel's permit application proposes that PM, PM_{10}, NO_X, and VOM emissions be subject to annual emission caps covering groups of related emissions units and emission points. For the blast furnace operations and the BOF shop, the proposed groupings include emission points with significant emissions, such as the BOF electrostatic precipitator stack, and minor emission points such as the iron spout baghouse stack. U. S. Steel's permit application also proposes approaches to making these emission caps enforceable as a practical matter, as would be required if these emission caps were to serve as synthetic minor limitations.[35]

In Attachment 1 to the draft denial letter, Illinois EPA asserts that there may be alternative groupings of emissions units and emission points that could be subjected to enforceable emission caps or other limitations:

> It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two basic oxygen furnaces to be directly limited separately from the emissions of any other units.
> *

[34] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[35] See discussion of synthetic minor limitations in Section VIII.B herein.

> *
> Alternatively, limits specifically for the emissions of the casthouse for the blast furnaces and the basic oxygen furnaces, i.e., the principal units at the facility for iron and steel production, could be accompanied by group limits for the overall emissions of these principal units and the other, "non- principal" units in these areas of the facility. For example, limits could be set for both emissions of the casthouse and for the emissions of the casthouse, charging of the blast furnaces, and the slag pits. Attachment 1 at 18-19.

U. S. Steel agrees with Illinois EPA generally that there are potentially suitable groupings other than those proposed in U. S. Steel's permit application and that the approach suggested by Illinois EPA in Attachment 1 is likely permissible under the applicable permitting rules.

It is unclear whether Illinois EPA's discussion of other potentially suitable groupings of other emissions units and emission points is intended to explain Illinois EPA's proposed denial of the permit application.[36] If it is so intended, U. S. Steel disagrees that this represents a valid basis for such denial. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

B. Particulate Matter Emissions Associated with a Facility Configuration No Longer Authorized Are Immaterial to the "Source Obligation" Demonstration

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application does not include information associated with emissions from the handling of coal and coke at the by-product coke oven batteries that were permanently shut down in 2015. This statement is correct.

Illinois EPA then asserts that this omission represents a deficiency in the permit application because these emissions should be included in the total post-project actual emissions quantity as used in determining whether PSD and NNSR permitting requirements apply. This assertion is without merit. Although this information may be relevant to an evaluation of whether the Production Increase Project as authorized by Illinois EPA and as implemented by National Steel Corporation prior to U. S. Steel's ownership was a major modification subject to the substantive requirements of the PSD and NNSR programs, it is not relevant to the "source obligation" analysis and demonstration that are required here. As discussed in Section VIII.B above, these analyses are prospective, not retrospective; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time.

[36] Notably, Illinois EPA has not claimed that the groupings and approaches proposed by Illinois EPA would result in permit conditions that are not enforceable as a practical matter or that are otherwise impermissible under the applicable rules.

C. The Permit Application Includes All Required Information Relating to Quantifying Emissions of NO_X and VOM from the Blast Furnace Casthouse Roof Monitor

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed NO_X and VOM emission caps, U. S. Steel proposed that emissions of these pollutants from the Blast Furnace Casthouse Roof Monitor be calculated as 5.3% of the measured emission rate from the Blast Furnace Casthouse Baghouse. (This value reflects the assumption that the emissions from the baghouse represent 95.0% of the total emissions from the casthouse and the uncaptured and unmeasured emissions represent 5.0% of the total: 5% ÷ 95% = 5.3%.)

Illinois EPA then asserts that U. S. Steel's permit application does not demonstrate that the proposed methodology would yield calculated emission rates that are representative of actual emissions from the Blast Furnace Casthouse Roof Monitor under all conditions; in particular, Illinois EPA asserts, the proposed methodology might underestimate actual emissions if the capture efficiency is less than the assumed 95%. Finally, Illinois EPA suggests that prescribing specific emission rates for NO_X and VOM in the permit can reasonably be expected to be more representative than the ratio approach proposed by U. S. Steel.

It is unclear whether these assertions in Attachment 1 to the draft denial letter are intended to support Illinois EPA's proposed denial of the application. If these assertions are so intended, U. S. Steel disagrees that this is a valid basis for denial of the application. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

U. S. Steel agrees that the potential problem identified and discussed by Illinois EPA—that an actual capture efficiency of less than 95% would not be reflected in the calculation methodology proposed by U. S. Steel—exists as a theoretical matter. U. S. Steel contends that this scenario is effectively prohibited, as operation of the blast furnace casthouse capture system is subject to stringent requirements under 40 CFR part 63, subpart FFFFF, particularly § 63.7790(b). Thus, if it were left to U. S. Steel to decide on appropriate compliance demonstration methods for inclusion in the revised construction permit, the proposed 5.3% ratio approach would be used. However, U. S. Steel recognizes that this decision is within the judgment and discretion of Illinois EPA.

D. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Blast Furnace Casthouse Roof Monitor

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Blast Furnace Casthouse Roof Monitor be calculated using prescribed emission factors of 0.030 lb per ton of iron and 0.0153 lb per ton of iron, respectively. Each of these proposed emission factors is derived

from the pre-control PM emission factor of 0.6 lb per ton of iron published by U.S. EPA.[37] Specifically, the PM emission factor is based on an assumed 95% capture efficiency (*i.e.*, 5% of the pre-control emissions are emitted to atmosphere through the roof monitor; 5% × 0.6 = 0.030). The PM_{10} emission factor is based on an assumed particle size distribution where the PM_{10} emission rate is equal to 51% of the PM emission rate (51% × 0.030 = 0.0153), again based on data published by U.S. EPA.[38]

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to these emission factors because the application "does not include relevant supporting information," "only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency," and therefore does not demonstrate that the proposed emission factors would yield calculated emission rates that are representative of actual emissions from the Blast Furnace Casthouse Roof Monitor.

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Notably, the supporting information provided in the permit application regarding the emission factors at issue is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. The assumption of 95% capture efficiency for the blast furnace casthouse at Granite City Works has been consistently applied by Illinois EPA for many years.[39]

A brief recap of the history of U. S. Steel's approach with respect to this issue is in order. In the construction permit application submitted in March 2020, U. S. Steel proposed PM and PM_{10} emission factors of 0.031 lb per ton of iron and 0.0155 lb per ton of iron, respectively. These emission factors have been prescribed by Illinois EPA for this purpose for decades.[40] Among Illinois EPA's informal comments regarding that permit application submittal, Illinois EPA's permit application reviewer correctly pointed out that these historically assumed emission factors are slightly higher than the values that would result from correctly calculating the emission factors using Illinois EPA's historic assumptions of 0.6 lb per ton pre-control, 95% capture efficiency, and 51% PM_{10}:PM ratio. Illinois EPA's permit application reviewer also stated that the agency's records do not appear to contain an explanation for this discrepancy. Accordingly, the permit application reviewer suggested that U. S. Steel use the revised and corrected emission factors in the permit application supplement submitted in October 2022, which U. S. Steel did.

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[37] *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 4th Ed. U.S. EPA, Research Triangle Park, NC. Section 7.5, "Iron and Steel Production," Table 7.5-2, "Particulate Emission Factors for Iron and Steel Mills," May 1983.

[38] *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 5th Ed. U.S. EPA, Research Triangle Park, NC. Section 7.5, "Iron and Steel Production," Table 7.5-2, "Size Specific Emission Factors," January 1995.

[39] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 41.

[40] *See, e.g.*, Construction Permit No. 95090167 issued Sept. 15, 1995; Construction Permit No. 95010001 issued Jan. 25, 1996.

In light of Illinois EPA's repeated acceptance of and reliance on the assumption of 95% capture efficiency in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, and in light of the informal suggestion by Illinois EPA's permit application reviewer to correct the emission factor calculations in the manner described above, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application supplement submitted in October 2022. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[41] but that was not done here.

Alternatively, if Illinois EPA now believes there are insufficient data to quantify the capture efficiency of the state-of-the-art capture system employed at the blast furnace casthouse at Granite City Works, and that the fugitive emissions[42] from the Blast Furnace Casthouse Roof Monitor are therefore not quantifiable, then those emissions should be omitted from the analyses performed by Illinois EPA to determine whether the source obligation provisions apply in conjunction with the permit revisions requested by Illinois EPA. Fugitive emissions are counted for purposes of PSD and NNSR applicability determinations only to the extent that such emissions are quantifiable.[43]

E. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Slag Pits

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Slag Pits be calculated using a prescribed emission factor of 0.00417 lb per ton of hot metal.

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to this emission factor because the application "does not include relevant supporting information" and therefore does not demonstrate that the proposed emission factor would yield calculated emission rates that are representative of actual emissions from the Slag Pits.

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code

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[41] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[42] Fugitive emissions are "those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening." 40 CFR § 52.21(b)(20). The emissions capture systems serving the blast furnace casthouse satisfy the stringent requirements of 40 CFR part 63, subpart FFFFF, which reflects U.S. EPA's determination of the maximum degree of reduction in emissions that is achievable for these operations. 42 U.S.C. § 7412(d)(2). It is indisputable that these capture systems reflect the state of the art and that, to the extent there are any uncaptured emissions of PM_{10} or PM, those emissions could not reasonably be captured or controlled and thus are fugitive emissions.

[43] *See, e.g.*, 40 CFR § 52.21(i)(4)(vii)(exempting a project from PSD permitting requirements if it would be major "only if fugitive emissions, to the extent quantifiable, are considered" and it would occur at a source that is not in a listed source category); *see, also*, 45 *Fed. Reg.* 52676 at 52692 (Aug. 7, 1980)(EPA explains that it is declining to extend the exemption the exemption at § 52.21(i)(4)(vii) to the listed source categories, such as iron and steel mills, but stated, "EPA emphasizes, however, that fugitive emissions from a source in one of the listed categories will only be included in threshold calculations 'to the extent quantifiable'").

requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Notably, the supporting information provided in the permit application regarding the emission factor at issue is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. The emission factor of 0.00417 lb per ton for the Slag Pits at Granite City Works has been consistently applied by Illinois EPA for decades.[44] The summary of the derivation of that factor as provided by U. S. Steel in the permit application is simply a paraphrasing of Illinois EPA's description.[45]

In light of Illinois EPA's repeated acceptance of and reliance on this emission factor in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application supplement submitted in October 2022. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[46] but that was not done here.

F. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Continuous Casting Operation

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Caster Mold, Slab Cutoff, and Slab Ripping operations be calculated using prescribed emission factors.

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to these emission factors because the application does not supporting information "sufficient to show that the emission factors that are proposed as prescribed factors are representative."

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any particular supporting information, nor does the agency point to even an application form or guidance document suggesting that such documentation or

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[44] *See, e.g.*, Construction Permit No. 95090167 issued Sept. 15, 1995; Construction Permit No. 95010001 issued Jan. 25, 1996.

[45] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 42, stating as follows:

> Emission Factor: 0.00417 lbs/ton of iron
> Origin of EF: Calculated from EPA Assessment of Atmospheric Emissions from Quenching of Blast Furnace Slag. Also, AP-42, Table 13.2.4-4, Fugitive Uncontrolled emissions.
> Summation of the following emission factors:
> a. Slag Quenching = 0.0026 lbs/ton iron,
> b. Slag Digging = 0.00157 lbs/ton iron.

[46] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

additional explanation be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. Notably, the supporting information provided in the permit application regarding the emission factors at issue is more extensive than the documentation provided in the permit application submitted by National Steel Corporation in 1995 and accepted by Illinois EPA when issuing Permit No. 95010001 in 1996. These PM/PM_{10} emission factors for the continuous casting operation at Granite City Works have been consistently prescribed by Illinois EPA for this purpose for many years.[47]

In light of Illinois EPA's repeated acceptance of and reliance on these emission factors in numerous permitting actions over a period of nearly thirty years, including several permitting actions occurring prior to U. S. Steel's ownership of the facility, U. S. Steel reasonably concluded that no further justification was needed as part of the permit application submitted in March 2020 or the permit application supplement submitted in October 2022. Of course, Illinois EPA retains authority to request additional information in conjunction with a construction permit application,[48] but that was not done here.

G. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Iron Pellet Screen

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Iron Pellet Screen be calculated using a prescribed emission factor of 0.00131 lb per ton of material. As explained in the permit application, the proposed emission factor is derived from the PM_{10} emission factor of 0.0087 lb per ton of material published by U.S. EPA for crushed stone screening,[49] with application of an 85% control efficiency. Specifically, the PM emission factor is based on an assumed 95% capture efficiency (*i.e.*, 5% of the pre-control emissions are emitted to atmosphere through the roof monitor; $5\% \times 0.6 = 0.030$).

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to this emission factor because the application "does not include relevant supporting information," particularly with respect to the proposal to use an emission factor for PM derived from an emission factor published by U.S. EPA for PM_{10}, and therefore does not demonstrate that the proposed emission factor would yield calculated emission rates that are representative of actual emissions from the Iron Pellet Screen.

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[47] *See, e.g.*, "Statement of Basis for the Planned Issuance of a Revised Clean Air Act Permit Program (CAAPP) Permit for: United States Steel Corporation, Granite City Works," Illinois EPA (Feb. 4, 2013) at 47; Construction Permit No. 95090167 issued Sept. 15, 1995; Construction Permit No. 95010001 issued Jan. 25, 1996.

[48] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

[49] *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, 5th Ed. U.S. EPA, Research Triangle Park, NC. Section 11.19.2, "Crushed Stone Processing and Pulverized Mineral Processing," Table 11.19.2-2, "Emission Factors for Crushed Stone Processing Operations," updated Aug. 2004. A control efficiency of 85% was applied for this operation 7.5, "Iron and Steel Production," Table 7.5-2, "Particulate Emission Factors for Iron and Steel Mills," May 1983.

The listing of the PM_{10}-derived emission factor as the proposed, prescribed factor for PM emissions was a scrivener's error in the permit application; U. S. Steel's intent was to propose that Illinois EPA prescribe use of the corresponding PM emission factor of 0.00375 lb per ton of material as shown in Table 5-5 of the permit application supplement submitted in October 2022. Nonetheless, the assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any proposed emission quantification methods for fugitive emissions, nor does the agency point to even an application form or guidance document suggesting that such a proposal be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate, including recordkeeping requirements and other compliance demonstration methods; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

H. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Mag Lime Silo

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that U. S. Steel proposed in the permit application that emissions of PM and PM_{10} from the Mag Lime Silo be included in the permit conditions relating to demonstration of compliance with the proposed PM and PM_{10} emission caps, and further proposed that emissions of these pollutants from the Mag Lime Silo be calculated using a prescribed emission rate of 0.009 lb per hour.

Illinois EPA then asserts that U. S. Steel's permit application is deficient as relating to this emission factor because the application does not include supporting information demonstrating that the proposed emission rate of 0.009 lb per hour is representative of actual emissions from the Mag Lime Silo.

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a permit application include any proposed compliance demonstration methods, nor does the agency point to even an application form or guidance document suggesting that such a proposal be provided. U. S. Steel's permit application includes all information required by the applicable permitting rules. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate, including recordkeeping requirements and other compliance demonstration methods; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters. Here, it is noteworthy that U. S. Steel voluntarily proposed that emissions from the Mag Lime Silo be subject to limits where it had no obligation to do so. Illinois EPA's proposed denial of the permit application will simply ensure the status quo is maintained, *i.e.*, that U. S. Steel is not subject to any limitations on emissions from this emissions unit.

I. The Permit Application Includes All Required Information Relating to Quantifying Emissions of Particulate Matter from the Basic Oxygen Furnace Shop Roof Monitor

In Attachment 1 to the draft denial letter, Illinois EPA correctly states that, among the procedures proposed by U. S. Steel in the permit application for demonstration of compliance with the proposed PM and PM_{10} emission caps, U. S. Steel proposed that emissions of these pollutants from the Basic Oxygen Furnace Shop Roof Monitor be calculated using prescribed emission factors that are lower than the emission factors used by National Steel Corporation in the permit application submitted in 1995 and by Illinois EPA in the permit issued in 1996. Illinois EPA characterizes U. S. Steel's proposal as follows:

> For PM, an emission factor of 0.01986 pounds/ton is proposed as a prescribed factor, compared to the current emission factor limit of 0.0987 pounds/ton; for filterable PM10, an emission factor of 0.0296 pounds/ton is proposed, compared to the current emission factor limit of 0.06614 pounds/ton.

This misstates U. S. Steel's proposal as presented in Section 5.5.2.2 of the permit application:

> For BOF Shop Roof Monitor, use PM emission factor of 0.0296 lb/ton and filterable PM10 emission factor of 0.0198 lb/ton.

Illinois EPA's mischaracterization of U. S. Steel's proposed emission factors for the Basic Oxygen Furnace Shop Roof Monitor is likely a scrivener's error in Attachment 1 to the draft denial letter.

Illinois EPA acknowledges in Attachment 1 to the draft denial letter that the emission factors proposed by U. S. Steel are representative of the current configuration of the Basic Oxygen Furnace Shop, but then asserts that U. S. Steel's permit application is deficient as relating to these emission factors because "those prescribed factors would not be representative of emissions before the new baghouse system was installed" and further asserts that "particulate emissions factors that are representative of particulate emissions circa 1996, before installation of the baghouse system on the furnaces, should be used in the revised netting analyses for PM and PM_{10}."

These assertions are without merit. Although this information may be relevant to an evaluation of whether the Production Increase Project as authorized by Illinois EPA and as implemented by National Steel Corporation prior to U. S. Steel's ownership was a major modification subject to the substantive requirements of the PSD and NNSR programs, it is not relevant to the "source obligation" analysis and demonstration that are required here. As discussed in Section VIII.B above, these analyses are prospective, not retrospective; there is no consideration of facts as they may have existed at some prior point in time and no "mixing" of facts from different points in time.

J. The Permit Application Includes Adequate Explanation of Projected Post-Project Actual Emissions from Fuel Combustion Units and Does Not Diminish Illinois EPA's Authority to Impose Enforceable Limits

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application represents the maximum total post-project actual NO_X emissions from certain fuel combustion units affected by the

Production Increase Project will be 706 tons per year and that the application also requests elimination of the gaseous fuel usage limits for these units. These statements are correct.

Illinois EPA then asserts that the permit application is deficient because it "does not explain why actual NO_X emissions of the subject units would not exceed this amount going forward if the permit were revised" as proposed. This assertion is without merit. The explanation is provided in Table 6-7 of the permit application supplement submitted in October 2022: The maximum potential emissions of the affected fuel combustion units are less than 706 tons NO_X per year.

Illinois EPA further asserts as follows:

> While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the 2022 application does not show that new limits for fuel usage and emissions would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels and emissions should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shutdown. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown. (Internal footnote omitted.)

A brief recap of the history of U. S. Steel's approach with respect to this issue is in order. In the construction permit application submitted in March 2020, U. S. Steel expressly requested enforceable emission caps for emissions of NO_X and other pollutants from the fuel combustion units affected by the Production Increase Project and provided emission calculations supporting these proposed emission caps. Among Illinois EPA's informal comments regarding that permit application submittal, Illinois EPA's permit application reviewer correctly pointed out that enforceable emission caps are superfluous and unnecessary where the maximum potential emissions of the affected unit or units is less than or equal to the emission caps under consideration. Accordingly, in the permit application supplement submitted in October 2022, U. S. Steel omitted the express request for enforceable emission caps for the affected fuel combustion units.

Notwithstanding this history, it remains the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate. If Illinois EPA is not persuaded that the future actual emissions from the fuel combustion units affected by the Production Increase Project will be less than or equal to the values represented in the permit application in the absence of enforceable limits on fuel usage in, or an enforceable emission caps for, these units, then the agency undisputedly has the discretion and authority to impose such limits in the permit. The permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters. That should be especially true where, as here, the agency conveys its preliminary judgment, the applicant revises its permit application to be consistent with that representation, and then the agency vacillates.

With regard to Illinois EPA's suggestion that the limits the agency is now considering may need to "address fuel burning units other than the Project-affected units currently addressed by the permit,"

such as the slab reheat furnaces and cogeneration boiler at the Granite City Works, U. S. Steel disagrees that such limits would be appropriate. As these emissions units were not among the units affected by the Production Increase Project, the emissions from these units are not relevant to the "source obligation" analysis and demonstration that are required here, as discussed in Section VIII.B above.

XIII. The Permit Application Includes All Information Necessary for Integrated Processing Under the CAAPP or, In the Alternative, Any Deficiencies Do Not Form a Basis for Denying the Construction Permit Application

A. Claimed Deficiencies in the Permit Application As Related to Integrated Processing Under the CAAPP Do Not Form a Basis for Denying the Construction Permit Application

As correctly noted by Illinois EPA in the draft denial letter, U. S. Steel requested that the revised construction permit be subjected to "integrated processing," as provided by subsections 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act, which would allow the changes to Permit No. 95010001 to be incorporated into the facility's CAAPP permit using the administrative amendment process.

Numerous purported deficiencies in the permit application listed by Illinois EPA in Attachment 1 to the draft denial letter are claimed to be deficient only because of the request for integrated processing. U. S. Steel generally does not agree with Illinois EPA regarding these claimed deficiencies, as discussed in Sections XIII.B through XIII.I below. In addition, U. S. Steel emphasizes that none of these issues would form a valid basis for denying the construction permit application; even if Illinois EPA were correct that these deficiencies would prevent the use of integrated processing, that would only provide a valid basis for denial of the request for integrated processing of the revised construction permit and associated revisions of the CAAPP permit.

B. The Permit Application Includes All Necessary Information Relating to General Provisions in the CAAPP Permit Governing Selection of Emission Factors

In Attachment 1 to the draft denial letter, Illinois EPA states that Permit No. 95010001 does not specify how emissions are to be quantified for purposes of demonstrating compliance with the permitted emission caps and that, in the absence of such compliance demonstration requirements, Illinois EPA imposed monitoring and recordkeeping requirements in the facility's CAAPP permit sufficient to assure compliance with applicable emission limits as required by subsection 39.5(7)(p) of the Illinois Environmental Protection Act. These statements are correct.

Illinois EPA then asserts that the pending permit application does not request revisions to Permit No. 95010001 "that would enable revisions to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by administrative amendment." This assertion is incorrect. U. S. Steel requested that the construction permit be subjected to "integrated processing," which requires that Illinois EPA process the permit application and draft the permit using a program that "meets procedural and compliance requirements substantially equivalent to those" imposed in the CAAPP program. Although this request was stated generally, and the permit application did not specify with precision the monitoring and recordkeeping requirements to be imposed in the revised construction permit and the amended CAAPP permit, that approach is appropriate: It is the responsibility of Illinois

EPA to draft a permit with conditions it judges to be suitable and appropriate; the permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters. Inherently subsumed in a request for integrated processing is an implied request that Illinois EPA satisfy its mandate to draft a permit or permit revision that includes the minimum elements of a CAAPP permit—including monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with applicable emission limits—and to remove or revise conflicting or redundant permit terms.

C. The Permit Application Includes All Required Information In Conjunction with the Request for Changes to Emission Point Naming

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the permit application, U. S. Steel requested that the emission point currently identified as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" in Permit No. 95010001 be renamed and identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." This statement is correct.

Illinois EPA then asserts that, for the following reasons, the pending permit application is deficient.

> However, the application does not actually identify the specific units that would be addressed by the proposed new term. In this regard, the application is not accompanied by an itemized list of the equipment and activities that would be covered by this new term or a diagram that identifies this equipment and activities. US Steel's request also does not explain how the requested revision to Permit 95010001 would do what has generally been requested as the proposed new term would refer to a "Material Handling Tripper." As the 2022 application requests changes to terminology in Permit 95010001, the changes should act to better identify the emissions units that would be addressed, improving the specificity and clarity of the revised permit.[51, 52]
>
> [51] For example, the proposed new term would not make clear that the basic oxygen furnace shop actually has two ladle stirring stations and one ladle metallurgy furnace, all served by Baghouse 2.
>
> [52] The requested change to the terminology for these emissions unit(s) is also problematic as it would refer to a control device, Baghouse 2, rather than to the equipment or activities that generate emissions. Applied literally, the proposed term would only address captured emissions; it would not address the uncaptured emissions, which elude capture for control by the baghouse.

This assertion is without merit. As an initial matter, U. S. Steel has not characterized the listed item as an emissions unit, regardless of naming convention. It is an emission point, and that is how U. S. Steel correctly characterized it in the permit application. The only condition in Permit No. 95010001 that applies to this emission point is a particulate matter emission limit of 12.8 tons per year, which applies solely to the emission point and not separately to "the equipment or activities that generate emissions." Any uncaptured emissions from that equipment or activities are routed to atmosphere through the Basic Oxygen Furnace Shop Roof Monitor. Those emissions are subject to the separate emission limits for the item referenced as "BOF Roof Monitor." This is consistent with the overall structure of Permit No. 95010001, which was issued by Illinois EPA many years prior to U. S. Steel's ownership, in which the emission limits for non-fugitive emissions are applicable to emission points (e.g., "Casthouse Baghouse," "Iron Spout Baghouse," "BOF ESP Stack") rather than emissions units.

A similar change to the item naming was effected by Illinois EPA in 2013 when issuing the CAAPP permit for the Granite City Works, where the agency referred to this emission point (i.e., the item to which the particulate matter emission limit of 12.8 tons per year is applicable) as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy Baghouse #2)."[50]

The "list of the equipment and activities that would be covered by this new term" – *i.e.*, Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility – is precisely the same as the list of the equipment and activities that are currently covered by the term "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" as used in Permit No. 95010001 and by the term "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy Baghouse #2)" in the facility's CAAPP permit. U. S. Steel reasonably concluded that Illinois EPA would understand this fact because the permit application requested and enumerated only discrete changes to Permit No. 95010001, none of which related to reconfiguring the equipment and activities venting to this emission point. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that a straightforward request for revision of the name of an emission point be accompanied by a list of the equipment and activities venting to that emission point, nor does the agency point to even an application form or guidance document suggesting that such information be provided. Of course, Illinois EPA retains authority to request additional documentation in conjunction with a construction permit application,[51] but that was not done here.

Notwithstanding all of the above, it remains the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate. If Illinois EPA wishes to revise the permit to "improv[e] the specificity and clarity of the revised permit better" or to "identify the emissions units that would be addressed" by a particular emission limit, Illinois EPA has the discretion and authority to make such revisions. The permit applicant has no obligation to reflect in the permit application a correct guess as to how the permitting authority will exercise its judgment regarding these matters.

D. The Permit Application Includes All Required Information Relating to the Steel Slag Removal Station and the Handling Operation for Raw Materials Used in Ladle Metallurgy

In Attachment 1 to the draft denial letter, Illinois EPA states that, in the permit application, U. S. Steel "does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS." Although U. S. Steel did not request any permit revisions with respect to this item that it considers to be substantive, the absolute statement is incorrect, as U. S. Steel indicated in the permit application that this item should be renamed as "Baghouse 1 for Material Handling." This revision was suggested by U. S. Steel for two reasons: First, renaming this item based on the emission point rather than the emitting activity is more consistent with the naming convention generally used in Permit No. 95010001, as discussed in Section XIII.C above. Second, the historical naming of this item is misleading, as this baghouse does not serve to control emissions from any slag removal operation; the steel slag removal station at Granite City Works is not served by any capture system or baghouse.

[50] *See*, CAAPP Permit No. 96030056 at Condition 7.5.6.g.

[51] *See, e.g.*, 35 Ill. Adm. Code Section 201.152 ("The Agency may adopt procedures that require data and information in addition to and in amplification of the matters specified in the first sentence of this Section, that are reasonably designed to determine compliance with this Chapter and ambient air quality standards, or that set forth the format by which all data and information shall be submitted.").

The requested renaming is consistent with the approach taken by Illinois EPA in Attachment 3 of the CAAPP for the facility, which refers to this item as "Baghouse #1."

Illinois EPA then asserts that the pending permit application is deficient in two respects relating to the steel slag removal station (i.e., the activity identified as "deslagging station" in historical permitting documents). This assertion is without merit as discussed below.

First, Illinois EPA states that the permit application "does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop." U. S. Steel has claimed neither that the steel slag removal station should not appropriately be categorized as slag skimming nor that it should not be addressed with the other slag skimming operations in the basic oxygen furnace shop. Plainly, U. S. Steel was under no obligation to offer, as part of the permit application or otherwise, a justification for a claim that it was not making.

Second, Illinois EPA states that the permit application "does not request revisions to Permit 95010001 to facilitate amendment of the CAAPP permit to appropriately address the emissions of this deslagging station and the associated material handling system." Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, include a request for revisions "to facilitate amendment of the CAAPP permit" for the facility. It is the responsibility of Illinois EPA to draft both a construction permit and a CAAPP permit with conditions it judges to be suitable and appropriate. The permit applicant has no obligation to reflect in the permit application a correct guess as to what revisions to one permit would be viewed by the permitting authority as facilitating revisions to another permit.

E. The Permit Application Includes All Required Information Relating to the Ladle Drying Preheaters

In Attachment 1 to the draft denial letter, with respect to the Ladle Drying Preheaters, Illinois EPA states that the permit application is deficient because U. S. Steel "does not request any changes to Permit 95010001 to maintain consistency with the approach to these units in the CAAPP permit."

This assertion is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, include a request for revisions "to maintain consistency with the approach to these units in the CAAPP permit" for the facility. It is the responsibility of Illinois EPA to draft both a construction permit and a CAAPP permit with conditions it judges to be suitable and appropriate. The permit applicant has no obligation to reflect in the permit application a correct guess as to what revisions to one permit would be viewed by the permitting authority as maintaining consistency with another permit.

F. The Permit Application Includes All Required Information Relating to Identification of the CAAPP Permit to be Administratively Amended Following Integrated Processing of the Construction Permit Application

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application is deficient because it "does not identify the version of the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment" under the integrated processing provisions. Relatedly, Illinois EPA asserts that U. S. Steel "has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006."

These assertions are without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, specify the "version" of the CAAPP permit for the facility that should be amended. It is solely the responsibility of Illinois EPA to make revisions and amendments to CAAPP permits in conformance with applicable rules and laws.

Regarding whether U. S. Steel has initiated the process of incorporating the provisions of Permit No. 11050006 into the facility's CAAPP permit, U. S. Steel responds further as follows: In November 2013, U. S. Steel submitted an application to renew the CAAPP permit for Granite City Works. In this permit application, U. S. Steel expressly requested that Illinois EPA incorporate the conditions of Permit No. 11050006 into the CAAPP permit and noted that "the Basic Oxygen Furnace process described in the CAAPP permit condition 7.5 needs to be updated with the new secondary baghouse added as part of the Emission Reduction Project (Construction Permit No. 11050006)."[52] That application was deemed complete by operation of law in January 2014.[53] Illinois EPA retains authority to request additional information in conjunction with a CAAPP permit application,[54] but the agency has not done so.

G. The Permit Application Includes All Required Information Relating to the Relationship Between Fugitive Dust Control Measures Required by Permit No. 95010001 and Requirements of 35 Ill. Adm. Code Part 212

In Attachment 1 to the draft denial letter, Illinois EPA states that the permit application is deficient because it "does not make clear the relationship between these requirements established by permit [relating to emissions of fugitive dust from roadways, parking areas, and open access areas] and state regulatory requirements for fugitive emissions in 35 IAC Part 212 Subpart K."

This assertion is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, specify the relationship between existing permit terms and applicable rule requirements. It is the responsibility of

[52] *See*, CAAPP permit renewal application at pp. 2-1 and 4-1.
[53] *See*, subsection 39.5(5)(f) of the Illinois Environmental Protection Act ("Unless the Agency notifies the applicant of incompleteness, within 60 days of receipt of the CAAPP application, the application shall be deemed complete.").
[54] *See*, subsection 39.5(5)(g) of the Illinois Environmental Protection Act ("If after the determination of completeness the Agency finds that additional information is necessary to evaluate or take final action on the CAAPP application, the Agency may request in writing such information from the source with a reasonable deadline for response.").

Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate and in conformance with applicable rules and laws.

H. The Permit Application Includes All Required Information Relating to Applicable Provisions of 40 CFR Part 63 Subpart FFFFF

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it "does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities. 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020." Relatedly, in Attachment 1, Illinois EPA makes the observation:

> These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the 2022 application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the basic oxygen furnaces and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate.

The assertion regarding a deficiency in the permit application is without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, include suggested bases upon which Illinois EPA might reopen the facility's CAAPP permit. It is solely the responsibility of Illinois EPA to reopen the CAAPP permit where the agency determines that the permit must be revised or revoked to assure compliance with all applicable requirements.[55]

U. S. Steel generally agrees with Illinois EPA's observation regarding the relevance of the NESHAP requirements and responds further as follows: The applicable requirements of the NESHAP as currently codified are legally enforceable, and the monitoring, testing, recordkeeping, and work practice requirements of that rule provide a sound technical basis for demonstration of compliance with particulate matter emission limits, regardless of whether Illinois EPA satisfies the mandate to reopen the CAAPP permit where such reopening is required to assure compliance with all regulatory requirements.

I. The Permit Application Includes All Required Information Relating to Equipment that is Listed in the CAAPP Permit and Has Been Permanently Shut Down

In Attachment 1 to the draft denial letter, Illinois EPA asserts that the permit application is deficient because it "does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emissions units" and further asserts that "[t]he responsibility to identify provisions in the CAAPP permit that should not be carried forward initially falls on US Steel as it is the CAAPP Permittee for the Granite City Works."

[55] *See,* subsection 39.5(15)(a)(iv) of the Illinois Environmental Protection Act.

These assertions are without merit. Illinois EPA does not identify any provision of the Illinois Environmental Protection Act or the Illinois Administrative Code requiring that any application for a construction permit revision, even one for which integrated processing is requested, request changes to the facility's CAAPP permit other than those directly resulting from the requested revisions of the underlying construction permit. It is the responsibility of Illinois EPA to draft a permit with conditions it judges to be suitable and appropriate and in conformance with applicable rules and laws.

The pending permit application was submitted for the narrow and specific purpose of addressing the outstanding appeal items and the underlying PSD and NNSR applicability evaluations relating to the Production Increase Project implemented by National Steel Corporation. This application was not intended to address changes that are not directly relevant to that purpose.

In November 2013, U. S. Steel submitted an application to renew the CAAPP permit for Granite City Works. That application was deemed complete by operation of law in January 2014.[56] Illinois EPA retains authority to request additional information in conjunction with the CAAPP permit application,[57] but the agency has not done so.

[56] *See,* subsection 39.5(5)(f) of the Illinois Environmental Protection Act ("Unless the Agency notifies the applicant of incompleteness, within 60 days of receipt of the CAAPP application, the application shall be deemed complete.").
[57] *See,* subsection 39.5(5)(g) of the Illinois Environmental Protection Act ("If after the determination of completeness the Agency finds that additional information is necessary to evaluate or take final action on the CAAPP application, the Agency may request in writing such information from the source with a reasonable deadline for response.").

United States Steel Corporation
Law Department
600 Grant Street, Room 1844
Pittsburgh, PA 15219-2800
Tel: 412-433 2919
Fax: 412 433 2811
E-mail: dwhacker@uss.com

David W. Hacker
Senior Counsel - Environmental

R010967

August 17, 2023

VIA EMAIL - brad.frost@illinois.gov

Mr. Brad Frost
Office of Community Relations
Illinois EPA
P.O. Box 19506
Springfield, IL 62794-9506

Dear Mr. Frost:

Re: *United States Steel Corporation – Granite City Works*
Request for Extension of Comment Period
Illinois EPA Notice of Intent to Deny Application for
Revision to Construction Permit/PSD Approval – Permit/Application No. 95010001
ID No. 119813AAI

United States Steel Corporation (U. S. Steel) respectfully requests an extension of at least 21-days to the comment period to allow U. S. Steel to properly consider the Illinois EPA's proposed denial of the above referenced permit application. This additional time is necessary to allow a thorough evaluation of the numerous, complex issues raised in the Illinois EPA's proposed denial. With this additional time, U. S. Steel can provide more meaningful comments to assist Illinois EPA in its continued review of the application and its supporting materials. As the Illinois EPA is aware, U. S. Steel worked diligently in preparing the application and meeting with the Illinois EPA – and we desire to continue to work in a collaborative manner with Illinois EPA during this process. We believe the additional time will be beneficial to that process. We appreciate the Illinois EPA's careful consideration of this request.

If you have any questions, please contact me at dwhacker@uss.com or (412) 433-2919.

Kind Regards,

cc: K. Jones, Esq. (USS)
L. Driver, Esq. (Hepler Broom)
A. Piscitelli (USS)
K. Armentrout (USS)
C. Hardin (USS)

217/785-1705

CERTIFIED MAIL

DENIAL OF AN APPLICATION FOR REVISIONS TO A CONSTRUCTION PERMIT/PSD APPROVAL[1] (DRAFT)

(Draft July 2023)

U.S. Steel Granite City
Attn: Krista Armentrout - Environmental Manager
1951 State Street
Granite City, Illinois 62040

Permit/Application No.: 95010001 I. D. No.: 119813AAI
Date Permit Originally Issued: January 25, 1996
Date Application for Revisions Received: October 7, 2022
Subject of Permit: Production Increase
Location: Granite City Works, Southeastern Granite City

The Illinois EPA has reviewed your above application for revisions to the above-referenced construction permit/Prevention of Significant Deterioration (PSD) approval issued for the above referenced project. The permit application is DENIED because Sections 9.1, 39, 39.5(5)(c), 39.5(10)(a)(i) and 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act (Act) and Sections 201.142,201.160, 203.128, 203.601, 203.602, 204.560, 204.1100, 204.1110, 204.1120 and 204.1130 of Title 35 of the Illinois Administrative Code (IAC) might be violated.

The specific reasons why provisions of the Act and State regulations may not be met if this permit were revised as requested by this application are detailed in the Listing of Denial Points, Attachment 1 of this permit denial.

Before taking action to deny the above-referenced application, the Illinois EPA held a public comment permit on a draft of a proposed permit denial letter in accordance with 35 IAC Part 252, as provided for by 35 IAC 252.105(b).

If you have any questions on the denial of this application, please call Minesh Patel at 217/785-1705.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:mvp:tan

[1] In this application, US Steel request that the revision of this permit be processed with "Integrated Processing," as is provided for by Section 39.5(13)(a) and (c)(v) of the Act. Integrated Processing would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit.

U.S. Steel Granite City (I. D. No. 119813AAI)
Permit/Application No. 95010001
Application for Revisions to the Permit Received on October 7, 2022
Draft of Permit Denial Letter July 2023

ATTACHMENT 1: LISTING OF DENIAL POINTS

1. THE REVISED NETTING ANALYSIS FOR THE PROJECT FOR NITROGEN OXIDES (NOx) DOES NOT FULFILL RELEVANT REQUIREMENTS OF NEW SOURCE REVIEW (NSR) FOR SUCH ANALYSES

Overview

For NOx emissions, the 2022 application for revisions to the Construction Permit 95010001 for the Production Increase Project (Project)[1] does not address or show fulfillment of the substantive requirements of the Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NaNSR) programs related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the 2022 application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and NaNSR (35 IAC 203.301) for NOx emissions.[2, 3] This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx.[4] The 2022 application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project

[1] Permit 95010001 was initially issued in January 1996 for a "Production Increase" at the Granites City Works. It provides for increases in the allowable production rates of iron from 2,372,500 to 3,165,000 tons per year and of steel from 2,774,000 to 3,580,000 tons per year. This permit was preceded by Construction Permit 9209014, a permit for increases in production issued in September 1992. That permit provided for increases in the permitted production rate on a monthly average basis for iron from 5,600 to 6,500 tons per day (equivalent to production of 2,372,500 tons per year) and for steel from 6,900 to 7,600 tons per day (equivalent to production of 2,774,000 tons per year).

[2] The basic oxygen furnaces, at which the largest increase in permitted NOx emissions is requested, were not physically modified and would not become subject to requirements for BACT or LAER for NOx even if the Project were a major modification.

[3] The 2022 application also does not include an analysis of alternatives. This analysis would have been required to be included in the original application for the Project if it had been recognized in 1996 that the Project was a major modification for NOx. It is beyond the scope of the revisions of Permit 95010001 that are now requested to address the fact that such an analysis was not originally part of the construction permit application for the Project.

[4] Under the PSD program, the significant emission rate for NOx is 40 tons/year; under NaNSR, since Granite City is not in an area that is classified as serious, severe or extreme nonattainment for ozone air quality, the significant emissions rate for NOx is also 40 tons/year. An increase in NOx emissions or, if the source elects to evaluate the net increase in emissions, a net increase in NOx emissions from a project that is equal to or greater than this rate is considered significant. (35 IAC 204.660 and 35 IAC 203.209.)

would become a major modification for NOx with the requested revisions to Permit 95010001, the 2022 application must show for NOx that the relevant substantive requirements of PSD and NaNSR are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and NaNSR would be met for the Project for NOx.

In this regard, the 2022 application requests that the permitted NOx emissions of the casthouse on the blast furnaces and the basic oxygen furnaces be increased by 19.4 and 220.2 tons/year, respectively, for an overall increase of 239.6 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.)[5] The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[6] The requested increase in the permitted NOx emissions of the blast furnaces and basic oxygen furnaces, 239.6 ton/year combined, would not result in the Project becoming a major modification for NOx. For this purpose, the 2022 application indicates that the overall decrease in NOx emissions from Project-affected fuel burning units would now be 250.3 tons/year, comparing their revised baseline NOx emissions of 956.3 tons/year and future NOx emissions of 706 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) However, the 2022 application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the 2022 application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would not exceed 706.0 tons/year.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For

[5] In the 2022 application, the increases in the NOx emissions of the blast and basic oxygen furnaces reflect proposed corrections to baseline emissions, as well as increases in the permitted emissions with the project. For the blast furnaces, the application indicates that baseline NOx emissions should be lowered from 15.6 to 4.6 tons/year. For the basic oxygen furnaces, baseline NOx emissions should be raised from 46.94 to 179.8 tons/year. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.")

[6] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

emission decreases to be relied on for the purpose of a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the 2022 application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The 2022 application proposes to rely upon the decreases in NOx emissions due to these changes, which decreases were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as the analysis does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed separately below, the 2022 application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

Application Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application indicates baseline NOx emissions of 131.8 and 123.2 tons/year from the use of blast furnace gas (BFG) and natural gas, respectively, in Boilers 1 through 12. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) Boilers 1 through 12 are the twelve boilers at the source in 1996 that were addressed by Permit 95010001. Ten of these boilers, Boilers 1 through 10, were shut down in 2009.[7] The 2022 application does not show that NOx emissions of these ten boilers, as existed in the period prior to 2009, were considered in the "future" NOx emissions with the Project of at most 706 tons/year from the Project-affected fuel burning units. In addition, with regard to Boilers 11 and 12, the two remaining old boilers at the source that continue in operation, flue gas recirculation systems have

[7] The shutdown of Boilers 1 through 10 was required by Condition 2.6(a) of Construction Permit 06070023, which was originally issued in July 2006. This permit addresses construction of a cogeneration boiler at the facility that would be designed to produce both high-pressure steam to generate electricity and lower pressure process steam. This boiler has been constructed and is in operation. The permitting of this new boiler relied upon contemporaneous decreases in NOx emissions from several actions, most notably, a decrease of 558.9 tons/year from addition of low NOx burners to four reheat furnaces. The permitting of the new cogeneration boiler also relied on a 33.41 tons/year decrease in NOx emissions from the shutdown of Boilers 1 through 10 as this eliminated use of natural gas by these boilers. The related application for emissions decreases that were contemporaneous with the new boiler did not rely on any decreases in the NOx emissions of these boilers from use of COG and BFG. This is because "…the boilers shutdowns will not result in any change in the amount of BFG and COG combusted at the Facility." (Application 06070022, Section 3.3.1. "Boilers 1 through 10 Shutdown Emission Calculations," p. 3-7.) The reliance of Permit 06070023 on emission decreases from the shutdown of these boilers is a further impediment to reliance on these decreases in a revised netting analysis for the Project.

been installed on these boilers pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to control NOx emissions to facilitate compliance with 35 IAC 217.164. The 2022 application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from Boilers 11 and 12 that are now being achieved with the new control systems, rather than their NOx emissions as previously existed with the Project in the period before these control systems were installed.

The application also indicates baseline NOx emissions of 461 tons/year from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12.[8] In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the 2022 application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[9]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application.[10] This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the

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[8] For Project-affected boilers, the 2022 application indicates that baseline NOx emissions from usage of COG are addressed only for Boilers 11 and 12. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.") This is likely erroneous since the application for Permit 06070022 indicates that Boilers 1 through 10 also had the ability to use COG.

[9] The 2022 application does reflect increased use of natural gas by Project-affected fuel burning units. The application explains that with the shutdown of the by-product coke oven batteries, COG is no longer available and more natural gas may need to be used (e.g., 2022 application, Section 6.3, Post-Project NOx Emissions Limitations"). Permit 95010001 currently limits annual use of natural gas by the Project-affected fuel burning units to 1,346 million cubic feet. The revised netting analyses in the 2022 application are based on a post-project annual natural gas usage of up to 1,980 million cubic feet (e.g., Tables 5-7, 6-6 and 7-3).

The decreases in NOx emissions that resulted from the shutdown of the coke oven batteries and elimination of COG in 2015 are contemporaneous with any increases in NOx emissions due to the accompanying use of more natural gas. However, these emissions decreases are not contemporaneous relative to the Project, which was undertaken in 1996. In addition, an application for revisions to Permit 95010001 is not an appropriate venue to address the use of more natural gas due to the shutdown of the coke oven batteries. The Project involved increases in production of iron and steel. The Project-affected fuel burning units do not include four slab furnaces that also used COG and now must use more natural gas. Lastly, the consequences of the shutdown of the coke oven batteries on the facility's NOx emissions, including the consequences for the slab reheat furnaces, are the subject of a separate construction permit application, Application 15030001, received March 5, 2015, which application is still pending.

[10] It should be noted that for purposes of applicability of NSR, for the same reasons that the 2022 application understates the net increase in emissions of NOx from Project-affected fuel burning units, the application also understates the increases or net increases in emissions of the Project for purposes of NSR for particulate matter (PM), particulate matter$_{10}$ (PM_{10}) and volatile organic material (VOM), i.e., pollutants other than NOx for which the requested revised permit for the Project would rely upon the increase or net increase in emissions not being significant.

requested increases in the permitted emissions of the blast furnaces and the basic oxygen furnaces. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the 2022 application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[11]

[11] With the requested revisions of Permit 95010001, it is unclear how, , the "future NOx emissions" of fuel burning units indicated in the 2022 application are NOx emissions that could have been allowed by this permit in 1996. The future NOx emissions of affected fuel burning units indicated in the 2022 application are less than the baseline NOx emissions, i.e., proposed future emissions of 706 tons/year compared to the claimed baseline of 956 tons/year. However, the Project did not include any elements that would lower the NOx emissions of fuel burning units. Rather, the production of more iron and steel would be accompanied by increased utilization of the blast furnace stoves and boilers as more blast air and steam are generally needed for blast furnaces to produce more iron. Accordingly, in 1996, the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions, as this permit addresses a project that involves use of more BFG and natural gas by Project-affected fuel burning units. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.)

Indeed, the future NOx emissions of the fuel burning units for purposes of any revised netting analysis should be expected to be substantially greater than their baseline emissions. If one assumes that the increases in emissions would be proportional to the permitted increase in iron production, future NOx emissions of the fuel burning units would be expected to increase by roughly 40 percent. If the baseline emissions of these units should have been 956 tons/year, as indicated in the 2022 application, this suggests future emissions of these units with the Project should be about 1,340 tons/year (956 tons/year x 1.4 = 1.338 ~ 1,340 tons/year). Alternatively, absent any decreases in NOx emissions from the twelve boilers and the discontinuation of COG, and disregarding increased use of natural gas in place of COG, the NOx emissions from the Project-affected fuel burning units for purposes of NSR applicability, as of 1996, would be on the order of 1,420 tons/year (Proposed future emissions of 706 tons/year + 131.8 tons/year attributable to use of BFG by the boilers + 123.2 tons/year attributable to use of natural gas by the boilers + 461 tons/year from the discontinuation of the use of COG in the stoves and Boilers 11 and 12 ~ 1,420 tons/year). If so, the calculated change in NOx emissions from Project-affected fuel burning units for purposes of NSR applicability would be a net increase on the order of 460 tons/year (1,420 – 956 = 464), rather than a net decrease of about 250 tons/year.

2. THE DETERMINATION OF BASELINE NOx EMISSIONS IN THE REVISED NETTING ANALYSIS CANNOT BE INDEPENDENTLY CONFIRMED

The new determination of baseline NOx emissions of Project-affected fuel burning units provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, as discussed below, concerns exist with the determination of the overall baseline NOx emissions for the Project.

Baseline Usage of Coke Oven Gas (COG)

As already discussed, the use of coke oven gas (COG) in Project-affected fuel burning units is introduced in the 2022 application for revisions to Permit 95010001.[12] This application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The annual usage of COG in the blast furnace stoves (374 million cubic feet/year) and in boilers (2,211 million cubic feet/year) is simply presented in the revised netting analysis for NOx. (2022 application, Appendix B - Emission Calculations, USS Granite City - 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis). The indicated usages of COG are not accompanied by any documentation or explanation.

Emission Factor for Use of COG in Boilers 11 and 12:

For COG, the 2022 application utilizes a NOx emission factor for Boilers 11 and 12[13] of 404 pounds/million cubic feet of COG.[14] The application states that this factor is based on emission testing conducted on the stack of A Coke Battery (2022 application, Table 6-4. "NOx Emission

[12] It should be noted that the introduction in the revised netting analysis for the Project of NOx emissions from use of COG in Project-affected fuel burning units is not acknowledged in the section of the 2022 application in which historical production and operating rates are discussed. Section 6.2.1 of the application, "Historical Throughput Rates," states that "The pre-project actual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 6-3 [Pre-Project Production and Operating Rates for NOx]." This statement is clearly not accurate as the usage of and NOx emissions from COG were not quantified in the 1995 application. Moreover, Table 6-3 does not include information for the historical or baseline usage of COG.

[13] In the 2022 application, there is an inconsistency in the information for the baseline NOx emissions of boilers. In Table 6-5, "Pre-project Actual Emissions and Summary of Changes to Pre-Project NOx Emissions Factors for Affected Emissions Units," baseline NOx emissions of Boilers 1 through 10 do not appear to be addressed since this table shows that baseline emissions are provided for B11 and B12 (Boilers 11 and 12). In Appendix B, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis, baseline NOx emissions appear to be provided for all boilers, as information is shown as being for "boilers."

[14] For the stoves, the revised netting analysis utilizes a lower NOx emission factor of 80 pounds/million cubic feet of COG. The application states that this factor is based on an emission test for which the date is unknown (2022 application, Table 6-4, p. 6-3). As this factor is identical to the NOx emission factor in USEPA's WebFIRE data base for burning of COG in industrial boilers, this factor can be considered appropriate. (USEPA, Clearinghouse for Inventories & Emission Factors, Emission Factors & AP 42, WebFIRE, Search WebFIRE, with search conducted using the term "coke oven gas" in the field under Select options under Source Classification Code.)

Factors for Fuel Burning"). The application does not show that it is appropriate to utilize an emission factor developed from the results of emission testing on the combustion stack of a coke oven battery to calculate emissions of a boiler. There are significant differences between combustion of COG as occurs at coke ovens and combustion of fuel in a boiler. At a fundamental level, a combustion stack emits the products of combustion from the heating of coke ovens to the high temperature needed to convert coal into coke. Regenerative heat exchangers are utilized to efficiently achieve this temperature. Boilers 11 and 12 emit the products of combustion from burning fuel to achieve the temperature needed convert water into process steam.[15]

Emission Factor for Use of Natural Gas in Ladle Preheaters:

For use of natural gas, the 2022 application utilizes a single emission factor for NOx emissions from all Project-affected fuel burning units. This factor, 306 pounds/million cubic feet of natural gas reflects the results of emission testing conducted on Boiler 12 when using natural gas. The application does not show that it is appropriate to utilize this emissions factor for ladle preheaters, which are different types of emissions units than boilers. Moreover, the revised netting analysis for NOx in the application erroneously indicates that the estimated baseline NOx emissions of ladle preheaters were "Revised to use current AP-42 emission factor." (2022 application, Appendix B, Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) The current AP-42 NOx emission factor for small boilers (<100 million Btu/hour heat input) without low NOx burners or flue gas recirculation is only 100 pounds/million cubic feet of natural gas. (USEPA, *Compilation of Air Pollutant Emission Factors*, AP-42, Table 1.4-1.)

Emissions from Use of Natural Gas on the Continuous Casting Lines:

Unlike the original application, the 2022 application does not directly address NOx emissions associated with use of natural gas in continuous casting operations.[16] In this regard, this application states

> The pre-project actual emissions for the Continuous Caster Mold – Caster #1 and Caster 2 process, as presented by National Steel Corporation in the 1995 Application listed NOx emissions from this operation. USS Granite City evaluated this analysis and determined that there is no NOx formation from this operation. Any NOx emissions from this operation are due to combustion of natural gas and are already accounted for under the gaseous fuel burning activities listed above [Section 6.2.2.1, Fuel Burning Emissions Units

[15] Application 15030001, the pending application for a construction permit for use of more natural gas with the shutdown of the by-product coke oven batteries, utilizes an emission factor for use of COG of 80 pounds/million cubic feet for baseline NOx emissions of Boiler 12. This is the NOx emission factor in FIRE for use of COG in boilers. This factor is much lower than 404 pounds/million cubic feet, the factor for COG used in the 2022 application for the baseline emissions of Boilers 11 and 12.

It should be noted that Application 15030001 does not include a NOx emission factor for Boiler 11 for COG. This is likely because Boiler 11 did not use COG in the baseline period used for Boilers 11 and 12 (January 2013 through December 2014) for the net increase analysis in this application.

[16] As reflected in Permit 95010001, the original permitting of the Project accounted for NOx emissions of 89.5 tons/year from Caster Molds – Casting but did not account for any NOx emissions from Slab Cut-Off and Slab Ripping, for which only particulate emissions were addressed.

Emissions (Revised)]. Therefore, in the revised analysis, NOx emissions are not included from this operation.

2022 application, Section 6.2.2.7, "Continuous Caster Mold Process Emissions (Revised)."

This is problematic for several reasons. First, the 2022 application does not address the NOx emissions of the natural gas-oxygen torches used in the slab cutting and slab ripping processes, which are part of the continuous casting lines.[17] Second, as the application indicates that NOx emissions are present from the mold processes on the casting lines, the application does not show that the same NOx emission factor is appropriate for this use of natural gas as utilized for ladle preheaters or, alternatively, separately account for the NOx emissions from use of natural gas in the casting process. Lastly, the 2022 application does not identify either the caster processes or the torches as units whose use of natural gas and resulting NOx emissions would be addressed with the emissions of other Project-affected fuel burning units (e.g., 2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units").

[17] Alternatively, if NOx is not formed by the torches given they are supplied with oxygen, the application does not confirm that usage of natural gas by the torches was not considered when the baseline NOx emissions from use of natural gas in Project-affected fuel burning units were determined.

3. THE APPLICATION LACKS INFORMATION FOR THE ACTUAL NOx EMISSIONS OF PROJECT-AFFECTED FUEL BURNING UNITS

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The 2022 application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically.

The 2022 application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

4. FOR THE BASIC OXYGEN FURNACES, THE 2022 APPLICATION DOES NOT ADDRESS THE POTENTIAL FOR UNCAPTURED EMISSIONS OF NOx, VOM AND CO THROUGH THE ROOF MONITOR FOR THESE FURNACES

For the basic oxygen furnaces, consistent with the original permitting of the Project, the 2022 application only quantifies stack emissions of NOx, VOM and CO. For these furnaces, the application does not address uncaptured emissions of these pollutants. (For these furnaces, the 2022 application does address uncaptured emissions of particulate and lead[18] for which Permit 95010001 limits emissions of these pollutants from the "BOF [Basic Oxygen Furnace] Roof Monitor," (Permit 95010001, Condition 18 and Table 2, Item 2)).

The revised netting analyses for NOx and VOM in the 2022 application assume that all emissions of these pollutants from the basic oxygen furnaces are now captured. That is, with the installation of the new baghouse control system on the furnaces to improve control of particulate emissions from the charging and tapping processes, all NOx and VOM emissions of these furnaces that originally were not captured and were emitted through the roof monitor now are captured and are emitted through the stack on the baghouse system. For example, as related to emissions of NOx, the application explains,[19, 20]

> At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF Shop roof monitor. No information was available at the time about the NOx emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. NOx emissions testing for the BOF Shop

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[18] The uncaptured lead emissions of the basic oxygen furnaces are summarily addressed by the 2022 application. In Section 2.2, this application states that changes to the current limits for lead emissions set by Permit 95010001 are not requested. As such, this application acknowledges the current limits for lead emissions in Permit 95010001, including the limits for uncaptured emissions from these furnaces that are emitted through the roof monitor (Permit 95010001 Condition 18 and Table 2, Item 2). Revisions to these limits are not requested.

[19] The 2022 application addresses uncaptured emission of VOM of the basic oxygen furnaces in a similar manner in Part 7 of the application. Refer to the second Section 7.2.2.1 in the application on p. 6-4, "BOF Baghouse – Secondary Emissions (New)."

[20] As reflected in this excerpt, the 2022 application refers to the NOx and VOM emissions of the baghouse system as "secondary emissions." This is inconsistent with the meaning of this term under the NESHAP for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, which only restricts this term to emissions of particulate matter. It is also misleading as it does not distinguish between captured and uncaptured emissions and suggests that capture of these emissions with a baghouse is sufficient to eliminate concerns for the existence of uncaptured emissions.

In this regard, as defined at 40 CFR 63.7852, "*Secondary emissions* mean **particulate matter** emissions (emphasis added) that are not controlled by a primary emissions control system, including emissions that escape from open and closed hoods, lance hole openings, and gaps or tears in the primary emission control system." For secondary emissions, 40 CFR 63 Subpart FFFFF recognizes the existence of both captured or stack emissions and uncaptured emissions, as would occur through a roof monitor. For basic oxygen furnaces, as well as setting emission limits for particulate emissions from primary control systems, this NESHAP also sets separate emission limits for 1) the particulate matter emissions from a control device used for the collection of secondary emissions, and 2) the opacity of secondary emissions that exit any opening in the furnace shop or other building housing a basic oxygen furnace.

> baghouse completed in the 2019-2020 time frame shows an average NOx rate of 0.0075 lb/ton for the BOF Shop Baghouse Stack. USS Granite City added the BOF Shop secondary NOx emission baseline based on the result of the stack test for the BOF Shop Baghouse stack.
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> 2022 application, Section 6.2.2.6. "BOF Baghouse – Secondary Emissions (New)."

This assumption made by the 2022 application for uncaptured emissions of NOx and VOM of the basic oxygen furnaces, i.e., that all emissions that were formerly uncaptured are now emitted through the baghouse system, is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were overlooked in the original permitting for the Project.[21]

Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing does not address the level of capture being achieved by the baghouse system. Rather it shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. (2022 application, Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase

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[21] In the original permitting of the Project, the uncaptured emissions of NOx and VOM from the basic oxygen furnaces appear to have been considered negligible. This was likely because the emissions of NOx and VOM of the furnaces were all attributed to the refining process, rather than to charging and tapping. During the refining step in a basic oxygen furnace, oxygen is injected into the molten iron charged to a furnace, which removes carbon from the iron by oxidation, converting the iron into steel. The oxidation of the carbon also provides heat to facilitate the melting of the scrap metal that is also charged to the furnace, so molten metal in the appropriate temperature range can be tapped from the furnace.

In 1996, the basic oxygen furnaces were only controlled by the electrostatic precipitator (ESP) system. While the ESP system only reduces or controls emissions of particulate and not emissions of NOx or VOM, the ESP system does capture NOx and VOM from these furnaces. As the capture efficiency for particulate emissions from refining is assumed to be at least 99.9 percent, it was also reasonable to assume that the ESP system also would achieve at least 99 percent capture for NOx and VOM. With these assumptions, i.e., that NOx and VOM are only generated during the refining step and at least 99.9 percent capture of these emissions is achieved by the ESP system, given the limits on emissions of NOx and VOM from the stack of the ESP set by Permit 95010001, i.e., 69.63 and 10.74 tons/year, respectively, the uncaptured emissions of NOx and VOM from these furnaces would have been projected to be no more than 0.07 and 0.01 tons/year, respectively,. (For example, for NOx, 69.63 tons/year ÷ (99.9 ÷ 100.0) x (100.0 – 99.9) ÷ 100.0 = 0.07 tons/year.) For purposes of determining applicability of NSR to the Project. the increases in NOx and VOM emissions of the furnaces with the Project would be less because these calculations for uncaptured emissions address all emissions of the furnaces, both baseline emissions and the increases in emissions from the Project.

Even with the correction to the emission data for the basic oxygen furnaces indicated in the 2022 application, if all NOx and VOM emissions of these furnaces were actually attributable to the refining step, uncaptured NOx and VOM emissions would still be very small. For example, the potential NOx emissions from the stack of the ESP are now shown to be 380.0 tons/year. With capture of at least 99.9 percent of the NOx by the ESP system, the potential uncaptured NOx emissions from these furnaces would still only be an additional 0.38 tons/year.

Analysis and Revised VOM PSD Net Emissions Increase Analysis.) For NOx, the application indicates baseline captured emissions of 179.8 tons/year, of which, based on the measured emissions from the new baghouse system, as much as 5.1 percent, i.e., 9.1 tons/year, would have been uncaptured in 1996; captured VOM emissions are 26.6 tons/year, of which as much as 15.8 percent, i.e., 4.2 tons/year, would have been uncaptured emissions in 1996. However, instead of assuming that all NOx and VOM emissions are now captured, it would not be unreasonable to assume that the new baghouse system improved capture of the emissions from charging and tapping such that the levels of captured emissions from the baghouse stack and the uncaptured emissions through the roof monitor are now identical.[22, 23]

Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the 2022 application to the particulate and lead emissions of these furnaces, for which it is assumed that there are uncaptured emissions that still occur through the roof monitor. In particular, the 2022 application requests that the revised permit establish prescribed emission factors for the particulate emissions of the basic oxygen furnaces

[22] It is reasonable to assume that the new baghouse that was installed to improve control of particulate emissions from charging and tapping of the basic oxygen furnaces reduced these emissions to less than half of their previous amounts. For example, the nominal control efficiency for charging and tapping went from 95 percent with only the ESP control system to 97.5 percent with the addition of the baghouse system. With this assumption, the potential NOx and VOM emissions from the baghouse stack from charging and tapping would be estimated to be about the same as the potential uncaptured emissions from charging and tapping that still occur through the roof monitor, with both being about 2.5 percent of the total emissions from the furnaces. The remainder of the NOx and VOM emissions from charging and tapping continue to occur through the ESP stack (95 percent of the total emissions of the furnaces).

[23] With this assumption, the potential NOx emissions of the basic oxygen furnaces with the Project would become 420.4 tons/year, rather than 400.0 tons/year (400.0 tons/year x (100% ÷ 5.1%) ÷ 100% = 420.4 tons/year. The potential VOM emissions of these furnaces with the Project would become 52.1 tons/year, rather than 45.0 tons/year (45.0 tons/year x (100% ÷ 15.8%) ÷ 100% = 52.1 tons/year.

that occur through the roof monitor.[24] For example, for pre-project actual emissions of the roof monitor, Section 5.2.2.7 of the application explains the following, [25]

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing prescribed emission factors for the BOF Shop Roof Monitor for which emissions testing is not feasible.[Footnote 33] For BOF Roof Shop Monitor, use PM emissions factor of 0.0296 lb/ton and filterable PM_{10} emission factor of 0.0198 lb/ton.
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> Footnote 33: PM and PM_{10} emissions factors are appropriately determined from the results of emission testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the BOF ESP and baghouse, Desulf/Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy.
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> 2022 application, Section 5.5.2.2. "Prescribed Emission Factors for Certain BOF Shop Operations."

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[24] The 2022 application requests that Permit 95010001 be revised to set "prescribed emission factors" for the emissions of certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the basic oxygen furnaces, which are also referred to as the emissions through the roof monitor of the basic oxygen furnace shop). For those units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 that address emissions in pounds/ton of input or production or in pounds/hour. For convenience, these provisions in the permit are generally referred to as "emission factor limits." The usage of this term extends to the provisions of the permit that address emission of lead that are in pounds per hour. In this regard, in Permit 95010001, Table 2, these limits for lead emissions are listed under the heading of "Emission Factor," along with the limits in pounds per ton of production for emissions of other pollutants.

Unlike the emission factor limits currently in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors that would be established in a revision to Permit 95010001 would not be enforceable. Instead, prescribed emission factors would be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit. The appropriateness of the various prescribed emissions factors that are selected would be a matter that would be considered during the processing of the revisions to Permit 95010001. Given the role of prescribed emission factors in determining compliance with annual emission limits set by the permit, it is expected that prescribed emission factors would only be set for units for which emissions testing is not feasible or is not warranted given the low levels of annual emissions predicted by engineering analysis and calculations. It is also expected that, as it is practical to do so, prescribed emission factors would be conservative, reflecting the maximum rates of emissions that could occur during the routine, compliant operation of emissions units.

[25] For pre-project actual emissions of particulate matter of the basic oxygen furnace through the roof monitor, Section 5.2.2.7 of the 2022 application explains the following,

> The BOF roof monitor actual emissions were calculated using the information from AP-42 Chapter 12.5 and AIRS (Aerometric Information Retrieval System) database. For pre-change actual PM and PM_{10} emissions, National Steel used 90% capture efficiency during the charging and tapping steps and 99% capture efficiency during the refining step for BOP operations. A detailed description of the baseline roof monitor PM and PM_{10} emission factors is provided in Appendix C of the 1995 Application. For the BOF operations, per particle size distribution in AP-42 Table 12.5-2, 67% of PM is PM_{10}. No changes are necessary for this emission factor.
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> 2022 application, Section 5.2.7.7, BOF Roof Monitor Emissions (No Change)

The fact that there are emissions of NOx and VOM from the basic oxygen furnaces that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. [26] In this regard, the 2022 application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions, but the application does not propose any such revisions for the basic oxygen furnaces or explain why such revisions are not needed.[27]

[26] For the basic oxygen furnaces, uncaptured emissions of CO should generally be expected to be much greater than the uncaptured emissions of NOx or VOM because the permitted stack emissions of CO of these furnaces are much greater. In this regard, Permit 95010001 limits the CO emissions from the stack of the ESP system for these furnaces to 16,097 tons/year. (The 2022 application does not request an increase in this limit.) If only 99.9 percent capture of CO is assumed by the ESP system, the potential uncaptured CO emissions of these furnaces would be 16.1 tons/year. (16,097 tons/year ÷ {99.9 ÷ 100.0} x {100.0 – 99.9} ÷ 100.0 = 16.1 tons/year CO.) Of course, the capture efficiency of the ESP system for CO could be higher than the efficiency for NOx or VOM if CO is only formed during the refining step when oxygen is actually being injected into the furnace and not during the entire refining step. However, one approach to the revision of Permit 95010001 would be to conservatively assume that the capture efficiency of the ESP system for CO is the same as its capture efficiency for particulate.

[27] The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the basic oxygen furnaces, addressing the combined stack emissions of the ESP and the new baghouse, to the current limits for the CO emissions of the furnaces in Permit 95010001, which limits currently apply only to emissions from the stack of the ESP.

5. THE EMISSION INVENTORY FOR THE SOURCE USED IN THE AIR QUALITY ANALYSIS FOR CARBON MONOXIDE (CO) OMITS CERTAIN CO EMISSIONS

The results of the analysis of the impacts of the Project on ambient air quality for carbon monoxide (CO) cannot be relied upon because the inventory for the CO emissions of the source with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The 2022 application includes an air quality analysis because the Project was originally permitted as a major modification for CO under the Prevention of Significant Deterioration (PSD) program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted.[28] To support this request, an air quality analysis for CO must be part of the application pursuant to Illinois' PSD rules, 35 IAC 204.1130, Air Quality Analysis, since the request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program.

Uncaptured Emissions from the Casthouse on the Blast Furnaces

The air quality analysis in the 2022 application does not address the uncaptured emissions of the casthouse (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs"). The application indicates potential CO emissions of 13.6 tons/year from the roof monitor on the casthouse (2022 application, Section 4.4). These "uncaptured" CO emissions from the casthouse, which are not captured by the baghouse systems on the casthouse, must be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to provide for more CO emissions from the Project.

Uncaptured Emissions from the Basic Oxygen Furnaces

The air quality analysis in the 2022 application does not address uncaptured emissions of the basic oxygen furnaces. (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs.") As discussed earlier, the 2022 application does not address uncaptured emissions from these furnaces. The application also does not explain why uncaptured emissions would not be present as the application does not show 100 percent capture of the emissions of these furnaces by the control systems for emissions of particulate. As there are uncaptured CO emissions from these furnaces, these emissions must also be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to accommodate additional CO emissions from the Project.

By-product Coke Oven Batteries

[28] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse on the blast furnaces, for which CO was not addressed in the original permitting for the project (2022 application, Section 4.4, p. 4-4) . This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than Boilers 1 through 10, which are now retired (2022 application, Sections 4.2 and 4.3, pp. 4-2 and 4-3). For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas used in the blast furnaces stoves, understated CO emissions.

The 2022 application does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the source. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. On the other hand, the analysis addresses CO emissions of emission units that did not exist in 1996, as this analysis addresses the emissions of the heat recovery coke ovens adjacent to the Granite City Works, which were built and are now operated by Gateway Energy & Coke. [29]

In addition, the air quality analysis in the application uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.[30]

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[29] The modelling in the air quality analysis did address the CO emissions of the new coke oven batteries adjacent to the Granite City Works that are owned and operated by Gateway Energy & Coke. However, modeling of the CO emissions of new units would only compensate for the CO emissions of existing units if the new batteries were direct, in-kind replacements of the shutdown units, which is not the case. This is not the case. The batteries that were shut down by US Steel were by-product recovery batteries. They recovered chemicals from the off-gas from the coking process (e.g., benzene, toluene and naphthalene, with the gas then used as fuel for heating the coke ovens and in certain other units at the source. Gateway's batteries are heat recovery batteries, in which the off-gas from coking is combusted in the ovens and the heat is used to make steam and generate electricity. Moreover, the new batteries and the old batteries both operated for a period of several years before US Steel shut down its batteries.

[30] Under the PSD program, the air quality analysis for a project whose modelled maximum impact(s) by itself on air quality for a pollutant are above certain specified concentration(s) or "significant impacts levels" under the PSD program must also consider "background air quality." This accounts for the contribution to ambient air quality of mobile sources (e.g., cars, trucks and buses) and of other sources (e.g., residential and commercial heating), which contribution cannot be determined as part of the computerized dispersion modelling for discrete emission units performed as part of the analysis. The air quality analysis in the 2022 application shows that the maximum air quality impact of the Project with the requested increases in CO emissions would continue to be above the significant impact level for CO on an 8-hour average. (In the original air quality analysis, the Project's impacts were significant for CO on both a 1-hour and an 8-hours average.) The value for background in the current air quality analysis is based on data collected at an ambient air monitoring station in East St. Louis operated by the Illinois EPA. If US Steel shows that the air quality analysis for the revision to Permit 95010001 should address current ambient air quality for CO, the value for background air quality in the analysis should be updated. Since the Illinois EPA discontinued ambient monitoring for CO at its East St. Louis monitoring station in 2020, the new value for background would likely need to be based on data collected at an appropriate monitoring station in Missouri operated by the Missouri Department of Natural Resources.

It should be noted that the values for background used in the original air quality analysis were likely conservative, as they were based on data from a now retired monitoring station in Granite City that was less than a third of a mile from the Granite City Works. Given the location of that station, the ambient air quality data collected at that station may have included the contribution to air quality of units for which modelling was also conducted, so that the original analysis effectively counted the impacts of those units twice. Thus, it is reasonable for the current air quality analysis to use value(s) for background air quality based on data collected at a monitoring station other than the one that was originally used.

6. SCOPE OF PROPOSED GROUP EMISSION LIMITS

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate.[31, 32] In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two basic oxygen furnaces. These are principal emission units at this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two basic oxygen furnaces

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[31] For PM, PM_{10}, NOx and VOM (i.e., pollutants other than sulfur dioxide (SO_2), carbon monoxide (CO) and lead), the 2022 application requests that the revised permit not include the provisions in Permit 95010001 that the Illinois EPA considers would limit emissions of individual "processes" in pounds/ton of production or throughput and in tons/year. These provisions were set to ensure that the Project would not be a major modification for purposes of New Source Review (NSR). The removal from Permit 95010001 of the "emission factor limits" which limit emissions of various process operations relative to their production or throughput, would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, prior to issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing emission factors were considered to constitute enforceable limits on emissions. This was done in the Illinois EPA's "Statement of Basis for a Planned Revision of the Clean Air Act Permit Program (CAAPP) Permit for: U. S. Steel Corporation, Granite City Works, 20th and State Streets, Granite City, Illinois," of March 2011, pages 20 through 26. That these provisions set enforceable limits was then recognized by the USEPA in the Administrator's subsequent order of December 3, 2012, "In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056," Petition Number V-2011-2, pages 7 through 9).

[32] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes, the 2022 application requests "group limits" for the annual emissions of groups of related emission units. For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period. The requested limits would theoretically be less stringent than the current limits as US Steel could potentially compensate for any "overage" of emissions by unit(s) in a group of units with lower levels of emissions from other units in the group.

Incidentally, in these appeals, US Steel only challenges the emission factor limits for "processes," such as the casthouse, the basic oxygen furnaces, continuous casting operations, and discrete material handling operations. These appeals do not challenge the emission factor limits for fuel burning units affected by the Project. Those limits do not restrict the emissions of individual units or groups of similar units. Instead, they separately restrict the emissions from use of different fuels, i.e., blast furnace gas, natural gas and oil.

to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the basic oxygen furnaces should not both continue to be limited individually.[33]

In this regard, the 2022 application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted (2022 application, Section 3, "Discussion of Permit Conditions used to Restrict PTE [Potential to Emit]). The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[34, 35] However, the 2022 application does not show that the

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[33] In light of the construction permits issued by other permit authorities cited by the application as support for group limits, it would seem acceptable for a revised permit to set group limits for the emissions units or operations that do not qualify as principal units. For example, for the production of iron, a revised permit could set limits for the overall emissions from charging the blast furnaces and the slag pits. Alternatively, limits specifically for the emissions of the casthouse for the blast furnaces and the basic oxygen furnaces, i.e., the principal units at the facility for iron and steel production, could be accompanied by group limits for the overall emissions of these principal units and the other, "non-principal" units in these areas of the facility. For example, limits could be set for both emissions of the casthouse and for the emissions of the casthouse, charging of the blast furnaces, and the slag pits.

[34] The 2022 application, Appendix E - "Copies of EPA Determinations," contains two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[35] In a footnote, the 2022 application also refers to the USEPA's order responding to a petition to object to a Title V permit issued for a facility in Middletown, New York proposed by Masada (USEPA, Order, May 2, 2001, *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00001, Issued by the New York State Department of Environmental Conservation, Petition No.: II-2000-07.) As explained by US Steel in the application, in this order, the USEPA upheld the,

> …use of annual emission caps with a rolling cumulative total methodology and rejected petitioners' "concerns that the permit appears to rely on after-the-fact monitoring, rather than engineering practices, test data or vendor guarantees" to establish restrictions on PTE. U. S. EPA based its findings on the fact that "[i]f the source has no room to operate under the PTE emission limiting cap, it must cease operation or face a violation" and that "all PTE limits rely on after the fact monitoring of some kind."

specific circumstances of the Project are such that the current limits for annual emission of the principal emission units should be replaced with group limits that apply to the combined emissions of principal emission units and other lesser emission units.[36] The circumstances of the Granite City Works are not the same as those presented by the cited permits. US Steel's Granite City Works is a manufacturing facility at which iron is produced from iron ore in blast furnaces and steel is produced from molten iron and scrap metal in basic oxygen furnaces. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station. The utilization of the individual generating units in the new facility would vary from day to day and season to season as the use of the units would be tied to the inability of other electrical generating facilities to meet the demand for electricity.[37]

2022 application, Footnote 11.

[36] For the casthouse on the blast furnaces, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the casthouse baghouse (i.e., the main baghouse for the casthouse), the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited, other than CO, for the permit to restrict the overall emissions of the pollutant from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the BOFs.

For the basic oxygen furnaces, the current permit separately addresses emissions of particulate and lead from the stack of the ESP and the roof monitor (uncaptured emissions.) For these furnaces, it would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of the pollutant from these furnaces. In particular, the revised permit would not set limits specifically for the emissions of the new baghouse system that was installed to improve control of particulate emissions from charging and tapping of these furnaces. Instead, the revised permit would address emissions that occur from this baghouse with limits for different pollutants for the overall emissions of these furnaces.

[37] At the Shell Off-Shore and Masada facilities, variability of utilization or operation of different emission units was a consideration in the permitting of these facilities. In its response to comments on the draft permit for Shell Offshore, USEPA Region 10 explains,

> The commenters are correct that EPA guidance does express a general preference for shorter time periods rather than 12-month rolling limits. See 1989 PTE Guidance at 9. As the commenter acknowledges, however, EPA has also recognized that longer rolling limits are appropriate for sources with substantial and unpredictable variations in emissions, as well as for those sources that curtail operation during part of a year on a regular seasonal cycle. Id. at 9 – 10. Such is the case here. Shell's planned exploratory operations are atypical as compared to other sources because emission units consist of multiple engines and generators with variable emission on the Kulluk and a fleet of numerous support vessels. Operations will vary from hour-to-hour, day-to-day month-to-month, and season-to-season based on factors such as the number of wells drilled, the activity being undertaken (drilling mud cellar lines, other drilling activity, or activity that does not involve drilling), the depth of wells drilled, whether emergency engines are being run for testing, and ice conditions. Given the variability in operations, and thus emissions expected from the source, and after considering a full

range of options for limiting the source's potential to emit, Region 10 determined that it was appropriate to establish longer-term rolling limits.

USEPA, Region 10, "Response for Comments for Outer Continental Shelf Permit to Construct and Title V Air Quality Operating Permit: Conical Drilling Unit Kulluk," October 2011, p. 26.

In the USEPA`s order for Masada of April 8, 2002, USEPA observes that,

Masada's operations will have significant fluctuations due [sic] the variability of the processed waste, making an operating parameter-based PTE limit less appropriate. The emissions-based PTE limit discussed below recognizes this fact and provides Masada with operational flexibility accordingly. Moreover, Masada will be measuring its emissions on a real-time basis using CEMS [continuous emissions monitoring systems], obviating the need to limit and monitor operating parameters as a surrogate for emissions.[Footnote 6] Thus the petitioners have not demonstrated that it was inappropriate for the NYSDEC [New York State Department of Environmental Conservation] to restrict Masada's emissions directly, rather than its operation or production.

Although it is generally preferable that PTE limitations be as short-term as possible (e.g., not to exceed one month), EPA guidance [USEPA, "Guidance on Limiting Potential to Emit in New Source Permitting," June 13, 1989] also allows permits to be written with longer term limits if they are rolled (meaning recalculated periodically with updated data) on a frequent basis (e.g., daily or monthly). The 1989 guidance recognizes that such longer rolling limits may be appropriate for sources with 'substantial and unpredictable annual variation in production." 1989 Guidance at 9.

Footnote 6. This is consistent with prior EPA practice in appropriate circumstances. See e.g., Memorandum entitled "3M Tape Manufacturing Division Plant, St. Paul, Minnesota," from John Rasnic to David Kee, dated July 14, 1992 ("a federally enforceable emission limit may be used …to limit the potential to emit as long as a continuous emissions monitor (CEM) or an acceptable alternative is used."); and Memorandum entitled "Policy Determination on Limiting Potential to Emit for Koch Refining Company Clean Fuels Project," from John Rasnic to David Kee, dated March 13, 1992 ("Use of an emission limit to restrict potential to emit …is acceptable provided that emissions can be and are required to be readily determined or calculated.")

USEPA, Order, April 8, 2002, "*In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00003, Issued by the New York State Department of Environmental Conservation," Petition No.: II-2001-05, p. 6)

7. INADEQUATE JUSTIFICATION FOR ELIMINATION OR REVISION OF CURRENT LIMITS FOR PROJECT-AFFECTED FUEL BURNING UNITS

The justification provided in the 2022 application for revisions to Permit 95010001 to eliminate or revise limits on usage of fuel and, presumably, emissions by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and BFG currently set by Permit 95010001, it does not propose any new limits in their place.

> USS Granite City is also requesting revision/elimination of gaseous fuel usage limits for project-affected combustion units. In 2015, USS Granite City shutdown its by-product coke oven batteries. This eliminated the ability to use coke oven gas ("COG") as a fuel at the mill. In addition, ten of the twelve boilers at the time of the Project in 1996 have been retired. These actions have greatly reduced the emissions from fuel combustion in project-affected emissions units and obviate the need to preserve limits to restrict PTE of the remaining units.
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> 2022 application, Section 2.2.3, p. 2-4.

This rationale is deficient because it does not consider that the 2022 application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above,[38] this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the 2022 application does not show that new limits for fuel usage and emissions would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels and emissions should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shutdown. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

[38] It is noteworthy that the 2022 application does not address what an appropriate limit for usage of COG would have been in Permit 95010001 if the permit had originally addressed use of COG by Project-affected fuel burning units. In the absence of such information, it is unclear how the shutdown of the two by-product coke ovens at the facility and elimination of COG led to decreases in NOx emissions relative to the limits for NOx emissions of fuel-burning units set by Permit 95010001.

8. THE APPLICATION DOES NOT SHOW THAT EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS WOULD BE REPRESENTATIVE

To calculate baseline emissions of certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the 2022 application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
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> 2022 application, Section 3, p. 3

This summary of relevant USEPA policy in the 2022 application is consistent with the statements made by the EAB and the Administrator of USEPA in various orders responding to petitions that request it object to Title V permits or, in Illinois, CAAPP permits), issued by a permitting authority. In its decision in *Shell Offshore, Inc.*, the EAB also considered the use of prescribed emission factors in the permit that was appealed. The EAB did not object to this practice. It found that the use of prescribed emission factors may be appropriate for a permit to prescribe use of specific emission factors published by USEPA in its *Compilation of Air Pollutant Emission Factors* (AP-42) for certain emission units for the purpose of determining emissions for purposes of compliance with annual emission limits set by the permit.[39]

> The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or factors derived from source test data Shell submitted to the Region in support of two separate, previously OCS [Outer Continental Shelf] PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discover* drillship.
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> USEPA, Environmental Appeals Board, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2013.

[39] The EAB did observe that it is preferable that compliance with emission limits set by a permit be determined using source-specific emission factors, as would be developed by emissions testing required by the permit. The EAB did not address prescribed emission factors from sources other than AP-42 since the permit that was appealed only prescribed use of emission factor from AP-42. Given the general nature and limited scope of AP-42, the EAB's decision should not be interpreted to preclude use of emissions factors from source other than AP-42. There are emission units and pollutants for which use of prescribed emissions is appropriate for which emission factors are not present in AP-42 or better emission factors are available from other sources.

For US Steel, Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Note that relative to prescribed emission factors, the USEPA's finding, as is provided below, might be considered *dicta*. This is because the permit that was the subject of the appeal did not provide for use of prescribed emission factors. In addition, as the order addresses the possibility of using of prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.[40]

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
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> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

Roof Monitor on the Basic Oxygen Furnace Shop – Particulate Emissions:

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[40] In an order concerning a Title V permit issued by the Texas Commission on Environmental Quality (TCEQ), the Administrator of USEPA stated the following when addressing the use of emission factors in the permit:

> …Moreover, the justification provided by a permittee in a permit application should not substitute for the judgment of the permitting authority (TCEQ) with responsibility for ensuring that a Title V permit contains sufficient monitoring to ensure compliance. If TCEQ wishes to adopt and incorporate an applicant's technical justification for specific monitoring into the current Title V permit record, it must, at minimum, identify specifically where such a justification is to be found (just as it would be required to do it if [sic]wished to incorporate by reference a requirement located elsewhere.)
>
> USEPA, Administrator, Order Responding to Petition Requesting Objection to the Issuance of Title V Operating Permit, Petition No. VI-2017-6, *In the Matter of BP Amoco Chemical Company, Texas City Chemical Plant, Galveston County, Texas, Permit No. 01513*, dated July 20, 2021, p. 18.

The 2022 application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the basic oxygen furnace shop (i.e., the uncaptured emissions from these furnaces). The application does include support for the baseline particulate emission rates for the roof monitor on the basic oxygen furnace shop.[41, 42] However, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the basic oxygen furnaces and decrease the uncaptured emissions of particulate. For example, a fourth section was added to the ESP in 1995, increasing the volume of air that it could handle. As such, the baseline particulate emission rates of the Project are not representative of future emissions with the Project. Moreover, the emission factors actually proposed in Section 5.5.2.2 in the 2022 application are lower than emission factor limits now contained in Table 2 of Permit 95010001 for the roof monitor on the basic oxygen furnace shop. For PM, an emission factor of 0.01986 pounds/ton is proposed as a prescribed factor, compared to the current emission factor limit of 0.0987 pounds/ton; for filterable PM_{10}, an emission factor of 0.0296 pounds/ton is proposed, compared to the current emission factor limit of 0.06614 pounds/ton. The 2022 application does not show that the emission factors for the roof monitor on the basic oxygen furnace shop that are proposed as prescribed emission factors in Section 5.5.2.2 of the application are representative.[43]

Caster Mold, Slab Cutoff/Ripping Processes in Continuous Casting:

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[41] The baseline emission rates for the roof monitor are based on emissions factors from AP-42 for uncontrolled emission with application of 90 and 99 percent capture efficiencies for the refining process and the charging and tapping processes, respectively, being provided by the ESP control system on the furnaces in the baseline period before 1996 (2022 application, Section 5.5.2.2). While the application cites to Appendix C in the original application for the Project as support for these values for capture efficiency, this appendix only uses these assumed values of capture efficiency when calculating baseline emission rates for the Project. This appendix does not actually provide technical support for these values for capture efficiency being representative of the levels of capture efficiency that were achieved for particulate emissions of the basic oxygen furnaces in the baseline period for the Project. Appendix C also does not provide support for the higher levels of capture efficiency (95% and 99.9%) that it uses for operation and emissions for the basic oxygen furnaces with the Project.

[42] It should generally be noted that the sections of the 2022 application that provide the explanation or basis for the emission factors used in the application are not the sections in which prescribed emission factors are proposed for certain units. The basis for the different emission factors is typically provided earlier in the application in the sections of the application where baseline emission rates are addressed. For example, the particulate emission rates or factors for the roof monitor on the blast furnace casthouse are discussed in Section 5.2.3.3 (2022 application, p. 5-3); the proposed prescribed emission factors for this emission point, which are the same numerically, are provided later in Section 5.5.1.2 without further discussion (2022 application, p. 5-14 and 5-15).

[43] The emission factors that the 2022 application proposes to be prescribed for particulate emissions from the roof monitor on the basic oxygen furnaces may be appropriate at the present time given the installation of a baghouse control system on these furnaces. Nonetheless, for a revised permit to be issued that prescribes emission factors for emission from the roof monitor, the application must show that those factors are representative with the emission control measures that are required by the permit. It must also be recognized that those prescribed factors would not be representative of emissions before the new baghouse system was installed and operation of this system was required. As such, particulate emissions factors that are representative of particulate emissions circa 1996, before installation of the baghouse system on the furnaces, should be used in the revised netting analyses for PM and PM_{10}.

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors are proposed in Section 5.5.3 of the 2022 application that are identical to the baseline particulate emission rates for these emission units as generally discussed in Section 5.2.2.11, 5.2.2.13 and 5.2.2.14 of the application. In these sections, the application explained that these emission factors reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative. In this regard, the statement that these factors were taken from a historic report prepared by the Illinois EPA does not show that this report included information showing why these factors should be considered representative and can be prescribed by a revised permit.

Mag-Lime Silo:

For the Mag-Lime Silo, a prescribed emission rate of 0.009 pounds/hour is proposed (2022 application, Section 5.5.4.2). As explained in the application, this unit, which stores the reagent used in desulfurization of iron in the basic oxygen furnace shop, was overlooked in the original permitting of the Project (2022 application, Section 5.4.4 and Footnote 34, p. 5-16 and 5-17). US Steel elected not to address its baseline emissions in the revised netting analyses for PM and PM_{10} because emissions are low, i.e., potential annual emissions less than 0.1 tons. However, the application does not include calculations explaining how US Steel determined that potential particulate emissions of this unit are less than 0.1 tons/year, much less information showing that a prescribed emission rate of D0.009 pounds/hour should be considered representative of the emissions of this unit.[44]

[44] The application also does not explain how US Steel determined that the potential annual particulate emissions of the Mag-Lime Silo are less than 0.1 tons. In this regard, the application does not include calculations that identify any assumptions about operation of this unit or the control of its emissions made by US Steel when calculating the potential emissions of this unit. For example, for particulate matter, was the outlet emission rate of the filter that is part of this unit assumed to be less than the regulatory limit of 0.03 grains per dry standard cubic foot pursuant to 35 IAC 212.308 and 212.313?

9. FOR THE ROOF MONITOR OF THE CASTHOUSE, THE APPLICATION DOES NOT SHOW THAT THE METHODOLOGY THAT IS PROPOSED TO BE PRESCRIBED FOR THE DETERMINATION OF NOx AND VOM EMISSIONS WOULD BE REPRESENTATIVE

For the NOx and VOM emissions of the roof monitor on the casthouse on the blast furnaces (i.e., uncaptured emissions, which do not pass through a control device), the 2022 application proposes a prescribed emission calculation methodology that involves the results of emission testing for the main baghouse for the casthouse and an assumed capture efficiency of 95 percent.[45] For example, for NOx emissions from the roof monitor, the application requests that,

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the blast furnace casthouse roof monitor based on application of 95% capture emissions to the NOx stack test result for the blast furnace casthouse baghouse.
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> 2022 application, Section 6.5.1.2, Prescribed Emission Factors for Blast Furnaces Operations, p 6-9.

The application does not show that the "proposed methodology" would result in NOx and VOM emissions rates for the roof monitor that would be representative. In this regard, the proposed methodology would yield emission rates for the roof monitor that would be related directly to the measured emissions of the main baghouse on the casthouse. However, it would not address the effect of variation in capture efficiency on emissions. That is, with the proposed methodology, if emissions from the baghouse measured by a particular test were "lower," the calculated emission rate of the roof monitor would also be lower. The methodology would not address a situation in which the emissions measured by testing are lower because the capture efficiency of the baghouse system during testing was also lower. In this situation, there would actually be more emissions through the roof monitor. As such, unlike specific emission rates for NOx and VOM that would be prescribed in a revised permit, the "proposed methodology" would not address the NOx and VOM emissions from the roof monitor in a way that can reasonably be considered to be representative on an ongoing basis.[46, 47]

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[45] With the proposed methodology, the NOx or VOM emission rate for the uncaptured emissions of the casthouse would be derived from the emission rate of the main baghouse measured by periodic testing using the following formula:

[{Measured rate of the baghouse (lbs/ton) ÷ 0.95} x 0.05] = Calculated rate for the monitor (lbs/ton)

[46] This issue would not be present with an appropriate prescribed emission factor. As such, a factor would not change based on the results of periodic testing, the factor could be reviewed when processing the application to confirm that it was conservatively developed so as to be representative on an ongoing basis.

[47] Section 7.5.1.2 of the 2022 application, which addresses the proposed calculation methodology for the VOM emissions from the roof monitor on the casthouse, erroneously refers to the results of emissions testing of the main baghouse system on the casthouse for NOx rather than testing for VOM.

10. THE APPLICATION DOES NOT INCLUDE NECESSARY SUPPORT FOR THE EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS.

The 2022 application does not include relevant supporting information for certain emission factors used in the application, as follows. Absent this information the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

Blast Furnace Casthouse Roof Monitor:
The prescribed particulate emission factors proposed for the roof monitor on the casthouse (i.e., the uncaptured emissions from the casthouse) are identical to the baseline emission rates. These rates are based on emission factors from AP-42 for uncontrolled emissions with application of a 95 percent capture efficiency for the baghouse control systems on the casthouse. The application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency (2022 application, Section 5.2.3). Further support is needed for a prescribed emission factor based on achievement of 95 percent capture.

Slag Pits:
For particulate emissions from quenching of slag, the 2022 application does not include a copy of the "EPA assessment" that is the basis of the emission factors and material showing how the selected emission factors were derived from this assessment. For emissions from transfer of slag, the application does not include a copy of the calculations by which the emission factors were developed from the formulas provided in AP-42, Section 13.2.4. The application also does not address whether the emission factors rely on control by the application of water or the presence of residual moisture and, if so, the basis for the assumed levels of control efficiency. (2022 application, Section 5.2.2.5, p 5-4).

Iron Pellet Screen:
For the Iron Pellet Screen, the proposed prescribed emission factor for PM and PM_{10} emissions is identical to the baseline emission rates (2022 application, Section 5.2.2.16). While the emission factor for uncontrolled emissions for screening of crushed stone in Table 11-19.2-2 in AP-42 is identified as the basis of this emission rate, a control efficiency of 85 percent is applied, reducing the factor that is actually used to 15 percent of the cited AP-42 factor. The application does not describe the means by which the particulate emissions of this screen are controlled or reduced to show that 85 percent control of particulate emissions is achieved for the Iron Pellet Screen.[48]
In addition, AP-42 lists two emission factors for screening of crushed stone, one for PM and one for PM_{10}. The emission factor for PM is about three times the factor for PM_{10} (0.025 pounds/ton ÷ 0.0087 pounds/ton = 2.87, ~ 3). The 2022 application does not show that for screening of iron ore pellets, an emission factor that was developed for PM_{10} is directly transferable to PM emissions.

[48] The CAAPP permit, Condition 7.4.2 indicates that the Iron Pellet Screen is not served by emission control equipment.

11. THE DETERMINATIONS OF PARTICULATE EMISSIONS FROM HANDLING OF COKE, IRON PELLETS AND LIMESTONE ARE NOT SUPPORTED AND CANNOT BE CONFIRMED

With regard to baseline particulate emissions, the determination of baseline emissions from handling of coke, iron pellets and limestone provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not provide needed supporting information for the "corrected" determinations of baseline particulate emissions of these operations as it is not accompanied by detailed calculations for the emissions from handling each material. (2022 application, Table 5-5. "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM Emissions Factors for Affected Emission Units" and Table 5-6, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM_{10} Emissions Factors for Affected Emission Units.")[49]

With regard to emissions with the Project, the 2022 application does not include information for particulate emissions from handling of coke, iron pellets and limestone. Since the by-product coke oven batteries were not shut down until 2015, emission information is needed for handling of coal for the period of operation with the Project before the batteries were shut down. Likewise for coke, emission information is needed to address handling of coke before US Steel constructed the conveyor system to receive coke directly from the heat recovery coke production facility built by Gateway.[50]

[49] Tables 5-5 and 5-6 do refer to "Table F-3 of the 1995 application" for these material handling operations. A copy of this table is provided in Appendix B of the 2022 application. However, this table only appears to address PM_{10} emissions, for which it provides annual emissions in tons/year. This table does not include calculations and background information showing how the annual emissions of PM_{10} were determined. Finally, the data for annual emissions of material handling operations appears to rely on the "PM10 SIP" requiring a 90 percent reduction from uncontrolled emissions without providing any support for this assumption.

[50] As this new conveysterm was constructed as part of a different project, i.e., the construction of the Gateway facility, rather than the Production Increase Project, US Steel should not address emissions that are specifically associated with this new system.

12. THE REQUESTED CHANGES TO THE GROUPING OF UNITS IN THE PERMIT FOR CONSISTENCY WITH THE GROUPINGS OF UNITS IN THE CAAPP PERMIT WOULD NOT ADDRESS ALL DIFFERENCES IN THE GROUPINGS OF UNITS

As addressed in Section 2.2.2 of the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed, as discussed below, by the specific changes to Permit 95010001 that have been requested.

Requested Changes for the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)":

As explained in Section 11.1.2 of the 2022 application, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 950100001 with operations in the Basic Oxygen Furnace Shop. The application also requests that this unit be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term. In this regard, the application is not accompanied by an itemized list of the equipment and activities that would be covered by this new term or a diagram that identifies this equipment and activities. US Steel's request also does not explain how the requested revision to Permit 95010001 would do what has generally been requested as the proposed new term would refer to a "Material Handling Tripper." As the 2022 application requests changes to terminology in Permit 95010001, the changes should act to better identify the emission units that would be addressed, improving the specificity and clarity of the revised permit.[51, 52]

Absence of A Request for Revisions for the "Deslagging Station and Material HS":

[51] For example, the proposed new term would not make clear that the basic oxygen furnace shop actually has two ladle stirring stations and one ladle metallurgy furnace, all served by Baghouse 2.

[52] The requested change to the terminology for these emission unit(s) is also problematic as it would refer to a control device, Baghouse 2, rather than to the equipment or activities that generate emissions. Applied literally, the proposed term would only address captured emissions; it would not address the uncaptured emissions, which clude capture for control by the baghouse.

The 2022 application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System).[53] These emission units are currently addressed in Permit 95010001 with continuous casting operations (Permit 95010001, Condition 20 and Table 3). In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations (CAAPP permit, Condition 7.6.2(a)).[54] The 2022 application does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop. In this regard, for the argon stirring station, US Steel does explain in Section 11.1.2 of the 2022 application that this station should be addressed with operations in the basic oxygen furnace shop rather than with continuous casting operations. This is because this station is a "BOPF shop ancillary operation" for purpose of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF (2022 application, Section 11.1.2). US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations. Alternatively, US Steel does not request that this station be addressed with other

[53] For example, in Section 5.2, the 2022 application does not identify any updates or revisions to the pre-project actual emissions of the steel deslagging station and associated material handling system. Likewise, Appendix B – Emission Calculations does not identify any changes from the 1996 netting analyses that involve these units (Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised PM PSD Net Emissions Increase Analysis and Revised PM10 PSD Net Emissions Increase Analysis).

[54] The presence of a deslagging station that is physically located in the continuous casting building is indicated in the pending application for renewal of the CAAPP permit. This application indicates that the particulate emissions of this station are controlled.

> Deslagging Station:
> Molten steel from the BOF is transferred directly from the BOFs to the continuous casting building. The first operation carried out in this building is the skimming of slag from the surface of the molten steel. Slag removed by this operation is skimmed into slag pots for disposal. Baghouse #1 is used to control emissions from this process.
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> CAAPP Renewal Application, Appendix D: Process Descriptions, Section 7.6 Continuous Casting, Deslagging Station, p. D-56.

BOPF shop ancillary operations.[55] Slag skimming is one of the operations that 40 CFR 63.7852 defines as being "Basic oxygen process furnace shop ancillary operations."[56, 57]

For the "Deslagging Station and Material HS," the 2022 application also does not request revisions to Permit 95010001 as the CAAPP permit currently limits particulate emissions of this operation twice, once as a continuous casting operation and again as a material handling operation. In this regard, the CAAPP permit limits the particulate emissions of a "Deslagging Station and associated Material Handling System (Condition 7.6.6(a). As indicated by a reference in this condition, the CAAPP permit also limits emissions of a "Material HS and Deslagging Station" (Condition 7.1.6(b)(i)) in Section 7.1 of the CAAPP permit, where discrete material handling and processing operations are addressed. The 2022 application does not request revisions to Permit 95010001 to facilitate amendment of the CAAPP permit to appropriately address the emissions of this deslagging station and the associated material handling system. In the absence of such revisions, the current CAAPP permit would suggest that the revised netting analyses for particulate should address the emissions of these units twice, once as deslagging and once as material handling. On the other hand, if Permit 95010001 would address emissions of these units in this way, the consolidated emission limits for continuous casting and discrete material handling operations would be inappropriate as emissions of the deslagging station and the associated material handling system would be accounted for twice.[58]

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[55] The proper categorization of this steel deslagging station is important when considering US Steel's request for consolidation of the emission limits currently set by Permit 95010001. As a general matter, any new, "consolidated" limits set by a revised permit must be developed to apply to sensible groupings of units. The groupings of units should facilitate identification in the revised permit of the regulatory requirements that apply to various units. This is especially true as the consolidated limits would rely on certain applicable regulatory requirements, e.g., the work practices and operational monitoring requirements under 40 CFR 63 CFR Subpart FFFFF, to assure consistent operation of emission units so as to keep short-term emissions at or below the established emission rates for the units.

[56] For this steel deslagging station, there is a potential compliance issue relative to the NESHAP, 40 CFR 63 Subpart FFFFF. The CAAPP permit indicates that the emissions of this station are not controlled (CAAPP permit, Condition 7.6.2). On the other hand, if its emissions are controlled by Baghouse 2, the direct applicability of the NESHAP to this station becomes a minor matter. This is because Baghouse 2 is directly subject to requirements of 40 CFR 63 Subpart FFFFF as it controls emissions from "ladle metallurgy." Ladle metallurgy is defined by 40 CFR 63.7852 as "… a secondary steelmaking process that is performed typically in a ladle after initial refining in a basic oxygen furnace to adjust or amend the chemical and/or mechanical properties of steel. This definition does not include vacuum degassing."

[57] It is also noteworthy that as the steel deslagging station is identified as a continuous casting operation by Permit 95010001, the permit applies 35 IAC 212.458(b)(8), which sets a limit of 5 percent, 6-minute average, for the opacity of emissions from the various continuous casting operations (Permit 95010001, Condition 19). However, Permit 95010001 omits the introductory language for this standard that provides that it does not apply to fugitive emissions. The introductory language is present in the CAAPP permit, which addresses the standards that apply to both fugitive and non-fugitive emissions of continuous casting operations (Permit 96030056, Conditions 7.6.3((b), (b)(ii) and (c)).

[58] If there was not actually a material handling system associated with the steel deslagging station, this could be readily addressed in the application for revisions of Permit 95010001. The application could acknowledge the error in the original application, as reflected in the permit that was issued, accompanied by an accurate diagram for the deslagging station as it existed in 1995 and as it now exists. In this regard,

For "Ladle Drying/Preheating," Absence of Any Request for Changes:
For "Ladle Drying/Preheating," the 2022 application does not request any changes to Permit 95010001 to maintain consistency with the approach to these units in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units (Permit 95010001, Table 4, Certain Fuel Combustion Units). In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the Basic Oxygen Furnace Shop, as well as elsewhere in the permit with other Project-affected fuel burning units (e.g., Conditions 5.6.2((ii) and (iii)). In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop (Condition 7.5.6(b)). In the absence of appropriate changes to the CAAPP permit, since the ladle drying/preheating takes place in the basic oxygen furnace shop, the limit for the NOx emissions of the basic oxygen furnace shop would apply to the sum of the NOx emissions of the basic oxygen furnaces and the ladle dryers/preheaters.

it is perhaps noteworthy that Permit 95010001 does not identify the material(s) that are handled by the material handling operations associated with the steel deslagging station.

13. THE 2022 APPLICATION DOES NOT REQUEST REVISIONS TO PERMIT 95010001 AND, INDIRECTLY, TO THE CAAPP PERMIT THAT WOULD ALSO BE NECESSARY AS THIS APPLICATION REQUESTS THAT THE REVISED PERMIT PRESCRIBE EMISSION FACTORS FOR CERTAIN UNITS

The 2022 application does not request revisions to general provisions in Permit 95010001 that would enable revisions to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by administrative amendment to allow prescribed emission factors to be used to determine ongoing emissions of certain emission units. In this regard, the CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. Permit 95010001 does not specify how emissions are to be determined for this purpose, much less specify that, for certain emission units and pollutants, prescribed emission factors are to be used.[59] Accordingly, the procedures to determine compliance with the emission limits set by Permit 95010001 were established in the CAAPP permit for the Granite City Works. This was necessary because the emission limits set by Permit 95010001 are applicable requirements under the CAAPP. The procedures that were established in the current CAAPP permit do not provide for the use of prescribed emission factors. Rather, the CAAPP permit generally requires US Steel to use "appropriate emission factors," i.e., emission factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that are used placed on US Steel.[60] The CAAPP permit also provides for recordkeeping and reporting by US Steel so that the Illinois EPA and interested parties can know and may review for the emission factors that are being used. However, the 2022 application simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors."[61]

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[59] Condition 39(a) of Permit 95010001 did require "one-time testing" for various pollutant for certain emission units within 270 days of the date that this permit was initially issued. Additional time was subsequently provided to complete testing for the particulate emissions of a boiler when burning blast furnace gas. Unfortunately, the permit did not require testing of the NOx and VOM emissions of the BOFs. That testing was subsequently required by the CAAPP permit issued for the facility.

[60] This approach is consistent with a basic principle of the Title V permit program, as reflected in the CAAPP, that the responsibility for showing compliance with applicable air pollution control requirements for a facility lies with the source or Permittee for the facility, and not with the permitting authority.

[61] It should also be noted that in PCB 2013-53, the appeal that is pending before the Pollution Control Board for CAAPP permit 96030056, US Steel challenged Condition 5.13, General Procedures for Certain Permit Limits on Emissions. Condition 5.13 is relevant to the requested revisions of Permit 95010001 as it specifies procedures by which compliance is to be generally determined with the emission factor limits and annual emission limits set by Permit 95010001for process units. In addition to not proposing revisions to Permit 95010001 to accommodate use of prescribed emissions factors, the 2022 application does not address related revisions to Condition 5.13 of Permit 96030056 to potentially facilitate resolution of PCB 2013-53 as Condition 5.13 is challenged in this appeal.

14. THE 2022 APPLICATION DOES NOT ADDRESS THE AMENDMENT TO THE CAAPP PERMIT AUTHORIZED BY CONSTRUCTION PERMIT 11050006, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

The 2022 application does not identify the version of the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Construction Permit 11050006, issued April 1, 2013. This permit addresses the addition of a baghouse system to improve control of particulate emissions of the basic oxygen furnaces from charging and tapping of the furnaces. With the addition of this new system, the furnaces have three points of emissions, i.e., the new baghouse, the historic ESP, and the roof monitor on the furnace shop.[62] Certain work practices that were required by Permit 95010001 for control of particulate emissions of the furnaces with only an ESP system conflicted with the use of the baghouse system or would no longer be appropriate when emissions were also controlled with the new system. To address the fact that these work practices were also present in the CAAPP permit for the facility, Construction Permit 11050006 was subject to Integrated Processing and allowed certain changes to be made to the CAAPP permit by administrative amendment.[63] This was intended to enable use of the new baghouse system for improved control of particulate emissions in compliance with the CAAPP permit without the need for a subsequent permit proceeding to modify the CAAPP permit. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[64]

Section 39.5(13)(a) of the Illinois Environmental Protection Act provides that "The Agency shall take final action **on a request** for an administrative permit amendment within 60 days after **the**

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[62] The new baghouse system required a construction permit because this system would affect the requirements that then existed for control of particulate emissions of the basic oxygen furnaces, including their emissions of lead. For purposes of NSR, the construction permit was issued based on the new baghouse system being a project that would reduce the emissions of particulate and lead from these furnaces rather than increase these emissions. The permit was also based on this new system not increasing the emissions of other pollutants from these furnaces. As such, the construction permit for the new baghouse system, Permit 11050006, did not set limits for emissions from the baghouse system. This permit also did not lower the existing limits for the emissions of the basic oxygen furnaces

[63] To address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, in its entirety. The new version of Section 7.5 addresses the basic oxygen furnace shop with the new baghouse system. Given the extent of the changes to Section 7.5 that were needed to accommodate addition of a baghouse to the particulate control system for the basic oxygen furnaces, this approach was taken to Permit 11050006 to provide accuracy, clarity and simplicity in the revisions to the CAAPP permit that were being authorized.

[64] The 2022 application does address the addition of the baghouse control system for the basic oxygen furnaces as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the basic oxygen furnaces.

receipt of the request." (Emphasis added.) Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the 2022 application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[65, 66]

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[65] The timing of the physical issuance of a revised CAAPP permit by the Illinois EPA is critical as a procedural matter because it starts the period within which the Permittee may appeal such action to the Pollution Control Board. Moreover, in PCB 2013-62, US Steel has already appealed certain elements of the changes to the CAAPP permit that are addressed by the administrative amendment to the CAAPP permit authorized pursuant to Permit 11050006.

Given this appeal, the Illinois EPA would not "reinstate" those provisions when issuing the amended CAAPP permit. Instead, it is expected that the amended CAAPP permit would contain notes that explain that the appealed provisions continue to be present in the that existing CAAPP permit as they were appealed. Nevertheless, it is possible that US Steel would appeal those notes in the amended permit as they would acknowledge the continued existence of the appealed provisions.

[66] Concerns are posed by certain conditions in existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The 2022 application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit. One concern is that the deadlines in Permit 11050006 for performing emission testing on the new baghouse and completing certain other actions were based on the basic oxygen furnaces being in routine use once the construction of the new baghouse system was completed. The permit did not contemplate the over two yearlong interruption in production that began in December 2015. US Steel undertook this interruption in production in response to the poor markets for domestic steel at that time. As such, although failures to meet certain deadlines in Permit 11050006 likely were reasonable, it is not clear that they would be excused as being due to *force majeur* (i.e., event(s) that could not reasonably be anticipated or controlled by the source).

The other concern with existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 is that they overlook the role of the existing ESP control system in controlling particulate emissions from charging and tapping of the basic oxygen furnaces. Instead, Permit 11050006 incorrectly indicates that the new baghouse system will control emissions from charging and tapping of the furnaces and the existing ESP system will control emissions from the refining process. In fact, the new baghouse system was constructed to improve control of emissions from charging and tapping, with capture hoods to collect particulate emissions that are not captured by the hoods that serve the ESP system. This is perhaps most clearly shown in the 2010 Memorandum of Understanding between US Steel and the Illinois EPA (MOU) as this MOU addresses improvement in the control of emissions from charging of the furnaces. Section 4(d) of the MOU acknowledges the presence of the existing control for charging with the ESP. It also indicates that control of emissions from charging could be improved by ducting either some or all of these emissions to a new baghouse system. In any case, the errors in the description of the new baghouse system for the basic oxygen furnaces in Permit 11050006 should also be corrected so that erroneous information is not perpetuated in the amendments to the CAAPP permit.

15. THE 2022 APPLICATION WOULD NOT CLARIFY THE RELATIONSHIP BETWEEN FUGITIVE DUST CONTROL MEASURES REQUIRED BY PERMIT 95010001 AND MEASURES REQUIRED BY 35 IAC PART 212 SUBPART K

For roadways, parking areas, and open access areas, Conditions 23, 24, 26, 27, 28, 29 and 30 of Permit 95010001 require implementation of control measures for emissions of fugitive dust. The 2022 application does not make clear the relationship between these requirements established by permit and state regulatory requirements for fugitive emissions in 35 IAC Part 212 Subpart K.[67] In particular, Condition 29 requires daily recordkeeping for the implementation of required measures for on-site dust control. However, it does not address the relationship between these permit-mandated records and the recordkeeping required by 35 IAC 212.316(e)(2).[68] At the same time, Permit 95010001 does address one requirement of 35 IAC Part 212 Subpart K as Condition 25 restates the requirement of 35 IAC 212.316(e)(1), which provides that the opacity of fugitive particulate matter emissions from any roadway or parking area at the Granite City Works shall not exceed 5 percent.[69] That Permit 95010001 does not currently deal with regulatory requirements for fugitive dust is an issue as Integrated Processing of a revision of this this permit requires that the compliance procedures in the revised revised be consistent with those required by the CAAPP.

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[67] Incidentally, the CAAPP permit for the Granite City Works appears to erroneously apply the requirements of 35 IAC Part 212 Subpart K, to the requirements for off-site dust control in Permit 95010001. These regulatory requirements, including that subject sources must be operated under the provisions of an operating program designed to significantly reduce fugitive particulate matter emissions, are applicable to US Steel for sources of fugitive dust at the Granite City Works. However, 35 IAC 212.302 appears to provide that the various emission standards and control requirements in 35 IAC Part 212 Subpart K, other than the general standard for the opacity of fugitive emissions in 35 IAC 212.301, apply for emission units for fugitive dust at certain types of facilities, including manufacturing facilities. Accordingly, these regulatory requirements would not apply to off-site roadways and the compliance procedures for the control measures for off-site roadways should instead be established by permit.

[68] For example, for roadways and parking areas at a steel mill in Granite City (i.e., the Granite City Works), 35 IAC 212.316(g)(2) requires the owner or operator to keep the following detailed records related to the application of control measures for these units:

> 35 IAC 212.316(g)(2) …
>
> D) For each application of water or chemical solution to roadways by truck: the name and location of the roadway controlled, application rate of each truck, frequency of each application, width of each application, identification of each truck used, total quantity of water or chemical used for each application and, for each application of chemical solution, the concentration and identity of the chemical;
> E) For application of physical or chemical control agents: the name of the agent, application rate and frequency, and total quantity of agent, and, if diluted, percent of concentration, used each day;
> F) A log recording incidents when control measures were not used and a statement of explanation.

[69] In Condition 31, Permit 95010001 also refers to 35 IAC Part 212 Subpart U, which also addresses fugitive emissions. For certain facilities, including the Granite City Works, it requires that the owner or operator prepare a contingency measure plan for reductions in particulate emissions that could be implemented in the event of an exceedance of the NAAQS for PM_{10}, 24-hour average. Incidentally, Illinois has never needed to implement the contingency plans required by 35 IAC Part 212 Subpart U.

16. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT ARE NEEDED DUE TO REVISIONS TO 40 CFR 63 SUBPART FFFFF, AS COULD BE EXPEDITED BY INTEGRATED PROCESSING OF PERMIT 95010001

The 2022 application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. (85 Federal Register, pages 42,074 – 42,130, July 13, 2020). Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources,

These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the 2022 application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the basic oxygen furnaces and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate. This reliance occurs as the emission limits that are set or would be set by a revised permit would be restated in the CAAPP permit for the Granite City Works, Permit 96030056. The provision currently in CAAPP Permit 96030056 that reflect the exceptions to the requirements of 40 CFR 63 Subpart FFFFF for SSM create a break or interruption in this reliance on the NESHAP for purposes of enforceability of permit limits for emissions, even if the actual nature and effect of this break or interruption is uncertain. Any concern over such interruptions would be eliminated if the former provisions of the NESHAP regulations, which USEPA acted to strike in July 2020, were also no longer present in the CAAPP permit.[70]

[70] From a legal and practical perspective, the continued presence of the former provisions of 40 CFR 63 Subpart FFFFF in the CAAPP permit would be problematic. Would US Steel have to maintain startup, shutdown and malfunction plans as related to particulate emissions of NESHAP-subject units relative to permit limits for particulate emissions? Would the continued presence of these provisions in the CAAPP permit throw Integrated Processing of Permit 95010001 into question as the compliance procedures that would accompany the limits for particulate emissions in revised Permit 95010001 would not be consistent with the procedures required by the CAAPP? Would US Steel and the Illinois EPA have to delineate and then implement a secondary version of the compliance procedures that would deal with emissions of particulate from NESHAP-subject units during SSM events?

17. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT HAVE RESULTED FROM SHUTDOWN OF EMISSION UNITS, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

The 2022 application does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. …

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes.[71, 72] In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary.[73] It

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[71] The elimination of COG also affected the applicability of emission standards to certain units. For example, 35 IAC 212.458(b)(23) is no longer applicable to ladle dryers/preheaters, contrary to what is stated in Condition 7.5.3-1 of the CAAPP permit.

[72] US Steel's current application for renewal of CAAPP Permit 96030056, which was received by the Illinois EPA on December 3, 2013, also does not address shut down of the by-product coke oven batteries and other related operations at the facility. This application only acknowledges that changes to the CAAPP permit will be needed in the future to address the addition of the baghouse to the particulate control system for the basic oxygen furnaces when construction of the baghouse is complete.

> The existing equipment descriptions for the individual processes at GCW (Granite City Works) in the CAAPP permit sections 7.1 to 7.4 and 7.6 to 7.13 are generally accurate. However, the Basic Oxygen Furnace process described in the CAAPP permit condition 7.5 will eventually need to be updated with the new secondary baghouse added as part of the Emission Reduction Project (Construction Permit No. 11050006) once construction is complete.
>
> Application for Renewal of CAAPP Permit 95030056, Section 2.2.2, "Process Changes."

[73] Irrespective of whether certain provisions in the CAAPP permit related to use of COG are still necessary, Condition 5.6 of the CAAPP permit limits the SO_2 emissions of these units from use of COG. (This condition restates limits from Federally Enforceable State Operating Permit 94120017, originally issued December 12, 1994.) The absence of COG does not act to excuse US Steel from required recordkeeping and periodic reporting for emissions of SO_2 and PM_{10} from these units from use of COG (CAAPP permit, Conditions 5.9(c) and 5.10.3). It also does not excuse US Steel from required operational monitoring for the use and sulfur content of COG (CAAPP permit, Conditions 5.6(a) and

would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.[74] The responsibility to identify provisions in the CAAPP permit that should not be carried forward initially falls on US Steel as it is the CAAPP Permittee for the Granite City Works.[75] Moreover, as the 2022 application requests Integrated Processing of the requested revisions to Permit 95010001, the subsequent revisions to the CAAPP permit that would be authorized by the revisions to Permit 95010001 must fulfill the requirement that a CAAPP permit issued for a source accurately identify or address the emission units that constitute the source is being permitted.

7.3.9(f)). In this regard, the emission units addressed by CAAPP Condition 5.6, which are addressed by these requirements for operational monitoring, recordkeeping and reporting, have not been shut down.

[74] A fundamental requirement of the CAAPP is that applications for CAAPP permits must be truthful, accurate and complete. In this regard, Section 39.5(5)(e) of the Environmental Protection Act provides that "Each submitted CAAPP application shall be certified for truth, accuracy, and completeness by a responsible official in accordance with applicable regulations." Section 10(a)(i) of the Act provides that one of the standards of issuance for a CAAPP permit by the Illinois EPA is that "… the applicant has submitted a complete and certified application for a permit, permit modification, or permit renewal consistent with subsection 5 and 14 of this Section [Section 39.5 of the Act], as applicable, and applicable regulations." The requirement for an application to be truthful, accurate and complete is applicable to US Steel's current request for revisions to Permit 95010001 as it includes a request for Administrative Amendment to the CAAPP permit for the Granite City Works by means of Integrated Processing under the CAAPP. The scope of this requirement's applicability is not limited to only certain types of CAAPP applications, such as applications for initial CAAPP permits or renewals of CAAPP permits.

[75] As US Steel is the Permittee for a CAAPP source, it must periodically report compliance or noncompliance with each of the requirements set forth in the CAAPP permit. If US Steel believes that it is "in compliance" with regard to certain requirements in the CAAPP permit because those requirements have been affected by Condition 9.11 of the CAAPP Permit, it is appropriate for US Steel to request appropriate changes to the CAAPP permit by means of an appropriate application for amendment or modification of the CAAPP permit. This is especially true as certain requirements in the CAAPP permit that relate to use of COG apply to emission units that have not been shut down.

18. THE EVALUATION OF BEST AVAILABLE CONTROL TECHNOLOGY (BACT) IN THE 2022 APPLICATION FOR CARBON MONOXIDE (CO) IS NOT SUFFICIENT AND DOES NOT ADEQUATELY SUPPORT US STEEL'S PROPOSAL FOR BACT

The evaluation of Best Available Control Technology (BACT) for CO in Section 8 of the 2022 application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the 2022 application requests that the revision of Permit 95010001 allow for more emissions of CO from these units.

The Scope of the Evaluation

As explained in the 2022 application, consistent with the definition of BACT in Section 169(3) of the Clean Air Act (42 US Code Section 7479(3)) and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices.

> In the BACT analyses herein, the term "available" is used, consistent with U.S. EPA guidance to refer to any control strategy that is potentially applicable to the source type in question (i.e., a technology or control option that has a practical potential for application to the source category in general). These may include fuel cleaning, inherently lower polluting processes, and end of pipe control devices. All identified control strategies that are not inconsistent with the fundamental purpose and basic design of the proposed [sic] facility are listed in this step.
>
> 2022 application, Section 8.2.1.4, "Available Control Options," p. 8-4.

For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices (2022 application, Section 8.2.3.3). In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option, i.e., "Work Practice Standards, including good combustion practices" (2022 application, Section 8.2.2.3). The evaluation does not explain why process-related control options are not available for the casthouse.[76]

[76] Incidentally, with regard to the blast furnace stoves, the evaluation does not explain why "good combustion practices" are considered to be a type of work practice standard rather than a separate control option. In Section 8.2.2.6 "Step 5 - Establish CO BACT," the evaluation proposes operational monitoring for temperature and oxygen levels to confirm operation of the stoves for efficient combustion of fuel, thereby maintaining CO emissions within the level that is achievable given the nature of the physical and operational design of the stoves. The evaluation also separately proposes the less prescriptive practices that are more often considered to constitute good combustion practices. For example, Section 8.2.2.6 also

Support Provided for the Scope of the BACT Evaluation

For both the casthouse and the blast furnace stoves, the BACT evaluation in the 2022 application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. For example, for the casthouse, the evaluation states:

> Based on a review for BACT determinations in U.S. EPA's RBLC (RACT/BACT/LAER Clearinghouse) database and other literature, the control options that are potentially available to control CO emissions from the blast furnace casthouse are:
>
> * Capture system and thermal incineration and
> * Capture system and catalytic incineration.
>
> 2022 application, Section 8.2.3.3, p. 8-8.

When a BACT evaluation is submitted, it may be appropriate or necessary[77] for the application to also include documentary support for the review of available control options that was conducted. In this regard, BACT evaluations commonly include copies of information from the RBLC that is potentially relevant to the determination of BACT that must be made. Further explanation is also provided if some of that information is not considered applicable to the units that are the subject of the BACT determination. Likewise, as there is relevant information in the literature, especially as it is addresses available control options for the subject pollutant, copies of that information should be included in a BACT evaluation. This information enables the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for a BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

Support Provided for Work Practices As BACT for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the 2022 application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard.[78]

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proposes to, "Conduct annual adjustment and tune-up to include, **at a minimum**, inspecting, adjusting, cleaning, or replacing instrumentation and operational control system components and inspecting the air-to-fuel ratio control system and adjusting as **appropriate** for **proper** operation." [Emphasis added.] Moreover, this statement of what would constitute "good combustion practices" for the stoves would be problematic as it would not be enforceable given the various qualifications, as highlighted, on the actions that are required actions to be taken.

[77] For the 2022 application, this information is considered necessary. BACT determinations for the CO emissions of casthouses for blast furnaces and blast furnace stoves are uncommon. The Illinois EPA does not have the ability based simply on its own experience and knowledge to confirm that the potential control options for CO BACT were reasonably identified in the BACT evaluations in the application.

[78] The definition of BACT at 35 IAC 204.280 provides that:

> USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions --*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel emissions units subject to the BACT requirements for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves there is no sampling port satisfying the location requirement in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.
>
> For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves.
>
> Footnote 45. For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.
> Footnote 46. Appendix A-1 to 40 CFR part 60.
>
> 2022 application, Section 8.2.2.6, "Step 5 – Establish CO BACT," p. 8-7.

Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. For example, the application does not include diagrams for the existing ductwork of the stoves to address whether the configuration of this ductwork would accommodate installation of test ports at a location that would satisfy USEPA Reference Method 1. The application also does not show how the refractory lining on the stacks or their age, approximately one hundred years old, would present significant technical challenges and costs so that the installation of test ports at a suitable location should be considered infeasible. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

> If the Agency [Illinois EPA] determines that technological or economic limitations on the application of measurement methodology to a particular emission units would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set further the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means that achieve equivalent results.

19. THE APPLICATION DOES NOT ADDRESS BACT FOR SO_2 AND CO FROM USE OF COKE OVEN GAS (COG) IN THE BLAST FURNACE STOVES

The 2022 application does not demonstrate that Best Available Control Technology (BACT) was utilized as an aspect of the Project for the SO_2 and CO emissions of the blast furnace stoves, as required under the PSD program (e.g., 35 IAC 204.1100(c)). In this regard, unlike the original application, the 2022 application addresses emissions from use of coke oven gas (COG) as fuel in certain Project-affected units. (Refer to the revised netting analyses for the Project for particulate, NOx and VOM and in the 2022 application.) As the 2022 application now addresses emissions of certain pollutants from burning of COG in fuel-burning units, including the blast furnace stoves, this application must also address the related consequence for emissions of SO_2 and CO under the PSD program from burning COG in the stoves. SO_2 and CO are pollutants for which the Project is a major modification subject to PSD. However, the 2022 application does not address BACT for SO_2 and CO as applied to use of COG in the stoves. As such, the 2022 application does not demonstrate that prior to February 2015, when the by-product recovery coke oven batteries at the Granite City Works were shut down and COG ceased to be available, BACT was being utilized for the SO_2 and CO emissions from use of COG in the stoves.

With respect to CO, it is relevant that the BACT demonstration in the 2022 application focuses on CO emissions from burning of fuels other than COG. For fuel burning units, the 2022 application states that "CO emissions of these units result primarily from incomplete combustion during the firing of BFG and natural gas." This ignores the historic contribution of COG to the CO emissions of the stoves prior to February 2015. The 2022 application also does not state that, as of February 2015, it was no longer necessary to address CO emissions from use of COG because COG was no longer produced and available for use.

20. AS RELATED TO SO_2 EMISSIONS FROM USE OF BFG, THE 2022 APPLICATION IS INCONSISTENT WITH A PENDING 2008 APPLICATION

In 2008, US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of BFG and the SO_2 emissions resulting from the use of BFG. That application (the 2008 application) was received on February 4, 2008. The 2022 application is inconsistent with and conflicts with the 2008 application. As such, these applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "… does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." (2022 application, p. 2-2.) The 2008 application does request changes to the provisions of the permit for SO_2 as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors." (October 2008 application, p. 1-1.)

In particular, in the 2008 application:

> …US Steel seeks to revise the Production Increase Permit (95010001) to account for US Steel's revised method for calculating the SO_2 emissions from BFG combustion. This will increase the total allowable SO_2 emissions on an annual basis from combustion of BFG in the Production Increase Permit.
>
> 2008 application, pp. 2-2 and 2-3

The 2008 application specifically requests that the SO_2 emission factor limit for BFG be increased from 6.65 to 16.00 pounds/million cubic feet of gas burned. With the revised emission factor, the permitted SO_2 emissions from use of the 185,030 million cubic feet of BFG per year, as allowed by the permit, would increase from 615.22 to 1480.24 tons/year. However, the 2022 application provides that the limits for SO_2 for use of BFG should be unchanged. As such, the 2022 application indicates that for use of BFG the requested revised permit should continue to limit SO_2 emission to 6.65 pounds/million cubic feet burned and 615.22 tons/year.

Moreover, the existence of the 2008 application suggests that the revisions to SO_2 emission limits that it requested were needed at the time of that application. The 2022 application does not show that this was not the case, as it does not address historic SO_2 emissions from use of BFG to show that an SO_2 emission factor of 6.65 pounds/million cubic feet was appropriate when Permit 95010001 was originally issued in 1996 and that annual SO_2 emissions have never exceeded 615.22 tons/year.

21. AS RELATED TO EMISSION LIMITS FOR SO_2, LEAD AND CO, THE 2022 APPLICATION IS INCONSISTENT WITH PENDING BOARD APPEALS

As already mentioned, the 2022 application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. The application states, "This permit application also does not request any changes to the SO_2 and lead emission limits in Construction Permit No. 950100001, so SO_2 and lead emissions will not be discussed further." [2022 application, Section 2.2, "General Description of Requested Permit Revisions," p. 2-2.][79, 80, 81] For CO, the 2022 application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[82]

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[79] In Section 3 of the application, in which support for elimination of emission factor limits and use of group limits is generally provided, the application only addresses limits for particulate, NOx and VOM. For example, the application states that,

> The approach proposed by USS Granite City with respect to the PM, PM_{10}, NOx and VOM emissions caps to be used in any revised Construction Permit No. 95010001, including the proposed revisions to certain emission limitations, compliance demonstration requirements, and other permit conditions as discussed in detail in Sections 5 through 7 of the permit application ["Proposed Changes to Permit Terms for PM and PM_{10} Emissions Increases Analyses," "Proposed Changes to Permit Terms for NOx Emission Increases Analysis, and "Proposed Changes to Permit Terms for VOM Emission Increases Analyses," respectively] is consistent with policy and precedent and will improve the enforceability of the PTE limitations in Construction Permit No, 95010001. In particular, USS Granite City emphasizes that removal of certain conditions and provisions addressing emissions individual emission units or emission points, including both limits on annual emissions and provisions emission addressing emissions factors will not result in impairment of the enforceability of the PTE limitations.
>
> 2022 application, Section 3, "Discussion of Permit Conditions Used to Restrict PTE [Potential to Emit]," 3-3.]

[80] For process operations, Permit 95010001 currently limits SO_2 emissions from the casthouse and slag pits associated with the blast furnaces in pounds per ton of iron produced and tons per year. For the casthouse, the SO_2 emissions of the main baghouse for the casthouse, the baghouse for the iron spouts at the casthouse, and the uncaptured emissions from the casthouse are limited, respectively, to 0.2006, 0.0073, and 0.0104 pounds per ton of iron produced. The SO_2 emissions of the slag pits are limited to 0.0100 pounds per ton of iron produced. (Permit 95010001, Condition 5 and Table 1.)

Although the emission factor limits for the SO_2 emissions of the casthouse are not identified as Best Available Control Technology (BACT) by Permit 95010001, these limits are considered to be the determination of BACT for SO_2 and should have been identified as such in this permit. BACT is required for the casthouse for SO_2 because the Project was a major modification for SO_2 under the PSD program, as is stated in this permit. Accordingly, as Project included physical changes to the blast furnaces to increase their production capability, BACT is required for the SO_2 emissions of the casthouse.

[81] For operations in the basic oxygen furnace shop, Permit 95010001 currently limits lead emissions in pounds per hour and tons per year. For the basic oxygen furnaces, the lead emissions from the ESP stack and roof monitor are limited to 0.01934 and 0.0129 pounds per hour, respectively. The lead emissions from desulfurization and hot metal transfer are limited to 0.0133 pounds per hour. (Permit 95010001, Condition 18 and Table 2.) The permit does not address the lead emissions of the basic oxygen furnaces that are now captured and controlled by the new baghouse system nor does the 2022 application request any revisions to the permit to address the lead emissions of these furnaces that now occur from the stack of the baghouse.

[82] In the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests certain updates to the

However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the basic oxygen furnaces, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack.[83] As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. As previously discussed, in these appeals, US Steel challenged all emission factor limits set by Permit 95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the t emission factor limits that are set for SO_2, CO and lead. In addition, in the 2022 application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.[84]

With regard to the CO emissions of the basic oxygen furnaces, the 2022 application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the basic oxygen furnaces, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system. Moreover, as the 2022 application does not propose such revisions to the current limits for CO emissions of these furnaces, the application effectively requests a relaxation of the current limits. This is because the revised permit would not address the CO emissions of these furnaces that now occur through the baghouse stack. That is, the limits in the revised permit would not account for any CO emissions that are no longer being captured with the ESP system and are instead now being emitted from the baghouse system.[85]

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limits for CO emissions from use of blast furnace gas and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

[83] Permit 95010001 currently limits CO emissions of the basic oxygen furnaces through the ESP stack to 8.993 pounds per ton of liquid steel produced and 16,097.47 tons/year. (Permit 95010001, Condition 18, Table 2, Section 1, BOF ESP Stack.) The permit does not address CO emissions that are now captured by the new baghouse system and emitted from its stack or any uncaptured CO emissions, which occur through the roof monitor.

[84] If the subject emission factor limits were included in a revised permit, the Illinois EPA could explain that, if these limits in the revised permit were stayed pursuant to an appeal to the Pollution Control Board, the limits would continue to be enforceable pursuant to Permit 95010001 as issued before the revision of the permit and any appeal of the revised permit to the Board.

[85] The 2022 application also does not request revisions to Permit 95010001 to address uncaptured CO emissions of the basic oxygen furnaces or otherwise address the uncaptured CO emissions of these furnaces. This is not consistent with the approach taken for the casthouse on the blast furnaces. For the casthouse, the application requests that the revised permit limit the overall emissions of CO from the stacks on the control systems serving the casthouse. The application also includes information for the overall CO emissions of the casthouse, including other captured emissions and uncaptured emissions.

> As discussed in Section 8.2.3.7 of this permit application [BACT Evaluation for Blast Furnace Casthouse], USS Granite City is proposing a CO BACT emission limit of 70 lb/hr based on total emissions of these two baghouses [main casthouse baghouse and iron spout baghouse], assuming

22. THE 2022 APPLICATION DOES NOT INCLUDE A SIGNED CERTIFICATION FOR THE ACCURACY AND COMPLETENESS OF THE APPLICATION

The 2022 application does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022, as required by 35 IAC 201.159 and Section 39.5(5)(e) of the Illinois Environmental Protection Act. In its place, the 2022 application includes a photocopy of an earlier certification, dated February 25, 2022, which was submitted with a prior application (2022 application, "Appendix A — Application Forms (Copies of Previously Submitted Versions)"). However, the 2022 application is a revision of the earlier application and US Steel intends the 2022 application to replace the earlier application submitted in March 2020 in its entirety (2022 application, Cover Letter). Accordingly, the 2022 application must include a new certification for its truth, accuracy and completeness.

95% capture efficiency for the capture system associated with the cast baghouse, as discussed in Section 5.2.3 of this permit application {A&B Blast Furnace Casthouse Roof Monitor Emissions PM_{10} Revised}, the fugitive CO emissions from the casthouse roof monitor are 3.1 lb/hr. Total CO emissions from the casthouse roof monitor, including both baghouse and fugitive emissions are 73.1 lb/hr and 320 tons per year ("TPY").

2022 application, Section 4.4, "Updated CO Emissions Information for Blast Furnace Casthouse."

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

Extension of the Public Comment Period in the Matter of the Intent to Deny an Application to Revise a Construction Permit/PSD Approval US Steel Corporation in Granite City

The comment period in this matter has been extended to September 11, 2023. All persons, including the applicant, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period. Persons wanting more information may view the draft permit denial letter and project summary at https://epa.illinois.gov/public-notices/boa-notices.html All comments should be received no later than September 11, 2023 and sent to:

Illinois EPA
Brad Frost, Office of Community Relations
1021 N. Grand Ave. East
PO Box 19506
Springfield, Illinois 62794-9506
phone 217/782-7027
TDD phone 866/273-5488
Brad.frost@illinois.gov

August 18, 2023

Illinois Environmental Protection Agency

Notice of Intent to Deny and Public Comment Period
Application for a Revision to a Construction Permit/PSD Approval
US Steel Corporation in Granite City

United States Steel Corporation (US Steel), 1951 State Street, Granite City, has applied to the Illinois Environmental Protection Agency (Illinois EPA) for a revision to an air pollution control construction permit/PSD (Prevention of Significant Deterioration) approval that was originally issued in 1996 for a production increase project at its steel mill located in southeastern Granite City (the Granite City Works). This facility emits particulate, sulfur dioxide, lead, volatile organic material, nitrogen oxides (NOx), and carbon monoxide (CO). The application requests increases in permitted emissions of CO, which the original application understated. As the application requests increases in permitted CO emissions for which the project originally was a major modification subject to PSD, the current application must address compliance with Illinois' rules for PSD, 35 Illinois Administrative Code Part 204. The application also does not show that the requested increase in NOx emission would not make the project a major modification for NOx. Based on its review of the application, the Illinois EPA has made a preliminary determination that the current application does not comply with the applicable air pollution control regulations. As the application requests revisions to provisions of the permit that would relate to PSD, the Illinois EPA has prepared a draft permit denial letter for public review and comment.

The Illinois EPA is accepting comments prior to making a final decision on this application. **Comments must be postmarked by 11:59 pm, August 21, 2023.** All persons, including the applicant, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period.

If sufficient interest is expressed in this matter, a hearing or other informational meeting may be held. Comments, questions and requests for information should be directed to Brad Frost, Office of Community Relations, Illinois EPA, PO Box 19506, Springfield, IL 62794-9506, phone 217/782-7027, TDD 866/273-5488, brad.frost@illinois.gov.

Persons wanting more information may view the draft permit denial letter and project summary at https://epa.illinois.gov/public-notices/boa-notices.html The repository for these documents and the application are located at the Illinois EPA's offices at 1101 Eastport Plaza Drive, Suite 100, Collinsville, 618/346-5120 and 1021 N. Grand Ave. East, Springfield, 217/782-7027. (Please call ahead to assure that someone will be available to assist you). Copies of the documents will be made available upon request to the contact listed above.

The facility is located in a potential Environmental Justice area. More information concerning Environmental Justice may be found at https://epa.illinois.gov/topics/environmental-justice.html

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

July 2023

Project Summary for the Proposed Denial of an Application* from United States Steel Corporation – Granite City Works for Revisions to a Construction Permit/PSD Approval Issued for a Production Increase Project at its Mill in Granite City

Site Identification No.: 119813AAI
Permit/Application No.: 95010001

Illinois EPA Contacts:
Review Engineers: Minesh Patel, Christopher Romaine and Jason Schnepp
Community Relations Coordinator: Brad Frost

Schedule for Public Comment Period:
Comment Period Begins: July 21, 2023
Comment Period Scheduled to Close: August 21, 2023

* In its application, U. S. Steel asks that the requested revisions of Permit 95010001 be processed by the Illinois EPA with "Integrated Processing," as is allowed by Section 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act. Integrated Processing of the revised permit would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit. Integrated Processing would require that the revision of the permit provide for compliance requirements that are substantially equivalent to those that are required in CAAPP permits. The processing of the permit must also be subject to procedural requirements that are substantially equivalent to those that apply for issuance CAAPP permits, including an opportunity for USEPA to review and comment upon a proposed version of the revised permit following completion of a public comment period on the draft of the revised permit.

1. Introduction

United States Steel - Granite City Works (US Steel) has applied to the Illinois EPA for revisions to an air pollution control construction permit (Permit 95010001) for a project at its Granite City Works, the steel mill in Granite City. This project (the "Project") involved increases in the permitted production of iron and steel by this facility. As this facility is a source of emissions, Permit 95010001 provided approval for the Project under both Illinois' construction permit programs for sources of emissions and the Prevention of Significant Deterioration (PSD) program under the federal Clean Air Act. This permit was originally issued in January 1996 to National Steel and was transferred to US Steel after it became the owner of the facility. This proposed denial involves the US Steel's revised application submitted in October 2022 (the "2022 application").

A key reason why revisions to Permit 95010001 are needed is that emission testing conducted in 2014 on the two basic oxygen furnaces (BOFs), in which steel is produced, showed their emissions of nitrogen oxides (NOx), as well as volatile organic material (VOM), are higher than is allowed by this permit. This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit were based on information in the original application.

US Steel has worked to prepare an application for revisions to Permit 9501001 that would allow more emissions of NOx and VOM from the BOFs. The 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted and subsequent changes that have occurred at the facility. Notably, the emissions of carbon monoxide (CO) of certain units have also been found to be higher than stated in the original application. A baghouse control system has been installed for the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. The byproduct coke oven batteries formerly at the facility were shut down in 2015. A brief description of some of the revisions to Permit 95010001 that US Steel has requested is provided at the back of this document in Appendix 1. The requested revisions do not include increases in the permitted iron and steel production of the facility as allowed by this permit as issued in 1996.

The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this are set forth in the draft of the proposed denial that has been prepared. Brief descriptions of the reasons why the Illinois EPA has determined that the 2022 application should be denied are provided in Appendix 2 of this document. For some requested revisions to Permit 95010001, the application should be denied because it does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply to this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application should be denied because it would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

As required by the PSD program, the Illinois EPA is holding a public comment period on its preliminary determination that the 2022 application should be denied and the draft denial letter that

has been prepared. This will allow for the public to consider and comment on this planned action and the draft of the denial letter that the Illinois EPA has prepared.

2. Background on the Granite City Works

The Granite City Works are an integrated steel mill, making both iron and steel. It has two blast furnaces to make iron from iron ore and an associated casthouse located between them in which tapping of iron and slag from the furnaces take place . Two basic oxygen furnaces (BOFs) are used to process iron from the blast furnaces, together with scrap metal, into steel. Before molten iron from the blast furnaces is charged to a BOF vessel, the iron undergoes "desulfurization" with a reagent to remove sulfur from the iron. Ladles of molten steel produced in the BOFs are transferred to "ladle metallurgy" where with the final additions of alloying materials are made to the molten steel. The two basic oxygen furnaces, the iron desulfurization operation, and the ladle metallurgy operations are all located in the basic oxygen furnace shop (BOF shop). From ladle metallurgy, the ladles of molten steel are transferred to the continuous casters in an adjoining building. The solid steel slabs from continuous casting are processed in rolling mills at the source, which make long, thin strips of steel that are wound in coils. Steel slabs from the casters also go to other plants to be made into finished steel.

Other operations at the Granite City Works include raw material handling and storage, steam boilers, and fuel-burning process equipment. The raw material handling and storage operations handle raw materials, such as iron ore pellets, limestone and other fluxing agents, coke, and alloy materials, for the iron and steel making operations. The steam boilers can burn both natural gas and blast furnace gas (BFG). BFG is a low heat content gaseous byproduct from the blast furnaces. BFG is the principal fuel for the blast furnace stoves in which the blast air supply for these furnaces is heated. Other fuel-burning process equipment at the source burns natural gas. Vehicle traffic on roads and parking lots at the Granite City Works also is a source of emissions of fugitive dust.

The Granite City Works formerly included two by-product recovery coke oven batteries and associated by-product processing plant. These operations were permanently shut down in February 2015. The primary source for coke used in the blast furnaces is now two heat recovery coke oven batteries in Granite City that are operated by Gateway Energy. With the shutdown of the by-product recovery coke oven batteries, coke oven gas is no longer produced and available for use in the blast furnace stoves, boilers and other fuel-burning equipment at the Granite City Works that previously used coke oven gas to provide a portion of their fuel.

Granite City is located in Madison County, which is part of the S. Louis Major Metropolitan Area. Madison County is designated nonattainment under the federal Clean Air Act for the National Ambient Air Quality Standard (NAAQS) for ozone.[3] For other pollutants for which there are NAAQS, i.e., carbon monoxide (CO), lead, nitrogen dioxide (NO_2), particulate matter$_{10}$ (PM_{10}), particulate matter$_{2.5}$ ($PM_{2.5}$) and sulfur dioxide (SO_2), Madison County is designated attainment or unclassifiable. USEPA maintains information about current ambient air quality for ozone and particulate on the internet at AirNow (airnow.gov). The Illinois EPA prepares annual reports for

[3] Air quality designations are adopted by USEPA. The designations for Illinois are found at 40 Code of Federal Regulations (CFR) 81.314.

ambient air quality as measured by its network of air monitoring stations around the states. These reports are also available on the internet (epa.illinois.gov/topics/air-quality-reports).

The Granite City Works are in an area that is of concern for Environmental Justice. As such, any proposed permit actions involving this facility are subject to the Illinois EPA's "Environmental Justice Policy." As addressed in this policy, the Illinois EPA is committed to protecting the environment and the health of the residents of Illinois, and to promoting equity in the administration of its environmental programs.

3. The Production Increase Project or the "Project"

In January 1996, National Steel, the former owner of the Granite City Works was issued Construction Permit 95010001 for increases in the allowable production of iron and steel by the Granite City Works, also referred to as the "Production Increase Project" or the "Project." As explained at that time, the increases in production would in part involve continuing improvements in the operation and maintenance of equipment, which is something that normally occur over the course of time. These would involve things such as the availability and use of ore pellets with higher yield, the availability and use of better refractories linings for furnaces, and ongoing improvements in maintenance practices that would reduce the frequency and duration of furnace outages for maintenance. However, the Project also involved certain physical changes to emission units to enable increased production of iron, i.e., changes to the blast furnace stove blowers to increase their air flow capacity. As such, the Project entailed a modification to the Granite City Works for which an air pollution control construction permit was needed.

National Steel's application for a construction permit for the Project addressed its implications for emissions of the iron and steel making operations and other operations at the Granite City Works that would be affected. The application showed that the increases in emissions from the Project would be significant so that the Project was a major modification for sulfur dioxide (SO_2)and carbon monoxide (CO) under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, as governed in 1996.[2] In this regard, in 1996, Granite City was located in areas that were designated attainment for the NAAQS for SO_2 and CO. The application submitted by National Steel addressed the substantive requirements of the PSD rules, as they applied to the Project for SO_2 and CO. For example, the application addressed the use of Best Available Control Technology (BACT) for the casthouse at the blast furnaces as it was identified as emitting SO_2 and the blast furnace stoves as they were identified as emitting SO_2 and CO. The Illinois EPA found that emissions of these pollutants from these units would be appropriately controlled with measures that reflected BACT.

National Steel's application showed that Project was not a major modification for other pollutants. For lead, the application showed that the increase in lead emissions would not be significant. For

[2] In 1996, the Illinois EPA administered the USEPA's PSD rules at 40 CFR 52.21 under a delegation agreement with USEPA. The Illinois EPA now implements the PSD program through states regulation at 35 IAC Part 204, which have been approved by USEPA as part of Illinois' State Implementation Plan.

particulate matter (PM),[3] particulate matter$_{10}$,[4] nitrogen oxides (NOx) and volatile organic material (VOM), the application showed that the net increases in emissions from the Project, considering contemporaneous decreases and increases in emissions, would not be significant. For example, the shutdown of ingot casting and the associated blooming mill at the Granite City Works provided emission decreases that were contemporaneous with the emission increases from the Project. Accordingly, for lead, PM, PM$_{10}$, NOx and VOM, the permitting of the Project did not address the substantive requirements of PSD or Illinois's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203 (more generally referred to as Nonattainment New Source Review or "NaNSR").

In this regard, in 1996, Granite City was located in areas that were attainment for PM and NO_2.[5] National City's application showed that the net increases in emissions of these pollutant from the Project (i.e., the increases in emissions after considering contemporaneous increases and decreases in emissions) would be below the rates that would be considered to be significant under PSD (25 and 40 tons/year for PM and NOx , respectively). In 1996, Granite City was located in areas that were designated nonattainment for NAAQS for ozone and PM$_{10}$. Madison County was and continues to be nonattainment for ozone. The part of Madison County that was nonattainment for PM$_{10}$ included Granite City. For VOM and NOx, as they are regulated as precursors to ozone in the atmosphere, National City's application showed that the net increases in emissions from the Project would be below the rates that would be significant under MSSCAM (40 tons/year for both VOM and NOx). For PM$_{10}$,the application showed that the net increase in PM$_{10}$ emissions from the project would also be below the rate that would be significant under MSSCAM (15 tons/year).

When issuing Permit 95010001 for the Project in 1996, the Illinois EPA included various limits to hold National Steel to the representations made in the application and make those representations enforceable. The future annual production of iron by the blast furnaces and steel by the BOFs were limited to the maximum production levels requested by National Steel in the application. The future annual emissions of different pollutants from the various process units affected by the Project were limited. For the BOFs, whose particulate emissions were only controlled by an electrostatic precipitator (ESP) add-on control system in 1996, separate emission limits were set for the emissions from ESP and the uncaptured emissions from open roof monitor above the BOFs. For fuel-burning units, e.g., the blast furnace stoves and boilers, emissions limits for different pollutants were set collectively for the group of such units, rather than individually. However, separate limits

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[3] Particulate matter (PM), as addressed by the application and relevant USEPA and Illinois rules, only includes filterable particulate and not condensable particulate. Relevant rules provide that measurements of PM emissions are to be made by test methods that are designed to only measure filterable particulate.

[4] For particulate matter$_{10}$, the application only addressed filterable emissions and not condensable emissions. As subsequently addressed in USEPA rules, emissions of condensable particulate were not regulated as a constituent of particulate matter$_{10}$ before January 1, 2011 [40 CFR 51 Appendix S, Emission Offset Interpretative Ruling, Part II, (A)(31)(ii)(*a*)].

In Illinois' rules, filterable particulate matter$_{10}$ is referred to as "PM-10;" condensable particulate as "condensible PM-10." This usage is confirmed in 35 IAC 212.108(a) and (b) by the methods that are specified for emissions testing.

[5] For purposes of PSD and MSSCAM, NOx was initially regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere. As addressed in the Clean Air Act as amended in 1990, NOx also became also regulated as a precursor to the formation of ozone. Finally, NOx is now also regulated as it is a precursor to PM$_{2.5}$.

were set for the emissions from burning BFG, natural gas and fuel oil.[6] The annual emission limits for different pollutant were accompanied by "emission factor limits" that addressed emissions in pounds per ton of iron or steel produced or handled, or for the fuel-burning units, emissions in pounds per volume of fuel burned. The permit required emission testing to be conducted for certain units following issuance of the permit to verify compliance with the requirements of the permit. [7, 8]

The Illinois EPA also included certain requirements in Permit 95010001 for the BOFs that were more stringent than those that had previously applied.[9] The opacity of emissions from the roof monitor was limited to 20 percent on a 3-minute average, from 30 percent on a 6-minute average. Specific practices that were required to be used to reduce particulate emissions of the BOFs. For example, use of flame suppression was required during tapping of a BOF, when molten steel and slag are poured from a BOF into a ladle. Minimum values were set for the air flow through the hoods that capture the particulate emissions of the BOFs for control by the ESP, with different values set for the charging, refining, and tapping steps in the operation of a BOF. A housekeeping program was required for the area below the ESP where collected particulate is transferred from hoppers on the bottom of the ESP into fabric containers for transport off-site. For roadways at the Granite City Works, the permit set specific requirements for the frequency of treatment of different road segment to reduce emissions of fugitive dust due to vehicle traffic on the roadway. These

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[6] For fuel burning units, the permit did not set limits for emissions from the burning of coke oven gas (COG). The operation of the by-product coke oven batteries at the Granite City Works and the associated production of COG was considered to be unaffected by the increased production of iron by the blast furnaces. As a matter of good practice, coke oven batteries are operated at a stable production rate that is consistent with the design and conditions of the batteries. To the extent that the amount of coke produced at a source is more or less than is needed by the source, surplus coke can readily be shipped to other sources, or the deficit made up with coke shipped in from other sources.

[7] For the blast furnaces, emission testing was required for the baghouse that controls particulate emissions of the casthouse, i.e., the structure that encloses the area where molten iron and slag are periodically tapped from the bottoms of the blast furnaces, with testing required PM, VOM, SO_2 and NOx, as well as for opacity. For the BOFs, testing was required for the ESP control system for emissions of PM, CO and lead, as well as for opacity. Testing for emissions of PM was also required for the baghouse that control iron molten iron desulfurization operation that precedes the BOFs and from a representative steam boiler while burning BFG.

[8] The permit stated that the BACT requirement of the PSD rules would be met for SO_2 and CO. However, the permit did not identify specific emission limits or practices that were determined to be BACT for the BACT-subject units. For CO, the specific limits or practice that would be considered to be BACT would be addressed with the proposed revisions to this permit. For CO. US Steel has identified the existence of emissions and higher levels of emissions from the blast furnace casthouse and stoves, respectively. As such, for these unit, BACT for CO must be reevaluated. For SO_2, US Steel has not requested increases in permitted annual emissions. Therefore, BACT for SO_2 does not need to be reevaluated. It would nevertheless be reasonable in the revised permit to identify requirements that are considered to be BACT for SO_2.

[9] The PM-10 emissions of the Granite City Works with the Project were of singular concern to the Illinois EPA. In 1996, an area that included Granite City was designated as nonattainment for PM_{10} air quality. The Illinois EPA performed computerized dispersion modeling for the future PM_{10} air quality of the Granite City area with the Project. The modeling analysis showed that the National Ambient Air Quality Standards (NAAQS) for PM_{10} would be met with PM-10 emissions from the Project-affected units at the Granite City Works at the maximum rates in reflected by the application. In May of 1998, the USEPA redesignated the area in which Granite City is located to attainment for PM_{10}.

Incidentally, the Granite City area is now also designated attainment for the NAAQS for $PM_{2.5}$. The NAAQS for $PM_{2.5}$ were initially adopted by USEPA in 2006, with the NAAQS on an annual average subsequently being lowered in 2012. The ambient air monitoring stations conducted in Granite City by the Illinois EPA continue to show attainment of the NAAQS for PM_{10} and $PM_{2.5}$.

requirements were accompanied by requirements for daily recordkeeping for the treatment of roadways and the implementation of the cleaning program for these roads. The permit also required periodic treatment of certain public roads that serve the source to their reduce emissions.

4. Improved Control of Particulate Emissions of the BOFs (the New Baghouse)

The version of Permit 95010001 that is the subject of US Steel's 2022 application is the revised permit issued on December 17, 2012. In this regard, in 2010, US Steel agreed to install a baghouse control system with fabric filter that would operate along with the existing ESP system to improve control of particulate emissions of the BOFs from charging and tapping. The commitment to the additional control system was made in an agreement between US Steel and the Illinois EPA[10] for several measures to reduce particulate emissions from steelmaking.[11] For the BOFs, installation of a baghouse system was required to improve control of emissions from tapping, when steel and slag are poured from a BOF vessel into a ladle. US Steel was also required to evaluate whether the new baghouse system could be designed to also improve the control of emissions from charging, when iron and scrap metal are poured and unloaded into a BOF vessel. US Steel determined that the new baghouse system could be designed to improve control of emissions from both charging and tapping. As such, once the new baghouse system began operation, the existing ESP system continued to control emissions for the BOFs from refining; the emissions from charging and tapping began to be controlled by a combination of the ESP system and the new baghouse system.

The new baghouse system for the BOFs was initially addressed by Construction Permit 11050006, as issued on August 31, 2011. For purposes of PSD and MSSCAM, this permit was based on the new system being a project that would reduce the emissions of particulate and lead from these furnaces AND NOT increase any emissions. US Steel subsequently applied for a revision of this permit, which was issued on April 1, 2013. In the application for revision of this permit, US Steel formally requested Integrated Processing so as to allow certain related changes to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by means of an administrative amendment. This would assure that the baghouse system could be used in compliance with requirements in the CAAPP permit, which did not address the possibility that a baghouse might be added for the BOFs. For example, for tapping of a BOF, flame suppression was required by the

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[10] "United States Steel Corporation Granite City Works and IEPA Memorandum of Understanding," signed by US Steel on June 30, 2010, and by the Illinois EPA on July 1, 2010 (the Agreement).

[11] In addition to the new baghouse system for the BOFs, the Agreement also provided for use of "steam rings." In a BOF, oxygen is used during the refining step to remove carbon and silica from the molten iron by oxidation. The oxygen lances are inserted into the BOF through openings in the hood over the BOF. Steam rings inject steam in the annular areas between the lances and the openings for the lances. This interferes with outward flow through the openings in the hood improving capture of particulate. by the hood.
The Agreement also provided for limits for emissions of particulate matter, in grains per dry standard cubic foot (gr/dscf), that were more stringent than the emission standards that were applicable under state rules. and 40 CFR 63 Subpart FFFFF:

Baghouses for iron desulfurization, slag skimming and ladle metallurgy: 0.005 gr/dscf (compared to 0.01 gr/dscf)
ESP for the BOFs: 0.01 gr/dscf (compared to 0.02 gr/dscf)
New baghouse for the BOFs: 0.005 gr/dscf (compared to 0.01 gr/dscf).

CAAPP permit reduce particulate emissions. However, this would not be appropriate with the new baghouse system.[12]

It was not possible to simply revise Permit 11050006 with Integrated Processing to enable the revisions to the CAAPP permit that were needed to facilitate the installation and use of this system. It was first necessary to revise Permit 95010001, the permit that is now the subject of the 2022 application.[13] This is because the requirements in the CAAPP permit that were impediments to moving forward with the baghouse system were actually established by Permit 95010001.[14] For example, Condition 11 of Permit 95010001 required the use of flame suppression for tapping; the CAAPP permit merely restated this requirement. Accordingly, Permit 95010001 was revised to provide that this requirement, as well as similar operational requirements that would be inconsistent with the use of the new baghouse system would cease to apply when the new system began to be operated.[15] In their place, US Steel was broadly required to operate and maintain the BOFs and associated emissions capture and control systems in accordance with the applicable requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Facilities, 40 CFR 63 Subpart FFFFF.[16]

In the revision to Permit 95010001, operational requirements for the BOFs and the ESP system that were considered to be obsolete or outdated with the new requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, were also removed. The operational requirements of this NESHAP were determined to better address proper operation of emission control systems for BOFs. For example, as related to capture of secondary emissions,[17] the NESHAP addresses the operation of the capture

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[12] In flame suppression, the use of natural gas burners reduces generation of particulate by depleting the amount of oxygen in the air that comes in contact with molten metal. To improve control of emissions from tapping, the new baghouse system includes local hoods specifically to capture emissions from tapping, as well as local hoods to capture emissions from charging. With local capture hoods for tapping, the continued use of flame suppression would be unsafe, posing hazards both to personnel and equipment, as well as being of uncertain effectiveness to reduce emissions. The high levels of draft provided by the local capture hoods are incompatible with flame suppression as they can act to interfere with the stability and orientation of the flame and pose risks of blowing out the flame.

[13] The revision of Permit 95010001 was completed several months before the revision of Permit 11050006, the permit for the baghouse system. As a PSD permit issued pursuant to 40 CFR 52.21, the revision to Permit 95010001 did not take effect on December 13, 2012, when it was issued. It became effective later in January 2013 after the date for filing an appeal of the revised permit with USEPA's Environmental Appeals Board had passed without any appeal. With the effectiveness of revised Permit 95010001, the revision to Permit 11050006 with Integrated Processing could then be completed.

[14] If Permit 95010001 had not been revised to remove operational requirements that precluded the use of the new baghouse system, these requirements could not have been removed from the CAAPP permit by means of Integrated Processing of a revision to Permit 11050006. These operational requirements would still have been applicable since these requirements would have continued to be present in Permit 95010001.

[15] To address the period before the new baghouse system was operational, the revision to Permit 95010001 provided that the use of flame suppression for tapping and other measures that would obstruct the use of the new baghouse system cease to apply when US Steel began operation of the new system. [Revised Permit 95010001, Condition 11(b).]

[16] US Steel became subject to the requirements of this NESHAP, which applies to the BOFs and certain other operations at the Granite City Works, beginning May 22, 2006. This is because the facility is considered an existing source under 40 CFR 63 Subpart FFFFF.

[17] In common usage, the particulate emissions of BOFs from refining are often referred to as the "primary emissions;" the emissions from charging and tapping are referred to as "secondary emissions." However, in

hoods and the air flow entering the control device(s), rather than the aggregate air flow at the stack of the control device(s).[18] Likewise, the compliance procedures of the NESHAP (e.g., requirements for emission testing and operational monitoring) were determined to be more appropriate for the BOFs and their control systems than the requirements in Permit 95010001.[19]

In summary, the previous revisions to Permit 95010001 were narrowly focused on enabling the installation of the new baghouse system. This was done by removing specific requirements that were inconsistent with the use of this system and, more generally, by removing requirements that were no longer appropriate because of applicable requirements in 40 CFR 63 Subpart FFFFF. The revisions to Permit 95010001 did not extend to other requirements, such as the emissions limits set by this permit for the BOFs. Likewise, the changes to the CAAPP permit that were authorized by means of the Integrated Processing of the revision of Permit 11050006 were focused on enabling the future operation of new baghouse system, including the related changes that had been made in the December 2012 revision to Permit 95010001.[20] The changes authorized to the CAAPP permit also included relevant requirements for the ongoing operation of the baghouse system that were actually set in Permit 11050006 and would appropriately be restated in the CAAPP permit. However, changes were not authorized to the emissions limits in the CAAPP permit for the BOFs and various other emission units as those limits were still present in Permit 95010001.[21]

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the NESHAP, 40 CFR 63.7852, the primary particulate emissions of a BOF are defined as the emissions that are captured for control by the primary emission control system; the secondary emissions are the emissions that are not captured for control by the primary emission control system. As such, the Granite City Works, the ESP control system is the primary control device for the BOFs under the NESHAP. All emissions that are captured by this system, including emissions from charging, refining and tapping, are primary emissions.

[18] The NESHAP also places the burden for establishing the specific measures that will be implemented to ensure proper operation of the capture systems and control devices for BOFs on the source rather than on the permitting authority. The measures that are required to be used are the ones that were present when performance testing for particulate matter emissions shows compliance with the applicable standard.

In light of the applicable requirements of the NESHAP, the operating procedures and requirements in Attachment A, as formerly addressed by Condition 10, were also considered overly prescriptive. For example, Attachment A set out actions that were to be to be taken by employees, e.g., the emission control foreman and operator, rather than practices that the Permittee was required to implement.

[19] A practical concern also existed because certain operational requirements of Permit 95010001 were similar to but different than those of the NESHAP. Given the requirements of the NESHAP, which were newer and developed through rulemaking, the continuing implementation and oversight of the older requirements in Permit 95010001 was not considered to be an appropriate or effective use of resources.

[20] The 2012 revision of Permit 11050056 provided that the changes to the CAAPP permit for the facility that were authorized by means of Integrated Processing could only happen or take effect after the new baghouse system for the BOFs began operation (Permit 11050056, issued April 1, 2013, page 16). US Steel has not yet applied to the Illinois EPA to initiate issuance of an administrative amendment to the CAAPP permit that would reflect the changes to this permit authorized by Permit 11050056.

[21] US Steel filed an appeal of revised Permit 11050056 with the Illinois Pollution Control Board (Board), PCB 13-62. Similar to the appeal of CAAPP permit for the facility (PCD-53), Permit 11050056 was appealed because it also provided for the emission limits for the BOFs and other units in the BOF shop set by Permit 95010001 to again be restated in the CAAPP permit. In this regard, to address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for the complete replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, with a new, revised Section that addresses the basic oxygen furnace shop with the new baghouse system. As an appeal was filed, the provision of Permit 11050056 that would have restated those limits have been stayed pending resolution of the appeal.

5. US Steel's Current Application for Revisions to Permit 95010001

US Steel's current application (the "2022 application" or "application") requests a number of revisions to Permit 95010001. A key reason why revisions to Permit 95010001 are needed is that emission testing for the two basic oxygen furnaces (BOFs) shows their emissions of nitrogen oxides (NOx), as well as their emissions of volatile organic material (VOM), are higher than is allowed by this permit.[22] This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit reflected information in the application. US Steel has also determined that emissions of carbon monoxide (CO) of the casthouse on the blast furnaces and certain Projected-affected fuel burning units are higher than are addressed by the permit. This is because original application did not address CO emissions from the casthouse and understated CO emissions from Project-affected fuel burning units

Accordingly, the 2022 application requests revisions to Permit 9501001 to allow more emissions of NOx and VOM from the BOFs, which the original application understated. In particular, the application requests that the permitted NOx emissions of the casthouse and the BOFs be increased by 19.4 and 220.2 tons/year, respectively. To support these increases in emissions, the application includes revised netting analyses that attempt to show that the Project would not be a major modification for purposes of either PSD or MSSCAM with the requested increases in emissions.

US Steel also requests that the revised permit address CO emissions from the casthouse and allow more CO emissions from fuel burning units.[23] For CO, the application attempts to show that the Project would still comply with the substantive requirements of PSD, which are applicable as the Project originally was a major modification for CO under the PSD program. The application includes an evaluation of BACT for CO for the casthouse and blast furnace stoves, i.e., the units that are or would become subject to the BACT requirement of the PSD program.[24] The application also includes a new air quality impact analysis for CO that would address the Project with the increases in CO emissions as are requested.

This 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted. For PM, PM_{10}, NOx and VOM (i.e., pollutants other than CO, sulfur dioxide (SO_2),and lead), the application requests that the revised permit not include the provisions in Permit 95010001 that would address emissions of individual "processes" in pounds/ton of production or throughput. (For convenience, these provisions in the permit that

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[22] This emissions testing of the BOFs for NOx and VOM was first conducted in 2014, with further testing conducted in 2018 and 2021.

[23] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse, for which CO emissions were not identified and addressed in the original permitting for the project. This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than ten boilers that are now retired. For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas (BFG) used in the blast furnaces stoves, understated CO emissions.

[24] The BOFs were not physically modified as part of the Project. Accordingly, they would not become subject to requirements for BACT or LAER even if the Project were a major modification for a pollutant.

address emissions in pounds/ton of production or throughput or, for lead, in pounds per hour, are generally referred to by the Illinois EPA as "emission factor limits." The Illinois EPA set the emission factor limits and limits on annual emissions in Permit 95010001to ensure that the Project would not be a major modification for purposes of PSD or MSSCAM.[25] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes or emission points, the application requests "group limits" for the annual emissions of groups of related emission units.[26] For emission units for which routine emission testing is feasible, the emissions contributed by units towards the group limits would be determined using emissions rates that reflect the results of emission testing. For certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the BOFs), for which routine emission testing is not feasible, the application requests that the revised permit set "prescribed emission factors." For these units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 for process units that currently restrict emissions in pounds/ton of input or production or in pounds/hour.[27]

Lastly, the application also recognizes subsequent changes at the facility, which occurred after the Project, that were not contemplated in 1996 and not provided for when Permit 95010001 was originally issued. The changes at the facility include the addition of a baghouse control system for the BOFs to improve control of their particulate emissions. The changes also include the shutdown of the by-product coke oven batteries that were formerly at the facility, which eliminated emissions from these operations. In this regard, the application requests revisions to Permit 95010001 to provide for increased use of natural gas by Project-affected fuel burning units. The application explains that this is necessary with the shutdown of the by-product coke oven batteries because COG is no longer available and more natural gas may need to be used.

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[25] The removal from Permit 95010001 of the "emission factor limits" would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62, as these appeals address PM, PM_{10} and NOx and VOM emissions. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, before issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing "emission factors" were considered to constitute enforceable limits on emissions.

[26] For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period.

[27] Unlike the emission factor limits in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors established in a revision to Permit 95010001 would instead be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit.

The Illinois EPA has reviewed the 2022 application to determine whether the application shows compliance with applicable regulatory requirements and would support issuance of a revision to Permit 95010001 as requested by US Steel. The Illinois EPA has also considered whether the application would support issuance of such a revised permit with Integrated Processing, as has also been requested, so that related revisions to the CAAPP permit for the Granite City Works may be made by administrative amendment. The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this determination are set forth in the draft of the proposed denial letter that has been prepared.[28] As discussed in further detail below, for some of the revisions requested to Permit 95010001, the application does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply for this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

6. Discussion of Key Reasons for the Planned Denial of the Application

6.1. The Revised Netting Analysis for the Project for NOx

A. Overview

The revised netting analysis for NOx submitted for the Project with additional NOx emissions as requested does not show that the Project would not become a major modification for NOx. Accordingly, a revised permit cannot be issued as requested because, for emissions of NOx, the 2022 application does not address or show fulfillment of the substantive requirements of the rules for Prevention of Significant Deterioration (PSD) and Major Stationary Sources Construction and Modification related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and MSSCAM (35 IAC 203.301) for NOx. This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx. The application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the application must show for NOx that the relevant substantive requirements of PSD and MSSCAM are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and MSSCAM would be met for the Project for NOx.

[28] Brief descriptions of the reasons why the Illinois EPA's preliminary determination for this application is that it should be denied are provided in Appendix 2 of this document.

The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[29] However, the application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would be such that the Project would not be a major modification for NOx.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The application proposes to rely upon the decreases in NOx emissions due to these changes, which were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as it does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed below, the application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

B. The Analysis Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application relies on decreases in emissions that occurred long after 1996. This includes decreases from the shutdown of ten of the twelve boilers at the facility that were originally addressed by Permit 95010001 in 1996. The shutdown of Boilers 1 through 10 was required by Construction Permit 06070023, which was originally issued in July 2006 for construction of a cogeneration boiler that would burn blast furnace gas (BFG) and natural gas. The application does not show that NOx emissions of these ten boilers, as existed in the period prior to

[29] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

2009, were considered in the "future" NOx emissions with the Project from the Project-affected fuel burning units. In addition, with regard to the two remaining old boilers at the facility, Boilers 11 and 12, that continue in operation, flue gas recirculation systems have been installed pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to reduce NOx emissions to facilitate compliance with 35 IAC 217.164. The application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from these boilers that are now being achieved with the new systems, rather than the NOx emissions as previously existed with the Project in the period before these systems were installed.

The application also indicates baseline NOx emissions from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12. In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[30]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application. This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the BOFs. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[31]

C. Insufficient Information to Independently Confirm the Revised Baseline NOx Emissions

The revised determination of baseline NOx emissions of Project-affected fuel burning units that is part of the revised netting analysis is not accompanied by information that would allow it to be independently verified. In this regard, the application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that

[30] The revised netting analysis does address increased use of natural gas by Project-affected fuel burning units because COG is no longer available and more natural gas may need to be used to make up for this.

[31] Indeed, with the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of affected fuel burning units indicated in the application are emissions that could have been allowed by this permit in 1996. The future NOx emissions of these units indicated in the application are less than their baseline NOx emissions. As the Project did not include any elements that would lower the NOx emissions of fuel burning units, the production of more iron and steel would have been accompanied by increased utilization of the blast furnace stoves and boilers so that in 1996 the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.).

appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, concerns exist with the determination of the overall baseline NOx emissions for the Project. In particular, this application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The application utilizes a NOx emission factor for Boilers 11 and 12 for use of COG that the application states is based on emission testing conducted on the stack for underfiring of one of the coke batteries, rather than testing on one of these boilers or other similar boiler. For burning of natural gas, the application does not show the emission factor that is utilized for boilers would also be appropriate for ladle preheaters and casting operations.

D. Supporting Date Is Not Provided For Future NOx Emissions of Fuel-Burning Units

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically. The application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

6.2. The Application Does Not Address the Potential for Uncaptured Emissions of NOx, VOM and CO Through the Roof Monitor of the BOF Shop

The application is deficient in its approach to the uncaptured emissions of NOx, VOM and CO emissions of the BOFs. For the BOFs, consistent with the original permitting of the Project, the application only quantifies stack emissions of NOx, VOM and CO. Moreover, the revised netting analyses for NOx and VOM assume that all emissions of these pollutants from the BOFs are now captured. That is, with the new baghouse system to improve control of particulate emissions, all NOx and VOM emissions of the BOFs that originally were not captured and were emitted through the roof monitor are now captured and emitted through the stack on the baghouse system.

This assumption is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were not addressed in the original permitting for the Project, likely because they were considered negligible. Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the application to the particulate and lead emissions of these furnaces, which assumes that there are uncaptured emissions that still occur through the roof monitor. By way of contrast, the 2022 application requests that the revised permit

establish prescribed emission factors for the particulate emissions of the BOFs that occur through the roof monitor.

The fact that there are emissions of NOx and VOM from the BOFs that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. In this regard, the application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions. However, the application does not propose any such revisions for the BOFs or explain why such revisions are not needed. For example, the application also does not explain why it would not be inappropriate for any revised permit to set a limit for the annual emissions of CO from the BOFs through the stacks of the control systems, with associated requirements for periodic emission testing.

6.3. The Inventory Used in the Air Quality Analysis for CO Omits Certain Emissions

The results of the analysis of the impacts of the Project on ambient air quality for CO cannot be relied upon because the inventory for the CO emissions of the facility with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The application includes an air quality analysis for CO because the Project was originally permitted as a major modification for CO under the PSD program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted. To support this request, an air quality analysis for CO must be part of the application pursuant to 35 IAC 204.1130, since this request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program. In this regard, the air quality analysis in the 2022 application does not address uncaptured CO emissions of the casthouse. As discussed earlier, the application does not address uncaptured emissions from these furnaces or does not explain why uncaptured emissions would not be present. In this regard, the application does not show 100 percent capture of the particulate emissions of these furnaces by the control systems for particulate. The application also does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the facility. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. In addition, the air quality analysis uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.

6.4. The Proposed Scope of Proposed Group Emission Limits Is Overly Broad

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate. In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two BOFs. These are principal emission units at

this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two BOFs to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the BOFs should not both continue to be limited individually.

In this regard, the application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted. The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[32] However, the application does not show that the specific circumstances of the Project are such that the current limits for annual emissions of the principal emission units should be replaced with group limits that apply to the combined emissions of the principal emission units and other lesser emission units.[33] The circumstances of the Granite City Works are not the same as those presented by the cited permits. The Granite City Works are a manufacturing facility at which iron is produced from iron ore and then converted into steel in BOFs. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station.

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[32] The application cites two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[33] For the casthouse, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the main baghouse for the casthouse, the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited for the permit to restrict the overall emissions of pollutants other than CO from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. (As the Project is subject to BACT for CO, the limit could only apply to stack emissions.)
The circumstances of the BOF are similar, as the current permit separately addresses emissions of particulate and lead from the ESP stack and the roof monitor. It would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of each pollutant from the BOFs.

6.5. Inadequate Justification for Elimination of Current Limits for Project-Affected Fuel Burning Units

The justification provided in the application for revisions to Permit 95010001 to eliminate limits on usage of fuel and, presumably, emission by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and blast furnace gas currently set by Permit 95010001, it does not propose any new limits in their place. This rationale is deficient because it does not consider that the application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the application does not show that new limits for fuel usage would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shut down. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

6.6. The Application Does Not Show That the Emission Factors Proposed As Prescribed Factors for Certain Units Would Be Representative

A. Introduction

To calculate baseline emissions for certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3.

For the Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Relative to prescribing emission factors, the USEPA's finding, as is provided below, should be considered *dicta* since the permit that was the subject of the appeal did not actually provide for use of prescribed emission factors. As the order addresses the possibility of using prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit

applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
>
> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

B. Particulate Emissions of the BOFs Through the Roof Monitor

The application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the BOF shop (i.e., the uncaptured emissions from the BOFs). In this regard, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the BOFs. As capture and control for particulate improved, the factor for future uncaptured emissions would be different and lower (better) than the factor for baseline uncaptured emissions.

C. Continuous Casting Lines

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors that are proposed reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative.

D. Particulate Emissions of the Casthouse Through the Roof Monitor

For the casthouse roof monitor (uncaptured emissions particulate emissions of the casthouse), the application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency. Further support is needed for a prescribed emission factor for uncaptured emissions of the casthouse that is based on achievement of this level of capture.

E. Emissions of the Slag Pits and Iron Pellet Screen

For the slag pits and the iron pellet screen, the application does not provide support for the background information or inputs that were used to adjust the published factors for the operating conditions or circumstances of these units at the facility. Absent this information, the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

F. Current Provisions of the CAAPP Permit Requiring Use of Appropriate Emission Factors

The application is also deficient as it simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors." To facilitate the use of prescribed emission factors, the application also needs to propose or request revisions to general provisions in Permit 95010001 so as to also enable subsequent revisions to be made by administrative amendment to the CAAPP permit for the facility, Permit 96030056, to allow prescribed emission factors to actually be used to determine ongoing emissions of certain units.[34]

6.7. Requested Changes for Consistency with the Grouping of Units in the CAAPP Permit

In the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed by the specific changes to Permit 95010001 that have been requested. For example, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 95010001 with operations in the Basic Oxygen Furnace Shop and be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term.

On the other hand, the application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System). These emission units are currently addressed in Permit 95010001 with continuous casting operations. In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations. The application does

[34] The CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. These procedures do not provide for the use of prescribed emission factors. Rather, US Steel is generally required to use "appropriate emission factors," i.e., factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that being are used resting on US Steel. The CAAPP permit also provides for recordkeeping and reporting by US Steel so that information about the factors that are being used is publicly available and the Illinois EPA, the USEPA and interested parties can review the factors that are in use.

not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop as it would constitute a "BOPF {basic oxygen process furnace} shop ancillary operation" for purpose of 40 CFR 63 Subpart FFFFF. US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations.[35]

6.8 The Application Does Not Address the Amendment to the CAAPP Permit Previously Authorized Pursuant to Construction Permit 11050006

The 2022 application does not identify the version of the CAAPP permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Permit 11050006, issued April 1, 2013, for the addition of a baghouse system to improve control of particulate emissions of the BOFs. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[36] Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[37]

6.9. The Application Does Not Address Changes to the CAAPP Permit That Are Needed Due to Revisions To 40 CFR 63 Subpart FFFFF

The application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the

[35] For Ladle Drying/Preheating, the application also does not request any changes to Permit 95010001 to maintain consistency with the approach taken in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units. In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the BOF Shop, as well as elsewhere in the permit with other Project-affected fuel burning units. In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop.

[36] The 2022 application does address the addition of the baghouse control system for the BOFs as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the BOFs.

[37] Concerns are posed by certain conditions in existing Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit.

emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources. These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the BOFs and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate.

6.10. Changes to the CAAPP Permit That Have Resulted from Shutdown of Emission Units

The application is deficient as it does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. …

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes. In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary. It would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.

6.11. The Evaluation of BACT for CO in the Application Is Not Sufficient

The evaluation of BACT for CO in the application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the application requests that the revision of Permit 95010001 allows for more emissions of CO from these units.

A. The Scope of the Evaluation of Available Control Options

As provided in the definition of BACT in Section 169(3) of the Clean Air Act and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices. For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices. In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option. i.e., "Work Practice Standards, including good combustion practices." The evaluation does not explain why process-related control options are not available for the casthouse.

B. Documentations for the Investigation into Available Control Options

For both the casthouse and the blast furnace stoves, the BACT evaluation in the application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. This is not sufficient for the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for the BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

C. Support for Not Setting Numerical BACT Limits for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard. Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

6.12. Inconsistency of the Application with a Pending 2008 Application & Pending Appeals

A. Pending 2008 Application

On February 4, 2008,[38] the Illinois EPA received an application from US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of blast furnace gas (BFG) and

[38] Several things interfered with work on the 2008 application. These include the amount of effort needed by the Illinois EPA to issue the initial CAAPP permit for the Granite City Works. The first two CAAPP permits issued for this facility had to be enhanced and reissued to address certain deficiencies identified by USEPA in Orders responding to petitions requesting the USEPA object to the permits that had been issued. Then, additional revisions to Permit 95010001, as US Steel has tried to address with the 2022 application, were found to be necessary because the NOx and VOM emissions of the basic oxygen furnaces exceed or may exceed the limits established in this permit. Work on the current application for revisions to this permit was also disrupted by an interruption in the iron and steel production of the facility that began in December 2015. This interruption, which ultimately lasted for over two years, meant that it was uncertain that the facility would resume production of iron and steel.

the SO_2 emissions resulting from the combustion of BFG. The 2022 application is inconsistent with and conflicts with that prior application (the "2008 application"). As such, these two applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "… does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." The 2008 application does request changes to the provisions of the permit for SO_2, as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors."

B. Pending Board Appeals

The application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. For CO, the application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[39] However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the BOFs, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack. As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. In these appeals, US Steel challenged all emission factor limits set by Permit 95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the emission factor limits that are set for SO_2, CO and lead. In addition, in the application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.

With regard to the CO emissions of the BOFs, the application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the BOFs, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system.

6.13. Other Deficiencies in the Application

There are also a number of other lesser reasons why the Illinois EPA determined that the application should be denied, as are set forth in the draft of the denial letter. For example, this application does not include a signed certification for its truth, accuracy and completeness. While this deficiency could be remedied with a supplement to the application that provides both this certification and corrections to the errors in the application that have been noted, this would not be sufficient for a

[39] As already discussed, in the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests updates to the limits for CO emissions from use of BFG and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

revised permit to be issued given more substantial deficiencies in the application that have been identified..

7. Request for Comments

It is the Illinois EPA's preliminary determination that US Steel's 2022 application for revisions to Permit 95010001 should be denied. The Illinois EPA has prepared a draft of the denial letter that it proposes to issue for the 2022 application. The draft denial letter details the reasons why the Illinois EPA has determined that this application should be denied.

The Illinois EPA is providing the public with an opportunity to review and comment on this proposed denial of this application and the reasons for such action identified by the Illinois EPA as set forth in the draft of the denial letter.

Appendix 1

Brief Descriptions of the Revisions to Permit 95010001 Requested By US Steel

- Raise permitted NOx and VOM emissions of the basic oxygen furnaces (steel production) to correct for data in the original application that understated emissions. This revision would facilitate resolution of two appeals to Illinois` Pollution Control Board (PCB), PCB 2013-053 and PCB 2013-062 as they address NOx and VOM emissions of the BOFs. The first appeal addresses the Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) as issued in 2013 as it repeats emission limits set by Permit 95010001. The second appeal addresses Construction Permit 11050006, a construction permit issued in 2013 for improvements to the particulate control for the BOFs, as this permit also refers to emission limits set by Permit 95010001.

- Eliminate limits set by the permit for individual process operations for emissions of particulate matter and particulate matter$_{10}$ (collectively particulate), NOx and VOM. These limits, which are in pounds/ton of throughput and tons/year, were set for purposes of New Source Review (NSR). In place of these limits, set "group limits" for the annual emissions of groups of related operations, e.g., limits for the overall emissions of the casthouse for the blast furnaces and other units involved in production of iron. This would also facilitate resolution of the two appeals to the PCB as they both challenge the limits in pounds/ton of throughput. These requested revisions would make the permit less stringent. Any "overage" of emissions by certain unit(s) in a group could potentially be balanced by lower levels of emissions by other units in the group. Group limits have been allowed by USEPA for purposes of PSD in certain construction permits issued outside of Illinois.

- Address the CO emissions of the casthouse for the blast furnaces, which were not identified in the original application and are not currently addressed by the permit.

- Provide for an increase in usage of natural gas by Project-affected fuel burning units because coke oven gas is no longer available with the shutdown in 2015 of the byproduct coke oven batteries at the facility.

- Update the construction permit to be consistent with the grouping of units in the CAAPP permit for the facility, including addressing discrete material handling operations as a group of units.

- Process the revised construction permit with "Integrated Processing" so that appropriate revisions can be made to the CAAPP permit for the facility by Administrative Amendment rather than by a separate proceeding for a major modification of the CAAPP permit.

- Update Permit 95010001 with a number of minor revisions as requested to US Steel.

Appendix 2:

Brief Descriptions of Deficiencies in the Application Identified in the Draft Denial Letter

- The revised netting analysis for the Production Increase Project (the "Project") for NOx in the 2022 application attempts to show that the Project would still not be a major modification for purposes of Prevention of Significant Deterioration (PSD) or Major Stationary Source Construction and Modification (MSSCAM) with higher permitted emissions of nitrogen oxides (NOx) from the basic oxygen furnaces, as are being requested. However, the revised netting analysis for NOx does not fulfill relevant requirements of the rules governing netting analyses. As a result, the revised analysis does not show that the Project would still not be a major modification for purposes of PSD and MSSCAM with the requested increases in NOx emissions to correct erroneous data in the original application. In addition, for NOx, the application does not address applicable requirements of the PSD and MSSCAM programs that would become applicable as the Project would now be a major modification. As related to the effect of the Project on air quality, these include an air quality impact analysis for nitrogen dioxide (NO_2) under the PSD program and emission offsets for NOx under MSSCAM. As related to control of NOx emissions, this entails use of appropriate control measures for the NOx emissions of the casthouse on the blast furnaces and the stoves associated with the blast furnaces. This is because the Project included physical modifications to the blast furnaces so that the control measures for NOx must reflect Best Available Control Technology (BACT) under PSD and the Lowest Achievable Emission Rate (LAER) under MSSCAM.

  In particular, the application relies on decreases in NOx emissions due to actions at the facility that occurred after 1996, i.e., the shutdown of ten older boilers in 2010 and the shutdown of the by-product coke oven batteries in 2015. These actions are not contemporaneous with the Project, which occurred in 1996. As such, the accompanying decreases in NOx emissions cannot be relied upon to show that the Project should still be considered non-major.

- Certain emissions data underlying the revised netting analysis cannot be independently confirmed by the Illinois EPA.

- The application lacks detailed supporting information for the contribution of various Project-affected fuel burning units to the actual annual NOx emissions under the requested revised permit.

- The application does not show that the proposed groups of operations for the requested "group limits" for annual emissions are appropriate. In this regard, the 2022 application requests that emission limits currently set by Permit 95010001 that apply to emissions of various pollutants from individual emission units or points of emissions from the casthouse on the blast furnaces and the BOFs, which have both captured/controlled emissions and uncaptured emissions, be replaced with limits that apply to the emissions of groups of related emission units. This would not provide for emission limits that only apply to the blast furnaces casthouse and the two BOFs. These are principal emission units at this facility and their emissions should be directly limited separate from the emissions of other units. The construction permits issued by other jurisdictions cited in the application as support for setting group limits do not eliminate the need

for the Illinois EPA to exercise its technical judgment when deciding whether and to what extent to set group limits.

- The 2022 application does not show that certain emission factors that the application requests be prescribed by the revised permit should be considered representative and acceptable. In this regard, the application requests that for certain emission units, the revised permit specify or prescribe the emission factors that are to be used on an ongoing basis for purposes of assessing compliance with limits on emissions set by the permit.

- As related to sulfur dioxide (SO_2) emissions from burning blast furnace gas, a fuel byproduct from the blast furnaces, the 2022 application is inconsistent with an earlier application for revisions to Permit 95010001. This earlier application was submitted in 2008 pursuant to a state consent decree (*People of the State of Illinois v. US Steel Corporation, Inc.*, Madison County Circuit Court No. 05-CH-750 (December 18, 2007)). This earlier application is still pending. It requests revisions to Permit 95010001 to allow more emissions of SO_2 from burning blast furnace gas, both in pounds of SO_2 per million cubic feet of gas burned and in tons per year. However, the current application does not request any such changes and instead states that the limits for SO_2 emissions from blast furnace gas should not be changed.

- The application does not include information to facilitate Integrated Processing of a revised permit, as requested by US Steel. Most significantly, the application does not provide information to support removal of provisions in the CAAPP permit for the now shutdown coke oven batteries and for use of coke oven gas that should not be included in any amended CAAPP permit.

- US Steel has not taken necessary action to enable Integrated Processing of the requested revised permit. This is because it has not initiated the amendment of the CAAPP permit authorized by Permit 11050006, as issued in 2013, which is an earlier construction permit that was subject to Integrated Processing. That permit addresses the addition of the baghouse control system to the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. Prior to installation of the baghouse system, the particulate emissions from charging and tapping were only controlled with the electrostatic precipitator (ESP) control system.

- There are also a number of other lesser deficiencies in the 2022 application that also warrant the denial of this application.

Illinois Environmental Protection Agency

Notice of Intent to Deny
Revised Draft Denial Letter and New Public Comment Period
Application for a Revision to a Construction Permit/PSD Approval
US Steel Corporation in Granite City

United States Steel Corporation (US Steel), 1951 State Street, Granite City, has applied to the Illinois Environmental Protection Agency (Illinois EPA) for a revision to an air pollution control construction permit/PSD (Prevention of Significant Deterioration) approval that was originally issued in 1996 for a production increase project at its steel mill located in southeastern Granite City (the Granite City Works). This facility emits particulate, sulfur dioxide, lead, volatile organic material, nitrogen oxides (NOx), and carbon monoxide (CO). The application requests increases in permitted emissions of CO, which the original application understated. As the application requests increases in permitted CO emissions for which the project originally was a major modification subject to PSD, the current application must address compliance with Illinois' rules for PSD, 35 Illinois Administrative Code Part 204. The application also does not show that the requested increase in NOx emission would not make the project a major modification for NOx. Based on its review of the application, the Illinois EPA has made a preliminary determination that the current application does not comply with the applicable air pollution control regulations.

As the application requests revisions to provisions of the permit that would relate to PSD, the Illinois EPA must prepare a draft permit denial letter for public review and comment. A draft permit denial letter was previously made available beginning in July 2023. By this notice, the Illinois EPA, is announcing that it has prepared a revised draft permit denial and is now making this "revised draft denial letter" available for public review and comment. In response to certain comment that were received on the initial draft denial letter, this revised draft denial letter more clearly sets forth the sections of the Illinois Environmental Protection Act, the provision(s) of Title 35 Subtitle B: Air Pollution of the Illinois Administrative Code, and the reasons that would be the basis for the Illinois EPA's proposed denial of this application.

The Illinois EPA is accepting comments prior to making a final decision on this application. **Comments must be postmarked by 11:59 pm, January 8, 2024.** All persons, including the applicant, shall raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period.

If sufficient interest is expressed in this matter, a hearing or other informational meeting may be held. Comments, questions and requests for information should be directed to

Brad Frost, Office of Community Relations, Illinois EPA, PO Box 19506, Springfield, IL 62794-9506, phone 217/782-7027, TDD 866/273-5488, brad.frost@illinois.gov.

Persons wanting more information may view the draft permit denial letter and project summary at https://epa.illinois.gov/public-notices/boa-notices.html The repository for these documents and the application is located at the Illinois EPA's offices at 1101 Eastport Plaza Drive, Suite 100, Collinsville, 618/346-5120 and 1021 N. Grand Ave. East, Springfield, 217/782-7027. (Please call ahead to assure that someone will be available to assist you). Copies of the documents will be made available upon request to the contact listed above.

The facility is located in a potential Environmental Justice area. More information concerning Environmental Justice may be found at https://epa.illinois.gov/topics/environmental-justice.html

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/785-1705

CERTIFIED MAIL

DENIAL OF AN APPLICATION FOR REVISIONS TO A CONSTRUCTION PERMIT/PSD APPROVAL[1] (REVISED DRAFT[2])

(Draft December 2023)

U.S. Steel Granite City
Attn: Krista Armentrout - Environmental Manager
1951 State Street
Granite City, Illinois 62040

Permit/Application No.: 95010001 I. D. No.: 119813AAI
Date Permit Originally Issued: January 25, 1996
Date Application for Revisions Received: October 7, 2022
Subject of Permit: Production Increase
Location: Granite City Works, Southeastern Granite City

The Illinois EPA has reviewed your above referenced application for revisions to the above-referenced construction permit/Prevention of Significant Deterioration (PSD) approval (Permit 95010001) issued for the above referenced project. The permit application is DENIED because, if a revision to Permit 95010001 were issued as requested by this application, it might violate various Sections of the Illinois Environmental Protection Act (Act) and various provisions in Illinois' regulation pursuant to the Act. The Sections of the Act that might be violated include Sections 9(a), 9(b)(2), 9.1(d), 39(a), 39.5(5)(e), 39.5(7)(a), 39.5(5)(i), 39.5(10)(a)(iv) and 39.5(13)(c)(v). The provisions of the relevant Illinois regulations, i.e., Subtitle B of Title 35 of the Illinois Administrative Code (IAC), that might be violated include 35 IAC 201.152, 201.159, 201.160(a), 203.123, 203.128, 203.201,. 203.203(b), 203.208, 203.301, 203.302, 204.280, 204.330, 204.400, 204.550, 204.560. 204.810, 204.1100(c), 204,1110, 204.1130 and 270.401(f).

The specific Sections of the Act and the specific provisions of the Illinois Administrative Code that may not be met if Permit 95010001 were to be revised as requested by this application are detailed in the Listing of Denial Points, Attachment 1 of this permit denial. For each Denial Point, Attachment 1 also describes the information that this application did not provide and the specific reasons why the Act and might be violated if a revised permit were issued as requested, with accompanying explanation and discussion.

[1] In this application, US Steel requests that the revision of Permit 95010001 be processed with "Integrated Processing," as is provided for by Sections 39.5(13)(a) and (c)(v) of the Act. Integrated Processing would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit.

[2] This revised draft denial letter takes the place of the initial draft denial letter, which was made available for public review and comment beginning in July 2023. This revised denial letter more clearly sets forth the specific laws, rules and reasons that would be the basis for the Illinois EPA's proposed denial of this application.

(This footnote would not be included later in any denial that would be issued by the Illinois EPA.)

This permit denial has two appendices. Appendix A lists the various sections of the Act that are cited in Attachment 1 as the statutory basis for this denial letter, with description and, in some cases, general explanation why the section might be violated if Permit 95010001 were to be revised as requested by this application. Appendix B lists the various provisions in Subtitle B of Title 35 of the Illinois Administrative Code that are cited in Attachment 1 as the regulatory basis for this denial letter, with description and, in some cases, general explanation why the provision might be violated if Permit 95010001 were to be revised as requested by this application.

Before taking action to deny the above-referenced application, the Illinois EPA held a public comment permit on a draft of a proposed permit denial letter in accordance with 35 IAC Part 252, as provided for by 35 IAC 252.105(b).

If you have any questions on the denial of this application, please call Jason Schnepp or Minesh Patel at 217/785-1705.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:mvp:tan

U.S. Steel Granite City (I. D. No. 119813AAI)
Permit/Application No. 95010001
Application for Revisions to the Permit Received on October 7, 2022
Draft of Permit Denial Letter December 2023

ATTACHMENT 1: LISTING OF DENIAL POINTS

1. THE REVISED NETTING ANALYSIS FOR THE PROJECT FOR NITROGEN OXIDES (NOx) DOES NOT FULFILL RELEVANT REQUIREMENTS OF NEW SOURCE REVIEW (NSR) FOR SUCH ANALYSES

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d) and 39(a)*. (Note: The significance of asterisks that accompany certain Sections of the Act is explained in Appendix A.)

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 Illinois Administrative Code (IAC) 201.160(a), 203.201, 203.203(b), 203.208**, 203.301, 203.302, 204.550**, 204.810, 204.1100(c), 204.1110 and 204.1130. (Note: The significance of asterisks that accompany certain provisions of the Illinois Administrative Code is explained in Appendix B.)

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not show that the Production Increase Project (Project) would still not be a major modification for emissions of nitrogen oxides (NOx) for purposes of New Source Review (NSR) with the increases in NOx emissions that are requested to address errors in the initial permitting of the Project. In particular, the application requests an increase in the permitted NOX emissions of the basic oxygen furnaces (BOFs) of more than 200 tons/year. The netting analysis for NOx in the application, which addresses the Project with the requested increases in NOx emissions, is flawed so cannot be relied upon to show that the increases in permitted NOx emissions would not result in the Project being a major modification. The revised NSR applicability analysis is flawed as, contrary to applicable rules, it relies upon decreases in NOx emissions from actions that were neither contemporaneous with the Project nor creditable as they were not required by Permit 95010001. These decreases resulted from the later shutdowns of ten older boilers at the facility and the much later shutdown of the two by-product recovery coke oven batteries at the facility, as coke oven gas (COG) ceased to be available for use in Project-affected fuel burning units. The incongruous conclusion of the revised NSR applicability analysis is that the Project was accompanied by an overall decrease in the NOx emissions of Project-affected fuel burning units rather than an increase in NOx emissions as would be expected from an increase in production of iron by the blast furnaces.

   As the Project would become a major modification for NOx with the requested increase in permitted NOx emissions, the Project would become subject to Nonattainment New Source

Review (NaNSR) (35 IAC Part 203, Major Stationary Sources Construction and Modification (MSSCAM)) for NOx. NOx is regulated as a precursor to the formation of ozone in the atmosphere and, in 1996, the Granite City Works was in an area designated nonattainment for ozone air quality. (This area is still nonattainment for ozone.) As the Project would become a major modification for NOx with the requested increase in permitted NOx emissions, the Project would also become subject to Prevention of Significant Deterioration or PSD (35 IAC Part 204) for NOx. NOx is also regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere and, in 1996, the facility was in an area designated attainment or unclassified for NO_2 air quality. (This area is still attainment or unclassified for NO_2.) However, as related to the NOx emissions of the Project as now requested by the 2022 application, the application does not address the substantive requirements of MSSCAM or PSD for a major modification, much less show that these requirements are fulfilled. The application does not show that for the Project-affected emissions units for which the Lowest Achievable Emission Rate (LAER) and Best Available Control Technology (BACT) should have originally been required for NOx, LAER and BACT are present as required, respectively. by MSSCAM and PSD. For NOx, the application also does not address the requirement of MSSCAM that a major project be accompanied by emission offsets to counterbalance the increase in emissions of the nonattainment pollutant from the project. The application also does not include an analysis for the impact of the project on NO_2 air quality, as required by PSD.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Section 9.1(d) of the Act and the substantive requirements of 35 IAC Part 203 and Part 204 for a major modification (the requirements for LAER, BACT and emission offsets for NOx and an air quality impact analysis for NO_2) would be violated if a revision to Permit 95010001 were issued that increased the permitted NOx emissions of the Project as requested by the 2022 application. This is because the revised NSR applicability analysis for the Project for NOx improperly relies upon decreases in NOx emissions that are neither contemporaneous nor creditable to claim that the Project would continue to not be a major modification for NOx with the increases in permitted NOx emissions that are being requested.

Discussion

Overview

For NOx emissions, the 2022 application for revisions to the Construction Permit 95010001 for the Production Increase Project (Project)[1] does not address or show fulfillment of the substantive requirements of the Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NaNSR) programs related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the 2022 application also does not show fulfillment of

[1] Permit 95010001 was initially issued in January 1996 for a "Production Increase" at the Granites City Works. It provides for increases in the allowable production rates of iron from 2,372,500 to 3,165,000 tons per year and of steel from 2,774,000 to 3,580,000 tons per year. This permit was preceded by Construction Permit 9209014, a permit for increases in production issued in September 1992. That permit provided for increases in the permitted production rate on a monthly average basis for iron from 5,600 to 6,500 tons per day (equivalent to production of 2,372,500 tons per year) and for steel from 6,900 to 7,600 tons per day (equivalent to production of 2,774,000 tons per year).

the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and NaNSR (35 IAC 203.301) for NOx emissions.[2, 3] This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx.[4] The 2022 application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the 2022 application must show for NOx that the relevant substantive requirements of PSD and NaNSR are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and NaNSR would be met for the Project for NOx.

In this regard, the 2022 application requests that the permitted NOx emissions of the casthouse on the blast furnaces and the basic oxygen furnaces be increased by 19.4 and 220.2 tons/year, respectively, for an overall increase of 239.6 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.)[5] The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[6] The requested increase in the permitted NOx emissions of the blast furnaces and

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[2] The basic oxygen furnaces, at which the largest increase in permitted NOx emissions is requested, were not physically modified and would not become subject to requirements for BACT or LAER for NOx even if the Project were a major modification.

[3] The 2022 application also does not include an analysis of alternatives. This analysis would have been required to be included in the original application for the Project if it had been recognized in 1996 that the Project was a major modification for NOx. It is beyond the scope of the revisions of Permit 95010001 that are now requested to address the fact that such an analysis was not originally part of the construction permit application for the Project.

[4] Under the PSD program, the significant emission rate for NOx is 40 tons/year; under NaNSR, since Granite City is not in an area that is classified as serious, severe or extreme nonattainment for ozone air quality, the significant emissions rate for NOx is also 40 tons/year. An increase in NOx emissions or, if the source elects to evaluate the net increase in emissions, a net increase in NOx emissions from a project that is equal to or greater than this rate is considered significant. (35 IAC 204.660 and 35 IAC 203.209.)

[5] In the 2022 application, the increases in the NOx emissions of the blast and basic oxygen furnaces reflect proposed corrections to baseline emissions, as well as increases in the permitted emissions with the project. For the blast furnaces, the application indicates that baseline NOx emissions should be lowered from 15.6 to 4.6 tons/year. For the basic oxygen furnaces, baseline NOx emissions should be raised from 46.94 to 179.8 tons/year. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.")

[6] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

basic oxygen furnaces, 239.6 ton/year combined, would not result in the Project becoming a major modification for NOx. For this purpose, the 2022 application indicates that the overall decrease in NOx emissions from Project-affected fuel burning units would now be 250.3 tons/year, comparing their revised baseline NOx emissions of 956.3 tons/year and future NOx emissions of 706 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) However, the 2022 application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the 2022 application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would not exceed 706.0 tons/year.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for the purpose of a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the 2022 application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The 2022 application proposes to rely upon the decreases in NOx emissions due to these changes, which decreases were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as the analysis does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed separately below, the 2022 application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

Application Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application indicates baseline NOx emissions of 131.8 and 123.2 tons/year from the use of blast furnace gas (BFG) and natural gas, respectively, in Boilers 1 through 12. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) Boilers 1 through 12 are the twelve boilers at the source in 1996 that were addressed by Permit 95010001. Ten of these boilers, Boilers 1 through 10, were shut down in 2009.[7] The 2022 application does

[7] The shutdown of Boilers 1 through 10 was required by Condition 2.6(a) of Construction Permit 06070023, which was originally issued in July 2006. This permit addresses construction of a cogeneration boiler at the facility that would be designed to produce both high-pressure steam to generate electricity and lower pressure process steam. This boiler has been constructed and is in operation. The permitting of

not show that NOx emissions of these ten boilers, as existed in the period prior to 2009, were considered in the "future" NOx emissions with the Project of at most 706 tons/year from the Project-affected fuel burning units. In addition, with regard to Boilers 11 and 12, the two remaining old boilers at the source that continue in operation, flue gas recirculation systems have been installed on these boilers pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to control NOx emissions to facilitate compliance with 35 IAC 217.164. The 2022 application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from Boilers 11 and 12 that are now being achieved with the new control systems, rather than their NOx emissions as previously existed with the Project in the period before these control systems were installed.

The application also indicates baseline NOx emissions of 461 tons/year from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12.[8] In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the 2022 application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[9]

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this new boiler relied upon contemporaneous decreases in NOx emissions from several actions, most notably, a decrease of 558.9 tons/year from addition of low NOx burners to four reheat furnaces. The permitting of the new cogeneration boiler also relied on a 33.41 tons/year decrease in NOx emissions from the shutdown of Boilers 1 through 10 as this eliminated use of natural gas by these boilers. The related application for emissions decreases that were contemporaneous with the new boiler did not rely on any decreases in the NOx emissions of these boilers from use of COG and BFG. This is because "...the boilers shutdowns will not result in any change in the amount of BFG and COG combusted at the Facility." (Application 06070022, Section 3.3.1. "Boilers 1 through 10 Shutdown Emission Calculations," p. 3-7.) The reliance of Permit 06070023 on emission decreases from the shutdown of these boilers is a further impediment to reliance on these decreases in a revised netting analysis for the Project.

[8] For Project-affected boilers, the 2022 application indicates that baseline NOx emissions from usage of COG are addressed only for Boilers 11 and 12. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.") This is likely erroneous since the application for Permit 06070022 indicates that Boilers 1 through 10 also had the ability to use COG.

[9] The 2022 application does reflect increased use of natural gas by Project-affected fuel burning units. The application explains that with the shutdown of the by-product coke oven batteries, COG is no longer available and more natural gas may need to be used (e.g., 2022 application, Section 6.3, Post-Project NOx Emissions Limitations"). Permit 95010001 currently limits annual use of natural gas by the Project-affected fuel burning units to 1,346 million cubic feet. The revised netting analyses in the 2022 application are based on a post-project annual natural gas usage of up to 1,980 million cubic feet (e.g., Tables 5-7, 6-6 and 7-3).

The decreases in NOx emissions that resulted from the shutdown of the coke oven batteries and elimination of COG in 2015 are contemporaneous with any increases in NOx emissions due to the accompanying use of more natural gas. However, these emissions decreases are not contemporaneous relative to the Project, which was undertaken in 1996. In addition, an application for revisions to Permit 95010001 is not an appropriate venue to address the use of more natural gas due to the shutdown of the coke oven batteries. The Project involved increases in production of iron and steel. The Project-affected fuel burning units do not include four slab furnaces that also used COG and now must use more natural gas. Lastly, the consequences of the shutdown of the coke oven batteries on the facility's NOx emissions, including the consequences for the slab reheat furnaces, are the subject of a separate construction permit application, Application 15030001, received March 5, 2015, which application is still pending.

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application.[10] This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the basic oxygen furnaces. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the 2022 application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[11]

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[10] It should be noted that for purposes of applicability of NSR, for the same reasons that the 2022 application understates the net increase in emissions of NOx from Project-affected fuel burning units, the application also understates the increases or net increases in emissions of the Project for purposes of NSR for particulate matter (PM), particulate matter$_{10}$ (PM_{10}) and volatile organic material (VOM), i.e., pollutants other than NOx for which the requested revised permit for the Project would rely upon the increase or net increase in emissions not being significant.

[11] With the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of fuel burning units indicated in the 2022 application are NOx emissions that could have been allowed by this permit in 1996. The future NOx emissions of affected fuel burning units indicated in the 2022 application are less than the baseline NOx emissions, i.e., proposed future emissions of 706 tons/year compared to the claimed baseline of 956 tons/year. However, the Project did not include any elements that would lower the NOx emissions of fuel burning units. Rather, the production of more iron and steel would be accompanied by increased utilization of the blast furnace stoves and boilers as more blast air and steam are generally needed for blast furnaces to produce more iron. Accordingly, in 1996, the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions, as this permit addresses a project that involves use of more BFG and natural gas by Project-affected fuel burning units. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.)

Indeed, the future NOx emissions of the fuel burning units for purposes of any revised netting analysis should be expected to be substantially greater than their baseline emissions. If one assumes that the increases in emissions would be proportional to the permitted increase in iron production, future NOx emissions of the fuel burning units would be expected to increase by roughly 40 percent. If the baseline emissions of these units should have been 956 tons/year, as indicated in the 2022 application, this suggests future emissions of these units with the Project should be about 1,340 tons/year (956 tons/year x 1.4 = 1.338 ~ 1,340 tons/year). Alternatively, absent any decreases in NOx emissions from the twelve boilers and the discontinuation of COG, and disregarding increased use of natural gas in place of COG, the NOx emissions from the Project-affected fuel burning units for purposes of NSR applicability, as of 1996, would be on the order of 1,420 tons/year (Proposed future emissions of 706 tons/year + 131.8 tons/year attributable to use of BFG by the boilers + 123.2 tons/year attributable to use of natural gas by the boilers + 461 tons/year from the discontinuation of the use of COG in the stoves and Boilers 11 and 12 ~ 1,420 tons/year). If so, the calculated change in NOx emissions from Project-affected fuel burning units for purposes of NSR applicability would be a net increase on the order of 460 tons/year (1,420 – 956 = 464), rather than a net decrease of about 250 tons/year.

2. THE DETERMINATION OF BASELINE NOx EMISSIONS IN THE REVISED NETTING ANALYSIS CANNOT BE INDEPENDENTLY CONFIRMED

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d) and 39(a)*.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152**, 201.152*** and 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include data and information supporting the determinations of baseline NOx emissions for certain emissions units in the revised NSR applicability analysis for NOx. In this regard, it is noteworthy that the revised NSR applicability analysis does more than seek increases in permitted NOx emissions of the blast furnace casthouse and BOFs to correct errors in the original application for the Production Increase Project. As explained in the discussion below, the revised NSR applicability analysis now also addresses NOx emissions from burning coke oven gas (COG) in Project-affected units, which the Illinois EPA did not require be addressed in 1996. For the continuous casting operations, the analysis also takes a different approach to use of natural gas and associated NOx emissions. Lastly, the analysis does not reflect a reevaluation of the NOx emission factor used for ladle preheaters. For these units, an emissions factor for use of natural gas in boilers, which likely is not appropriate for the simpler burner systems in preheaters, continues to be used.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* As there are deficiencies in the data and information that is provided in the 2022 application for the baseline NOx emissions of fuel burning units, the revised NSR applicability analysis cannot be relied upon. Separate from Denial Point 1 concerning reliance on NOx emission decreases that are not contemporaneous and creditable, deficiencies in the emission data presented in this analysis are also a reason why this analysis cannot serve as proof that the Production Increase Project would not become a major modification for NOx under NSR with the increases in permitted NOx emissions that are now being requested. Likely or possible deficiencies in the emission data in the revised NSR applicability analysis for NOx in the application need to be resolved or corrected before any revised version of Permit 95010001 is issued that would be based upon a revised NSR applicability analysis for the Project.

Discussion

The new determination of baseline NOx emissions of Project-affected fuel burning units provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, as discussed below, concerns exist with the determination of the overall baseline NOx emissions for the Project.

Baseline Usage of Coke Oven Gas (COG)

As already discussed, the use of coke oven gas (COG) in Project-affected fuel burning units is introduced in the 2022 application for revisions to Permit 95010001.[12] This application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The annual usage of COG in the blast furnace stoves (374 million cubic feet/year) and in boilers (2,211 million cubic feet/year) is simply presented in the revised netting analysis for NOx. (2022 application, Appendix B - Emission Calculations, USS Granite City - 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis). The indicated usages of COG are not accompanied by any documentation or explanation.

Emission Factor for Use of COG in Boilers 11 and 12:

For COG, the 2022 application utilizes a NOx emission factor for Boilers 11 and 12[13] of 404 pounds/million cubic feet of COG.[14] The application states that this factor is based on emission testing conducted on the stack of A Coke Battery (2022 application, Table 6-4. "NOx Emission Factors for Fuel Burning"). The application does not show that it is appropriate to utilize an emission factor developed from the results of emission testing on the combustion stack of a coke oven battery to calculate emissions of a boiler. There are significant differences between combustion of COG as occurs at coke ovens and combustion of fuel in a boiler. At a fundamental level, a combustion stack emits the products of combustion from the heating of coke ovens to the high temperature needed to convert coal into coke. Regenerative heat exchangers are utilized to efficiently achieve this temperature. Boilers 11 and 12 emit the products of combustion from burning fuel to achieve the temperature needed convert water into process steam.[15]

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[12] It should be noted that the introduction in the revised netting analysis for the Project of NOx emissions from use of COG in Project-affected fuel burning units is not acknowledged in the section of the 2022 application in which historical production and operating rates are discussed. Section 6.2.1 of the application, "Historical Throughput Rates," states that "The pre-project actual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 6-3 [Pre-Project Production and Operating Rates for NOx]." This statement is clearly not accurate as the usage of and NOx emissions from COG were not quantified in the 1995 application. Moreover, Table 6-3 does not include information for the historical or baseline usage of COG.

[13] In the 2022 application, there is an inconsistency in the information for the baseline NOx emissions of boilers. In Table 6-5, "Pre-project Actual Emissions and Summary of Changes to Pre-Project NOx Emissions Factors for Affected Emissions Units," baseline NOx emissions of Boilers 1 through 10 do not appear to be addressed since this table shows that baseline emissions are provided for B11 and B12 (Boilers 11 and 12). In Appendix B, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis, baseline NOx emissions appear to be provided for all boilers, as information is shown as being for "boilers."

[14] For the stoves, the revised netting analysis utilizes a lower NOx emission factor of 80 pounds/million cubic feet of COG. The application states that this factor is based on an emission test for which the date is unknown (2022 application, Table 6-4, p. 6-3). As this factor is identical to the NOx emission factor in USEPA's WebFIRE database for burning COG in industrial boilers, this factor can be considered appropriate. (USEPA, Clearinghouse for Inventories & Emission Factors, Emission Factors & AP42, WebFIRE, with search conducted using the term "coke oven gas" in the field under Select options under Source Classification Code. .

[15] Application 15030001, the pending application for a construction permit for use of more natural gas with the shutdown of the by-product coke oven batteries, utilizes an emission factor for use of COG of 80 pounds/million cubic feet for baseline NOx emissions of Boiler 12. This is the NOx emission factor in FIRE for use of COG in boilers. This factor is much lower than 404 pounds/million cubic feet, the factor for COG used in the 2022 application for the baseline emissions of Boilers 11 and 12.

Emission Factor for Use of Natural Gas in Ladle Preheaters:
For use of natural gas, the 2022 application utilizes a single emission factor for NOx emissions from all Project-affected fuel burning units. This factor, 306 pounds/million cubic feet of natural gas reflects the results of emission testing conducted on Boiler 12 when using natural gas. The application does not show that it is appropriate to utilize this emissions factor for ladle preheaters, which are different types of emissions units than boilers. Moreover, the revised netting analysis for NOx in the application erroneously indicates that the estimated baseline NOx emissions of ladle preheaters were "Revised to use current AP-42 emission factor." (2022 application, Appendix B, Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) The current AP-42 NOx emission factor for small boilers (<100 million Btu/hour heat input) without low NOx burners or flue gas recirculation is only 100 pounds/million cubic feet of natural gas. (USEPA, *Compilation of Air Pollutant Emission Factors*, AP-42, Table 1.4-1.)

Emissions from Use of Natural Gas on the Continuous Casting Lines:
Unlike the original application, the 2022 application does not directly address NOx emissions associated with use of natural gas in continuous casting operations.[16] In this regard, this application states:

> The pre-project actual emissions for the Continuous Caster Mold – Caster #1 and Caster 2 process, as presented by National Steel Corporation in the 1995 Application listed NOx emissions from this operation. USS Granite City evaluated this analysis and determined that there is no NOx formation from this operation. Any NOx emissions from this operation are due to combustion of natural gas and are already accounted for under the gaseous fuel burning activities listed above [Section 6.2.2.1, Fuel Burning Emissions Units Emissions (Revised)]. Therefore, in the revised analysis, NOx emissions are not included from this operation.
>
> 2022 application, Section 6.2.2.7, "Continuous Caster Mold Process Emissions (Revised)."

This is problematic for several reasons. First, the 2022 application does not address the NOx emissions of the natural gas-oxygen torches used in the slab cutting and slab ripping processes, which are part of the continuous casting lines.[17] Second, as the application indicates that NOx emissions are present from the mold processes on the casting lines, the application does not show that the same NOx emission factor is appropriate for this use of natural gas as utilized for ladle preheaters or, alternatively, separately account for the NOx emissions from use of natural gas in the casting process. Lastly, the 2022 application does not identify either the caster processes or

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It should be noted that Application 15030001 does not include a NOx emission factor for Boiler 11 for COG. This is likely because Boiler 11 did not use COG in the baseline period used for Boilers 11 and 12 (January 2013 through December 2014) for the net increase analysis in this application.

[16] As reflected in Permit 95010001, the original permitting of the Project accounted for NOx emissions of 89.5 tons/year from Caster Molds – Casting but did not account for any NOx emissions from Slab Cut-Off and Slab Ripping, for which only particulate emissions were addressed.

[17] Alternatively, if NOx is not formed by the torches given they are supplied with oxygen, the application does not confirm that usage of natural gas by the torches was not considered when the baseline NOx emissions from use of natural gas in Project-affected fuel burning units were determined.

the torches as units whose use of natural gas and resulting NOx emissions would be addressed with the emissions of other Project-affected fuel burning units (e.g., 2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units").

3. THE APPLICATION LACKS INFORMATION FOR THE ACTUAL NOx EMISSIONS OF PROJECT-AFFECTED FUEL BURNING UNITS (LACK OF INFORMATION RELEVANT TO NETTING)

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152***, 201.160(a), 203.123, 203.128, 203.208*, 204.400, 204.550* and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The revised Netting Analysis for NOx in the 2022 application does not show that the value for the maximum future NOx emissions from certain fuel burning units, 706 tons/year, in aggregate, is appropriate for purposes of NSR. That is, the 2022 application does not show that 706 tons/year represents the post-project NOx emissions of these units as could have been addressed when Permit 95010001 was originally issued in 1996 if emissions from burning of COG in these units when operating at the levels of iron and steel production that were permitted had been considered. The 2022 application also does not show that the actual NOx emissions of the subject units in the period from 1996 to the present have not exceeded 706 tons/year. In other words, the application does not show that a value for future NOx emissions of the subject units of 706 tons/year does not really represent "future" emissions beginning at the present time. Otherwise, the value for future NOx emissions in the application improperly takes credit for reductions in the NOx emissions of the Production Increase Project (Project) that were not originally part of the Project. When the Project was initially issued in 1996, the NOx emissions from use of blast furnace gas (BFG) and natural gas in 12 boilers at the Granite City Works was addressed. When revaluating applicability of NSR for the Project for NOx with the increases in permitted emissions requested by the application, it is not appropriate to only address the potential NOx emissions of the two boilers that now remain. Although the other ten boilers are now shutdown, they were operating and emitted NOx in 1996. Similarly, in 1996, coke oven gas (COG) was used as a fuel and burned at the facility. With the shutdown of the two by-product recovery coke oven batteries at the facility, COG is no longer being produced. The NOx emissions of the fuel-burning units that formerly burned COG are now lower than they were in 1996 since natural gas is used to make up for the heat input to the units previously provided by COG. (Compared in terms of pounds of NOx per million Btu of fuel heat input, the NOx emissions from use of natural gas as a fuel are generally lower than those from use of COG.) However, when revaluating applicability of NSR for the Project for NOx with the increases in permitted emissions now requested, it is not appropriate to evaluate the NOx emissions of the units that formerly used COG as they now exist and to ignore the fact that in 1996 these units did use COG and their potential NOx emissions were higher. Again, as touched on in Denial Point 1, the difficulty is not that the future NOx emissions of the subject units may be lower compared to

what may have been possible for their permitted NOx emissions in 1996. The difficulty is that the revised NSR applicability analysis for NOx in the 2022 application attempts to rely on this "post-project" reduction in the NOx emissions of these units to make up for the increases in permitted NOx emissions of the blast furnace casthouse and BOFs that are requested.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* It would be improper for the Illinois EPA to issue a revision to Permit 95010001 that is based on the NSR applicability analysis for NOx in the 2022 application that is not consistent with the provisions of the NSR rules governing such analyses. This would be the case if the value/proposed limitation for maximum future NOx emissions of the subject units in the application was relied upon for issuance of a revision to Permit 95010001 and this value/proposed limitation does not reflect the potential emissions from the subject units with the Project, as required by 35 IAC 203.208 and 204.550 In other words, it would be improper for a revised permit to be issued that reflects current circumstances for the subject units if this reflects NOx emissions that are lower than could have properly been allowed in 1996.

Discussion

The 2022 application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

3A. THE APPLICATION LACKS INFORMATION FOR THE ACTUAL NOx EMISSIONS OF PROJECT-AFFECTED FUEL BURNING UNITS (LACK OF SUPPORTING INFORMATION)

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

!. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*, *201.152*****,35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The amount in the 2022 application for the maximum future NOx emissions from certain fuel burning units, 706 tons/year, in aggregate, is not accompanied by supporting information but is simply presented. The application does not explicitly list the various units whose NOx emissions are being addressed and describe the nature of the various units relative to the emissions of NOx from burning fuel in the units. Data is not provided for the maximum annual amounts of fuels burned in these units. Data is also not provided for the emission factors used to calculate annual emissions, the sources or basis of those factors, and why those factors should be considered representative of the NOx emissions of the various types of units that are being addressed.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include information that is necessary to allow the Illinois EPA to rely upon the future maximum NOx emissions of the subject units, presumably the fuel burning units affected by the Production Increase Project, being no more than the stated amount, or issue a revised permit that limits NOx emissions to the stated amount. The missing information is needed so that the Illinois EPA and other interested parties can independently review the methods, data and calculations by which the representation in the 2022 application for maximum future NOx emissions of the subject units was determined. This information is also necessary if the Illinois EPA is to place appropriate conditions in a revised permit requiring US Steel to track the NOx emissions of the subject units, so as to verify that that the future NOx emissions do not exceed the amount stated in the application or other appropriate amount. In this regard, it is significant that the emissions of many of the Project-affected fuel burning units at the facility, i.e., the blast furnace stoves, the BFG gas flares, and various process heaters, cannot be directly determined because these units are not amenable to emission testing.
Note that this denial point addresses the lack of supporting information for the maximum future NOx emissions of the subject units that is stated in the 2022 application. Denial Point 3, above,

addresses the time period that should be reflected in the determination of maximum future emissions for purposes of evaluating applicability of NSR.

(A further discussion is not provided for this denial point, as it was not present in the Initial Draft Denial Letter. Following the close of the public comment period on the Initial Draft Denial Letter, the Illinois EPA realized that the 2022 application is also deficient as the value it provides for future NOx emissions of Project-affected fuel burning units is not accompanied by supporting information.)

4. FOR THE BASIC OXYGEN FURNACES, THE 2022 APPLICATION DOES NOT ADDRESS THE POTENTIAL FOR UNCAPTURED EMISSIONS OF NOx, VOLATILE ORGANIC MATERIAL (VOM) AND CARBON MONOXIDE (CO) THROUGH THE ROOF MONITOR FOR THESE FURNACES

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*** and 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include information for the uncaptured emissions of NOx, volatile organic material (VOM) and carbon monoxide (CO) for the BOFs that occur through the roof monitor on the BOF shop, i.e., the building in which the BOFs are located. The existences of emissions of NOx, VOM and CO from the BOFs is well-established from testing of the stacks of the control systems for the particulate emissions of the BOFs. This testing shows emissions now occur through both the older ESP control system for the BOFs and the baghouse that was installed within the last ten years to improve control of particulate emissions from charging and tapping of the BOFs. These control systems may capture most of the emissions of the BOFs, achieving overall capture efficiencies that engineering design suggests may approach 100 percent. However, the 2022 application does not contain technical or engineering information showing that all emissions of the BOFs are now being captured and no emissions occur through the roof monitor or other openings in the BOF shop. Complete capture of the emissions of the BOF is also not required by applicable regulations. For example, under the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities ("Iron and Steel NESHAP" or "NESHAP"), 40 CFR 63 Subpart FFFFF, Table 1, the opacity of emissions from the roof monitor and other openings in the BOF shop at the facility is only limited to no more than 20 percent, on a 3-minute average.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information addressing uncaptured emissions of NOx, VOM and CO from the BOFs, the 2022 application would not provide complete information about the emissions of the BOFs. For NOx, absent information for these uncaptured emissions, if US Steel were to submit a corrected, revised NSR applicability analysis to show that the Project would not be a major modification for NOx with increases in permitted emissions as requested, that analysis would not be complete. For VOM, for which the 2022 application also requests an increase in permitted emissions, the revised NSR applicability analysis to support such a revision is not complete. For CO, for which revisions to the PSD approval provided by Permit 95010001 are requested for emission units other than the BOFs, the updated air quality impact analysis for CO required under the PSD rules would not reflect a complete emissions inventory for the existing sources of CO emissions at the Granite City Works.

Discussion

For the basic oxygen furnaces, consistent with the original permitting of the Project, the 2022 application only quantifies stack emissions of NOx, VOM and CO. For these furnaces, the application does not address uncaptured emissions of these pollutants. (For these furnaces, the 2022 application does address uncaptured emissions of particulate and lead[18] for which Permit 95010001 limits emissions of these pollutants from the "BOF [Basic Oxygen Furnace] Roof Monitor," (Permit 95010001, Condition 18 and Table 2, Item 2)).

The revised netting analyses for NOx and VOM in the 2022 application assume that all emissions of these pollutants from the basic oxygen furnaces are now captured. That is, with the installation of the new baghouse control system on the furnaces to improve control of particulate emissions from the charging and tapping processes, all NOx and VOM emissions of these furnaces that originally were not captured and were emitted through the roof monitor now are captured and are emitted through the stack on the baghouse system. For example, as related to emissions of NOx, the application explains,[19, 20]

> At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF Shop roof monitor. No information was available at the time about the NOx emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. NOx emissions testing for the BOF Shop baghouse completed in the 2019-2020 time frame shows an average NOx rate of 0.0075 lb/ton for the BOF Shop Baghouse Stack. USS Granite City added the BOF Shop secondary NOx emission baseline based on the result of the stack test for the BOF Shop Baghouse stack.

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[18] The uncaptured lead emissions of the basic oxygen furnaces are summarily addressed by the 2022 application. In Section 2.2, this application states that changes to the current limits for lead emissions set by Permit 95010001 are not requested. As such, this application acknowledges the current limits for lead emissions in Permit 95010001, including the limits for uncaptured emissions from these furnaces that are emitted through the roof monitor (Permit 95010001 Condition 18 and Table 2, Item 2). Revisions to these limits are not requested.

[19] The 2022 application addresses uncaptured emission of VOM of the basic oxygen furnaces in a similar manner in Part 7 of the application. Refer to the second Section 7.2.2.1 in the application on p. 6-4, "BOF Baghouse – Secondary Emissions (New)."

[20] As reflected in this excerpt, the 2022 application refers to the NOx and VOM emissions of the baghouse system as "secondary emissions." This is inconsistent with the meaning of this term under the NESHAP for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, which only restricts this term to emissions of particulate matter. It is also misleading as it does not distinguish between captured and uncaptured emissions and suggests that capture of these emissions with a baghouse is sufficient to eliminate concerns for the existence of uncaptured emissions.

In this regard, as defined at 40 CFR 63.7852, "*Secondary emissions* mean **particulate matter** emissions (emphasis added) that are not controlled by a primary emissions control system, including emissions that escape from open and closed hoods, lance hole openings, and gaps or tears in the primary emission control system." For secondary emissions, 40 CFR 63 Subpart FFFFF recognizes the existence of both captured or stack emissions and uncaptured emissions, as would occur through a roof monitor. For basic oxygen furnaces, as well as setting emission limits for particulate emissions from primary control systems, this NESHAP also sets separate emission limits for 1) the particulate matter emissions from a control device used for the collection of secondary emissions, and 2) the opacity of secondary emissions that exit any opening in the furnace shop or other building housing a basic oxygen furnace.

2022 application, Section 6.2.2.6. "BOF Baghouse – Secondary Emissions (New)."

This assumption made by the 2022 application for uncaptured emissions of NOx and VOM of the basic oxygen furnaces, i.e., that all emissions that were formerly uncaptured are now emitted through the baghouse system, is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were overlooked in the original permitting for the Project.[21]

Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing does not address the level of capture being achieved by the baghouse system. Rather it shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. (2022 application, Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis and Revised VOM PSD Net Emissions Increase Analysis.) For NOx, the application indicates baseline captured emissions of 179.8 tons/year, of which, based on the measured emissions from the new baghouse system, as much as 5.1 percent, i.e., 9.1 tons/year, would have been uncaptured in 1996; captured VOM emissions are 26.6 tons/year, of which as much as 15.8 percent, i.e., 4.2 tons/year, would have been uncaptured emissions in 1996. However, instead of assuming that all NOx and VOM emissions are now captured, it would not be unreasonable to

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[21] In the original permitting of the Project, the uncaptured emissions of NOx and VOM from the basic oxygen furnaces appear to have been considered negligible. This was likely because the emissions of NOx and VOM of the furnaces were all attributed to the refining process, rather than to charging and tapping. During the refining step in a basic oxygen furnace, oxygen is injected into the molten iron charged to a furnace, which removes carbon from the iron by oxidation, converting the iron into steel. The oxidation of the carbon also provides heat to facilitate the melting of the scrap metal that is also charged to the furnace, so molten metal in the appropriate temperature range can be tapped from the furnace.

In 1996, the basic oxygen furnaces were only controlled by the electrostatic precipitator (ESP) system. While the ESP system only reduces or controls emissions of particulate and not emissions of NOx or VOM, the ESP system does capture NOx and VOM from these furnaces. As the capture efficiency for particulate emissions from refining is assumed to be at least 99.9 percent, it was also reasonable to assume that the ESP system also would achieve at least 99 percent capture for NOx and VOM. With these assumptions, i.e., that NOx and VOM are only generated during the refining step and at least 99.9 percent capture of these emissions is achieved by the ESP system, given the limits on emissions of NOx and VOM from the stack of the ESP set by Permit 95010001, i.e., 69.63 and 10.74 tons/year, respectively, the uncaptured emissions of NOx and VOM from these furnaces would have been projected to be no more than 0.07 and 0.01 tons/year, respectively,. (For example, for NOx, 69.63 tons/year ÷ (99.9 ÷ 100.0) x (100.0 – 99.9) ÷ 100.0 = 0.07 tons/year.) For purposes of determining applicability of NSR to the Project. the increases in NOx and VOM emissions of the furnaces with the Project would be less because these calculations for uncaptured emissions address all emissions of the furnaces, both baseline emissions and the increases in emissions from the Project.

Even with the correction to the emission data for the basic oxygen furnaces indicated in the 2022 application, if all NOx and VOM emissions of these furnaces were actually attributable to the refining step, uncaptured NOx and VOM emissions would still be very small. For example, the potential NOx emissions from the stack of the ESP are now shown to be 380.0 tons/year. With capture of at least 99.9 percent of the NOx by the ESP system, the potential uncaptured NOx emissions from these furnaces would still only be an additional 0.38 tons/year.

assume that the new baghouse system improved capture of the emissions from charging and tapping such that the levels of captured emissions from the baghouse stack and the uncaptured emissions through the roof monitor are now identical.[22, 23]

Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the 2022 application to the particulate and lead emissions of these furnaces, for which it is assumed that there are uncaptured emissions that still occur through the roof monitor. In particular, the 2022 application requests that the revised permit establish prescribed emission factors for the particulate emissions of the basic oxygen furnaces that occur through the roof monitor.[24] For example, for pre-project actual emissions of the roof monitor, Section 5.2.2.7 of the application explains the following,[25]

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[22] It is reasonable to assume that the new baghouse that was installed to improve control of particulate emissions from charging and tapping of the basic oxygen furnaces reduced these emissions to less than half of their previous amounts. For example, the nominal control efficiency for charging and tapping went from 95 percent with only the ESP control system to 97.5 percent with the addition of the baghouse system. With this assumption, the potential NOx and VOM emissions from the baghouse stack from charging and tapping would be estimated to be about the same as the potential uncaptured emissions from charging and tapping that still occur through the roof monitor, with both being about 2.5 percent of the total emissions from the furnaces. The remainder of the NOx and VOM emissions from charging and tapping continue to occur through the ESP stack (95 percent of the total emissions of the furnaces).

[23] With this assumption, the potential NOx emissions of the basic oxygen furnaces with the Project would become 420.4 tons/year, rather than 400.0 tons/year (400.0 tons/year x (100% + 5.1%) ÷ 100% = 420.4 tons/year. The potential VOM emissions of these furnaces with the Project would become 52.1 tons/year, rather than 45.0 tons/year (45.0 tons/year x (100% + 15.8%) ÷ 100% = 52.1 tons/year.

[24] The 2022 application requests that Permit 95010001 be revised to set "prescribed emission factors" for the emissions of certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the basic oxygen furnaces, which are also referred to as the emissions through the roof monitor of the basic oxygen furnace shop). For those units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 that address emissions in pounds/ton of input or production or in pounds/hour. For convenience, these provisions in the permit are generally referred to as "emission factor limits." The usage of this term extends to the provisions of the permit that address emission of lead that are in pounds per hour. In this regard, in Permit 95010001, Table 2, these limits for lead emissions are listed under the heading of "Emission Factor," along with the limits in pounds per ton of production for emissions of other pollutants.

Unlike the emission factor limits currently in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors that would be established in a revision to Permit 95010001 would not be enforceable. Instead, prescribed emission factors would be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit. The appropriateness of the various prescribed emissions factors that are selected would be a matter that would be considered during the processing of the revisions to Permit 95010001. Given the role of prescribed emission factors in determining compliance with annual emission limits set by the permit, it is expected that prescribed emission factors would only be set for units for which emissions testing is not feasible or is not warranted given the low levels of annual emissions predicted by engineering analysis and calculations. It is also expected that, as it is practical to do so, prescribed emission factors would be conservative, reflecting the maximum rates of emissions that could occur during the routine, compliant operation of emissions units.

[25] For pre-project actual emissions of particulate matter of the basic oxygen furnace through the roof monitor, Section 5.2.2.7 of the 2022 application explains the following,

> The BOF roof monitor actual emissions were calculated using the information from AP-42 Chapter 12.5 and AIRS (Aerometric Information Retrieval System) database. For pre-change actual PM and PM_{10} emissions, National Steel used 90% capture efficiency during the charging and tapping steps and

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing prescribed emission factors for the BOF Shop Roof Monitor for which emissions testing is not feasible.[Footnote 33] For BOF Roof Shop Monitor, use PM emissions factor of 0.0296 lb/ton and filterable PM_{10} emission factor of 0.0198 lb/ton.
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> Footnote 33: PM and PM_{10} emissions factors are appropriately determined from the results of emission testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the BOF ESP and baghouse, Desulf/Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy.
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> 2022 application, Section 5.5.2.2. "Prescribed Emission Factors for Certain BOF Shop Operations."

The fact that there are emissions of NOx and VOM from the basic oxygen furnaces that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. [26] In this regard, the 2022 application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions, but the application does not propose any such revisions for the basic oxygen furnaces or explain why such revisions are not needed.[27]

> 99% capture efficiency during the refining step for BOP operations. A detailed description of the baseline roof monitor PM and PM_{10} emission factors is provided in Appendix C of the 1995 Application. For the BOF operations, per particle size distribution in AP-42 Table 12.5-2, 67% of PM is PM_{10}. No changes are necessary for this emission factor.
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> 2022 application, Section 5.2.7.7, BOF Roof Monitor Emissions (No Change)

[26] For the basic oxygen furnaces, uncaptured emissions of CO should generally be expected to be much greater than the uncaptured emissions of NOx or VOM because the permitted stack emissions of CO of these furnaces are much greater. In this regard, Permit 95010001 limits the CO emissions from the stack of the ESP system for these furnaces to 16,097 tons/year. (The 2022 application does not request an increase in this limit.) If only 99.9 percent capture of CO is assumed by the ESP system, the potential uncaptured CO emissions of these furnaces would be 16.1 tons/year. (16,097 tons/year ÷ {99.9 ÷ 100.0} x {100.0 – 99.9} ÷ 100.0 = 16.1 tons/year CO.) Of course, the capture efficiency of the ESP system for CO could be higher than the efficiency for NOx or VOM if CO is only formed during the refining step when oxygen is actually being injected into the furnace and not during the entire refining step. However, one approach to the revision of Permit 95010001 would be to conservatively assume that the capture efficiency of the ESP system for CO is the same as its capture efficiency for particulate.

[27] The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the basic oxygen furnaces, addressing the combined stack emissions of the ESP and the new baghouse, to the current limits for the CO emissions of the furnaces in Permit 95010001, which limits currently apply only to emissions from the stack of the ESP.

5. THE EMISSION INVENTORY FOR THE SOURCE USED IN THE AIR QUALITY ANALYSIS FOR CARBON MONOXIDE (CO) OMITS CERTAIN CO EMISSIONS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152***, 201.160(a), 204.330, 204.1110 and 204.1130.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The "Air Quality Modeling Report," Appendix C of the 2022 application, which provides the "Source Impact Analysis" required under PSD, is deficient because it does not address certain CO emissions of units that are at or were at the Granite City Works. In particular, the uncaptured CO emissions of the blast furnace cast house and the BOFs (i.e., the emissions that occur from the roof monitors and other openings in structures) are not addressed. The CO emissions of the two by-product recovery coke oven batteries formerly at the Granite City Works, which were in operation in 1996, are also not addressed.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* As the source impact analysis in the 2022 application does not address certain CO emissions, it does not fully address the impact of the Production Increase Project, with increases in permitted CO emissions as now requested, on ambient air quality for CO. This analysis also does not address the impact of the Project on CO air quality as would have been determined in 1996 if the Project had been permitted for more CO emissions, as is now being requested by the 2022 application.

Discussion

The results of the analysis of the impacts of the Project on ambient air quality for carbon monoxide (CO) cannot be relied upon because the inventory for the CO emissions of the source with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The 2022 application includes an air quality analysis because the Project was originally permitted as a major modification for CO under the Prevention of Significant Deterioration (PSD) program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted.[28] To support

[28] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse on the blast furnaces, for which CO was not addressed in the original permitting for the project (2022 application, Section 4.4, p. 4-4). This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than Boilers 1 through 10, which are now retired (2022 application, Sections 4.2 and 4.3, pp. 4-2 and 4-3). For the fuel burning units, US Steel has determined that the emission factors for CO

this request, an air quality analysis for CO must be part of the application pursuant to Illinois' PSD rules, 35 IAC 204.1130, Air Quality Analysis, since the request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program.

Uncaptured Emissions from the Casthouse on the Blast Furnaces

The air quality analysis in the 2022 application does not address the uncaptured emissions of the casthouse (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs"). The application indicates potential CO emissions of 13.6 tons/year from the roof monitor on the casthouse on the blast furnaces (2022 application, Section 4.4). These "uncaptured" CO emissions, which are not captured by the baghouse systems on the casthouse, must be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to provide for more CO emissions from the Project.

Uncaptured Emissions from the Basic Oxygen Furnaces

The air quality analysis in the 2022 application does not address uncaptured emissions of the basic oxygen furnaces. (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs.") As discussed earlier, the 2022 application does not address uncaptured emissions from these furnaces. The application also does not explain why uncaptured emissions would not be present as the application does not show 100 percent capture of the emissions of these furnaces by the control systems for emissions of particulate. As there are uncaptured CO emissions from these furnaces, these emissions must also be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to accommodate additional CO emissions from the Project.

By-product Coke Oven Batteries

The 2022 application does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the source. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. On the other hand, the analysis addresses CO emissions of emission units that did not exist in 1996, as this analysis addresses the emissions of the heat recovery coke ovens adjacent to the Granite City Works, which were built and are now operated by Gateway Energy & Coke. [29]

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utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas used in the blast furnaces stoves, understated CO emissions.

[29] The modelling in the air quality analysis did address certain newer units, which came into operation after the Project in 1996. In particular, the analysis addressed the CO emissions of the new coke oven batteries adjacent to the Granite City Works that are owned and operated by Gateway Energy & Coke. However, modeling of the CO emissions of new units would only compensate for the CO emissions of existing units if the new batteries were direct, in-kind replacements of the shutdown units, which is not the case. This is not the case. The batteries that were shut down by US Steel were by-product recovery batteries. They recovered chemicals from the off-gas from the coking process (e.g., benzene, toluene and naphthalene, with the gas then used as fuel for heating the coke ovens and in certain other units at the source. Gateway's batteries are heat recovery batteries, in which the off-gas from coking is combusted in

the ovens and the heat is used to make steam and generate electricity. Moreover, the new batteries and the old batteries both operated for a period of several years before US Steel shut down its batteries.

5A. ISSUES WITH THE BACKGROUND AIR QUALITY USED IN THE AIR QUALITY ANALYSIS THE EMISSION INVENTORY FOR THE SOURCE USED IN

(Note: In the Initial Draft Denial, this denial point, Denial Point 5A, was not addressed separately but was instead addressed as part of Denial Point 5. This deficiency is now being addressed separately for ease of understanding. This deficiency relates to the value for background ambient air quality used in the CO air quality analysis rather than deficiencies in the inventory of sources (i.e., the compilation of emissions units and emission data) used in the dispersion modeling in the air quality impact analysis for CO.)

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d) and 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 204.330, 204.1110 and 204.1130.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The "Air Quality Modeling Report," Appendix C of the 2022 application, which also provides the "Air Quality Analysis" required under PSD, is deficient. As related to baseline ambient air quality for CO, this report does not address baseline ambient air quality as existed at the time that the Production Increase Project was initially permitted. It also does not address ambient air quality as it presently exists. Rather, a value for background air quality from ambient monitoring conducted in 2016 through 2018 is used. This does not represent either air quality in the period before the Project was initially permitted or air quality at the present time. While the monitoring station in East St. Louis that was the source for the value selected for background air quality ceased operation in 2019, the Missouri Department of Natural Resources continues to conduct ambient monitoring for CO at a site in St. Louis. (In this regard, the 2022 application, p. 4-5, indicates that "There are many existing ambient CO monitors within the 100 miles of the facility (Figure 4).") The 2022 application does not justify use of a value for background ambient air quality that is not representative of the period when the Project was initially permitted. Then, if this can be justified, the 2022 application does not explain why it is appropriate to use a value for background air quality taken from ambient monitoring conducted over five years ago.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested*: Because of the issues with the value for baseline air quality used in the "Air Quality Modeling Report" in the 2022 application, as discussed above, it would not be proper to rely on the results of this report to issue a revised permit what would provide for increases in permitted CO emissions as requested by the 2022 application.

Discussion

In addition [to the deficiency addressed in Denial Point 5], the air quality analysis in the application uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.[30]

[30] Under the PSD program, the air quality analysis for a project whose modelled maximum impact(s) by itself on air quality for a pollutant are above certain specified concentration(s) or "significant impacts levels" under the PSD program must also consider "background air quality." This accounts for the contribution to ambient air quality of mobile sources (e.g., cars, trucks and buses) and of other sources (e.g., residential and commercial heating), which contribution cannot be determined as part of the computerized dispersion modelling for discrete emission units performed as part of the analysis. The air quality analysis in the 2022 application shows that the maximum air quality impact of the Project with the requested increases in CO emissions would continue to be above the significant impact level for CO on an 8-hour average. (In the original air quality analysis, the Project's impacts were significant for CO on both a 1-hour and an 8-hours average.) The value for background in the current air quality analysis is based on data collected at an ambient air monitoring station in East St. Louis operated by the Illinois EPA. If US Steel shows that the air quality analysis for the revision to Permit 95010001 should address current ambient air quality for CO, the value for background air quality in the analysis should be updated. Since the Illinois EPA discontinued ambient monitoring for CO at its East St. Louis monitoring station in 2020, the new value for background would likely need to be based on data collected at an appropriate monitoring station in Missouri operated by the Missouri Department of Natural Resources.

It should be noted that the values for background used in the original air quality analysis were likely conservative, as they were based on data from a now retired monitoring station in Granite City that was less than a third of a mile from the Granite City Works. Given the location of that station, the ambient air quality data collected at that station may have included the contribution to air quality of units for which modelling was also conducted, so that the original analysis effectively counted the impacts of those units twice. Thus, it is reasonable for the current air quality analysis to use value(s) for background air quality based on data collected at a monitoring station other than the one that was originally used.

6. SCOPE OF PROPOSED GROUP EMISSION LIMITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not show that certain proposed collections of emission units for the "group limits" for annual emissions of particulate, NOx and VOM that are generally requested are appropriate. In this regard, the 2022 application does not propose limitations that would only apply to the annual emissions of particulate of the casthouse for the two blast furnaces. The application also does not propose limitations that would apply only to the annual particulate emissions of the two BOFs. These are principal emission units at the Granite City Works. For the casthouse, the 2022 application does not show that that it would be unreasonable or inappropriate for Permit 95010001 to continue to have limitations for annual emissions of particulate that are directly enforceable independent of emissions of the other, lesser units involved in production of iron (i.e., the charging of the blast furnaces and slag pit operations). (As the application does not indicate any NOx or VOM emissions from these lesser operations, it is unclear whether group limits are actually being requested for blast furnace operations for NOx and VOM.) Similarly, for the BOFs, the 2022 application does not show that it would be unreasonable or inappropriate for Permit 95010001 to continue to have limitations for annual particulate emissions that are directly enforceable independent of the emissions of other, lesser units involved in making steel (i.e., the removal of sulfur from the molten iron, the skimming of the resulting slag from the surface of the iron in the ladle, and the ladle metallurgy operations after the BOFs). (The application does not actually indicate any NOx emissions from these lesser operations; for VOM, the only lesser unit identified with emissions is the skimming of slag.) While the 2022 application points to three construction permits for facilities issued by other permitting authorities as support for the proposition that limitations on annual emissions that apply to both principal units and lesser units are appropriate, the 2022 application does not show that the circumstances of the Granite City Works are such that those other permits should serve as precedents for the requested revisions of Permit 95010001. Variability in utilization or activity was an inherent aspect in the basic design or purpose of those three facilities and led to the approach to the emissions limitations that were set for those facilities. In this regard, one facility involved a fleet of sea-going vessels engaged in exploration for petroleum. The second facility, "the first of its kind," would be developed to make fuel ethanol from processed municipal waste and sewage sludge. (It may also be relevant that the construction permit for this facility, and as well as the permit for a fleet of vessels that would conduct offshore exploration for petroleum, both limited emissions so that the facilities would not be major sources for purposes of NSR.) The third facility was being developed as a peaking power plant, to operate mainly when other

sources of electricity, including wind and solar power, could not fully satisfy the demand for electricity. Moreover, this last permit sets limitations for the annual emissions of a group of identical generating units. As such, this permit does not provide support for setting limitations for a collection of disparate emission units. In summary, the 2022 application does not request revisions to Permit 95010001, that would continue to separately limit the annual particulate emissions of the blast furnace casthouse and the annual emissions of the two BOFs by themselves.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* If a revision to Permit 95010001 were issued without limits that independently apply to the emissions of the blast furnaces casthouse and to the emissions of the two BOFs, the 2022 application would not show the limits on annual emissions established in such revised permit would serve to restrict the emissions of the casthouse and the two BOFs as a practical matter. In this regard, as US Steel is applying for revisions to emission limits that are currently in Permit 95010001, it is obliged in its application to adequately explain and justify the revisions to the current emission limits that it is requesting. The three permits cited by US Steel in the 2022 application do suggest that permit limitations for the annual emissions of emission units that are accompanied by appropriate operational and/or emissions monitoring may now be considered acceptable as being enforceable as a practical matter without associated emission factor limits, i.e., limits on emission of pollutant(s) in pounds per ton of production or throughput, pounds per million Btu fuel heat input or pounds per hour. However, these permits do not show that the stringency of the current limits for the annual emissions of principal emissions units at the Granite City Works, a facility with substantial emissions in an urban area, should generally be relaxed by setting revised limits that would now apply to emissions of both principal unit(s) and other lesser units, as is proposed by the 2022 application.

Discussion

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate.[31, 32] In particular,

[31] For PM, PM_{10}, NOx and VOM (i.e., pollutants other than sulfur dioxide (SO_2), carbon monoxide (CO) and lead), the 2022 application requests that the revised permit not include the provisions in Permit 95010001 that the Illinois EPA considers would limit emissions of individual "processes" in pounds/ton of production or throughput and in tons/year. These provisions were set to ensure that the Project would not be a major modification for purposes of New Source Review (NSR). The removal from Permit 95010001 of the "emission factor limits" which limit emissions of various process operations relative to their production or throughput, would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, prior to issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing emission factors were considered to constitute enforceable limits on emissions. This was done

the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two basic oxygen furnaces. These are principal emission units at this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two basic oxygen furnaces to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the basic oxygen furnaces should not both continue to be limited individually.[33]

In this regard, the 2022 application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted (2022 application, Section 3, "Discussion of Permit Conditions used to Restrict PTE [Potential to Emit]). The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued

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in the Illinois EPA's "Statement of Basis for a Planned Revision of the Clean Air Act Permit Program (CAAPP) Permit for: U. S. Steel Corporation, Granite City Works, 20th and State Streets, Granite City, Illinois," of March 2011, pages 20 through 26. That these provisions set enforceable limits was then recognized by the USEPA in the Administrator's subsequent order of December 3, 2012, "In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056," Petition Number V-2011-2, pages 7 through 9).

[32] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes, the 2022 application requests "group limits" for the annual emissions of groups of related emission units. For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period. The requested limits would theoretically be less stringent than the current limits as US Steel could potentially compensate for any "overage" of emissions by unit(s) in a group of units with lower levels of emissions from other units in the group.

Incidentally, in these appeals, US Steel only challenges the emission factor limits for "processes," such as the casthouse, the basic oxygen furnaces, continuous casting operations, and discrete material handling operations. These appeals do not challenge the emission factor limits for fuel burning units affected by the Project. Those limits do not restrict the emissions of individual units or groups of similar units. Instead, they separately restrict the emissions from use of different fuels, i.e., blast furnace gas, natural gas and oil.

[33] In light of the construction permits issued by other permit authorities cited by the application as support for group limits, it would seem acceptable for a revised permit to set group limits for the emissions units or operations that do not qualify as principal units. For example, for the production of iron, a revised permit could set limits for the overall emissions from charging the blast furnaces and the slag pits. Alternatively, limits specifically for the emissions of the casthouse for the blast furnaces and the basic oxygen furnaces, i.e., the principal units at the facility for iron and steel production, could be accompanied by group limits for the overall emissions of these principal units and the other, "non-principal" units in these areas of the facility. For example, limits could be set for both emissions of the casthouse and for the emissions of the casthouse, charging of the blast furnaces, and the slag pits.

outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[34, 35] However, the 2022 application does not show that the specific circumstances of the Project are such that the current limits for annual emission of the principal emission units should be replaced with group limits that apply to the combined emissions of principal emission units and other lesser emission units.[36] The circumstances of the Granite City Works are not the same as those presented by the cited permits. US Steel's Granite City Works is a manufacturing facility at which iron is produced from iron ore in blast furnaces and steel is produced from molten iron and scrap metal in basic oxygen furnaces. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed

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[34] The 2022 application, Appendix E - "Copies of EPA Determinations," contains two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[35] In a footnote, the 2022 application also refers to the USEPA's order responding to a petition to object to a Title V permit issued for a facility in Middletown, New York proposed by Masada (USEPA, Order, May 2, 2001, *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00001, Issued by the New York State Department of Environmental Conservation, Petition No.: II-2000-07.) As explained by US Steel in the application, in this order, the USEPA upheld the,

> ...use of annual emission caps with a rolling cumulative total methodology and rejected petitioners' "concerns that the permit appears to rely on after-the-fact monitoring, rather than engineering practices, test data or vendor guarantees" to establish restrictions on PTE. U. S. EPA based its findings on the fact that "[i]f the source has no room to operate under the PTE emission limiting cap, it must cease operation or face a violation" and that "all PTE limits rely on after the fact monitoring of some kind."
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> 2022 application, Footnote 11.

[36] For the casthouse on the blast furnaces, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the casthouse baghouse (i.e., the main baghouse for the casthouse), the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited, other than CO, for the permit to restrict the overall emissions of the pollutant from the casthouse, rather than to individually limit the stack emissions of each control system and uncaptured emissions. The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the BOFs.

For the basic oxygen furnaces, the current permit separately addresses emissions of particulate and lead from the stack of the ESP and the roof monitor (uncaptured emissions.) For these furnaces, it would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of the pollutant from these furnaces. In particular, the revised permit would not set limits specifically for the emissions of the new baghouse system that was installed to improve control of particulate emissions from charging and tapping of these furnaces. Instead, the revised permit would address emissions that occur from this baghouse with limits for different pollutants for the overall emissions of these furnaces.

by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station. The utilization of the individual generating units in the new facility would vary from day to day and season to season as the use of the units would be tied to the inability of other electrical generating facilities to meet the demand for electricity.[37]

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[37] At the Shell Off-Shore and Masada facilities, variability of utilization or operation of different emission units was a consideration in the permitting of these facilities. In its response to comments on the draft permit for Shell Offshore, USEPA Region 10 explains,

> The commenters are correct that EPA guidance does express a general preference for shorter time periods rather than 12-month rolling limits. See 1989 PTE Guidance at 9. As the commenter acknowledges, however, EPA has also recognized that longer rolling limits are appropriate for sources with substantial and unpredictable variations in emissions, as well as for those sources that curtail operation during part of a year on a regular seasonal cycle. Id. at 9 — 10. Such is the case here. Shell's planned exploratory operations are atypical as compared to other sources because emission units consist of multiple engines and generators with variable emission on the Kulluk and a fleet of numerous support vessels. Operations will vary from hour-to-hour, day-to-day month-to-month, and season-to-season based on factors such as the number of wells drilled, the activity being undertaken (drilling mud cellar lines, other drilling activity, or activity that does not involve drilling), the depth of wells drilled, whether emergency engines are being run for testing, and ice conditions. Given the variability in operations, and thus emissions expected from the source, and after considering a full range of options for limiting the source's potential to emit, Region 10 determined that it was appropriate to establish longer-term rolling limits.
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> USEPA, Region 10, "Response for Comments for Outer Continental Shelf Permit to Construct and Title V Air Quality Operating Permit: Conical Drilling Unit Kulluk," October 2011, p. 26.

In the USEPA's order for Masada of April 8, 2002, USEPA observes that,

> Masada's operations will have significant fluctuations due [sic] the variability of the processed waste, making an operating parameter-based PTE limit less appropriate. The emissions-based PTE limit discussed below recognizes this fact and provides Masada with operational flexibility accordingly. Moreover, Masada will be measuring its emissions on a real-time basis using CEMS [continuous emissions monitoring systems], obviating the need to limit and monitor operating parameters as a surrogate for emissions.[Footnote 6] Thus the petitioners have not demonstrated that it was inappropriate for the NYSDEC [New York State Department of Environmental Conservation] to restrict Masada's emissions directly, rather than its operation or production.
>
> Although it is generally preferable that PTE limitations be as short-term as possible (e.g., not to exceed one month), EPA guidance [USEPA, "Guidance on Limiting Potential to Emit in New Source Permitting," June 13, 1989] also allows permits to be written with longer term limits if they are rolled (meaning recalculated periodically with updated data) on a frequent basis (e.g., daily or monthly). The 1989 guidance recognizes that such longer rolling limits may be appropriate for sources with 'substantial and unpredictable annual variation in production." 1989 Guidance at 9.
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> Footnote 6. This is consistent with prior EPA practice in appropriate circumstances. See e.g., Memorandum entitled "3M Tape Manufacturing Division Plant, St. Paul, Minnesota," from John Rasnic to David Kee, dated July 14, 1992 ("a federally enforceable emission limit may be used …to limit the

7. INADEQUATE JUSTIFICATION FOR ELIMINATION OR REVISION OF CURRENT LIMITS FOR PROJECT-AFFECTED FUEL BURNING UNITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency*: The 2022 application does not include information that would support revisions to Permit 95010001 to revise or eliminate current limitations for usage of fuels by the Project-affected fuel burning units, as is requested by the application. With regard to the elimination of the current limitations, the 2022 application does not quantitatively demonstrate that this would not result in an increase in the potential emissions of the subject units. This is of particular concern as Permit 9501001 does not limit the usage of COG, which was not quantitatively addressed in 1996 during the initial permitting of the Production Increase Project. Moreover, with the shutdown in 2015 of the two by-product recovery coke oven batteries at the facility, more natural gas must now be used as fuel in certain subject units (e.g., the blast furnace stoves), to replace the COG that was previously used. With regard to the revisions of the current limitations, the 2022 application does not include information that would be necessary for the Illinois EPA to set values for revised limitations that would be appropriate. As discussed above in Denial Point 3A, the 2022 application does not include the data and calculations underlying the representations in the 2022 application for future maximum emission of the Project-affected fuel burning units. This data would include the maximum usages of fuels as would be needed for the Illinois EPA to appropriately set revised limitations for future usages of fuel.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would eliminate or revise the current limitations in Permit 95010001 for the usage of fuel by Project-affected fuel burning units.

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potential to emit as long as a continuous emissions monitor (CEM) or an acceptable alternative is used."); and Memorandum entitled "Policy Determination on Limiting Potential to Emit for Koch Refining Company Clean Fuels Project," from John Rasnic to David Kee, dated March 13, 1992 ("Use of an emission limit to restrict potential to emit …is acceptable provided that emissions can be and are required to be readily determined or calculated.")

USEPA, Order, April 8, 2002, "*In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00003, Issued by the New York State Department of Environmental Conservation," Petition No.: II-2001-05, p. 6)

Discussion

The justification provided in the 2022 application for revisions to Permit 95010001 to eliminate or revise limits on usage of fuel and, presumably, emissions by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and BFG currently set by Permit 95010001, it does not propose any new limits in their place.

> USS Granite City is also requesting revision/elimination of gaseous fuel usage limits for project-affected combustion units. In 2015, USS Granite City shutdown its by-product coke oven batteries. This eliminated the ability to use coke oven gas ("COG") as a fuel at the mill. In addition, ten of the twelve boilers at the time of the Project in 1996 have been retired. These actions have greatly reduced the emissions from fuel combustion in project-affected emissions units and obviate the need to preserve limits to restrict PTE of the remaining units.
>
> 2022 application, Section 2.2.3, p. 2-4.

This rationale is deficient because it does not consider that the 2022 application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above,[38] this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the 2022 application does not show that new limits for fuel usage and emissions would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels and emissions should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shutdown. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

[38] It is noteworthy that the 2022 application does not address what an appropriate limit for usage of COG would have been in Permit 95010001 if the permit had originally addressed use of COG by Project-affected fuel burning units. In the absence of such information, it is unclear how the shutdown of the two by-product coke ovens at the facility and elimination of COG led to decreases in NOx emissions relative to the limits for NOx emissions of fuel-burning units set by Permit 95010001.

8. THE APPLICATION DOES NOT SHOW THAT EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS WOULD BE REPRESENTATIVE

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* Relative to the revisions to Permit 95010001 that are requested to establish certain "prescribed emission factors," the 2022 application does not include information justifying the future use of such proposed factors for the purpose of determining compliance with the revised limitations for the emissions of the project that are requested. In particular, the 2022 application does not include information showing that the proposed factors should be considered representative, accurate and appropriate. For example, for the uncaptured emissions of particulate of the BOFs, which occur through the roof monitor and, possibly, other openings in the BOF shop building, the application does not include any explanation for the emission factors that are proposed as prescribed emission factors. These factors are lower than the factors that were used for the calculations in the application for the baseline emissions of uncaptured particulate from the BOFs. This is generally reasonable as improvements have been made that have improved capture and control of the particulate emissions of the BOFs and should lower uncaptured emissions. Notably, a baghouse control system has been installed to improve control of emissions from charging and tapping the BOFs. However, the 2022 application does not explain how the proposed prescribed factors were developed. It also does not lay out the practices for control of particulate emissions of the BOFs that would accompany the proposed factors.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would determine future emissions of the subject emission units and emission points based on the factors proposed in the 2022 application. The 2022 application does not show that the proposed prescribed factors would appropriately be relied upon for the purpose of enforceably limiting the future emissions of the emission units and emission points for which they are proposed.

Discussion

To calculate baseline emissions of certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are

not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the 2022 application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
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> 2022 application, Section 3, p. 3

This summary of relevant USEPA policy in the 2022 application is consistent with the statements made by the EAB and the Administrator of USEPA in various orders responding to petitions that request it object to Title V permits or, in Illinois, CAAPP permits), issued by a permitting authority. In its decision in *Shell Offshore, Inc.*, the EAB also considered the use of prescribed emission factors in the permit that was appealed. The EAB did not object to this practice. It found that the use of prescribed emission factors may be appropriate for a permit to prescribe use of specific emission factors published by USEPA in its *Compilation of Air Pollutant Emission Factors* (AP-42) for certain emission units for the purpose of determining emissions for purposes of compliance with annual emission limits set by the permit.[39]

> The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or factors derived from source test data Shell submitted to the Region in support of two separate, previously OCS [Outer Continental Shelf] PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discover* drillship.
>
> USEPA, Environmental Appeals Board, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2013.

For US Steel, Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Note that relative to prescribed emission factors, the USEPA's finding, as is provided below, should be considered *dicta*. This is because the permit that was the subject of the appeal did not provide for use of prescribed emission factors. In addition, as the order addresses the possibility of using of prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying

[39] The EAB did observe that it is preferable that compliance with emission limits set by a permit be determined using source-specific emission factors, as would be developed by emissions testing required by the permit. The EAB did not address prescribed emission factors from sources other than AP-42 since the permit that was appealed only prescribed use of emission factor from AP-42. Given the general nature and limited scope of AP-42, the EAB's decision should not be interpreted to preclude use of emissions factors from source other than AP-42. There are emission units and pollutants for which use of prescribed emissions is appropriate for which emission factors are not present in AP-42 or better emission factors are available from other sources.

information that a source must provide in an application if it seeks a permit that would provide for use of prescribed emission factors is sought. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.[40]

> ...IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
>
> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

Roof Monitor on the Basic Oxygen Furnace Shop – Particulate Emissions:
The 2022 application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the basic oxygen furnace shop (i.e., the uncaptured emissions from these furnaces). The application does include support for the baseline particulate emission rates for the roof monitor on the basic oxygen furnace shop.[41, 42] However,

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[40] In an order concerning a Title V permit issued by the Texas Commission on Environmental Quality (TCEQ), the Administrator of USEPA stated the following when addressing the use of emission factors in the permit:

> ...Moreover, the justification provided by a permittee in a permit application should not substitute for the judgment of the permitting authority (TCEQ) with responsibility for ensuring that a Title V permit contains sufficient monitoring to ensure compliance. If TCEQ wishes to adopt and incorporate an applicant's technical justification for specific monitoring into the current Title V permit record, it must, at minimum, identify specifically where such a justification is to be found (just as it would be required to do it if [sic]wished to incorporate by reference a requirement located elsewhere.)
>
> USEPA, Administrator, Order Responding to Petition Requesting Objection to the Issuance of Title V Operating Permit, Petition No. VI-2017-6, *In the Matter of BP Amoco Chemical Company, Texas City Chemical Plant, Galveston County, Texas, Permit No. 01513*, dated July 20, 2021, p. 18.

[41] The baseline emission rates for the roof monitor are based on emissions factors from AP-42 for uncontrolled emission with application of 90 and 99 percent capture efficiencies for the refining process and the charging and tapping processes, respectively, being provided by the ESP control system on the furnaces in the baseline period before 1996 (2022 application, Section 5.5.2.2). While the application cites to Appendix C in the original application for the Project as support for these values for capture efficiency, this appendix only uses these assumed values of capture efficiency when calculating baseline emission rates for the Project. This appendix does not actually provide technical support for these values

the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the basic oxygen furnaces and decrease the uncaptured emissions of particulate. For example, a fourth section was added to the ESP in 1995, increasing the volume of air that it could handle. As such, the baseline particulate emission rates of the Project are not representative of future emissions with the Project. Moreover, the emission factors actually proposed in Section 5.5.2.2 in the 2022 application are lower than emission factor limits now contained in Table 2 of Permit 95010001 for the roof monitor on the basic oxygen furnace shop. For PM, an emission factor of 0.0296 ~~0.01986~~ pounds/ton is proposed as a prescribed factor, compared to the current emission factor limit of 0.0987 pounds/ton; for filterable PM_{10}, an emission factor of 0.0198 ~~0.0296~~ pounds/ton is proposed, compared to the current emission factor limit of 0.06614 pounds/ton. The 2022 application does not show that the emission factors for the roof monitor on the basic oxygen furnace shop that are proposed as prescribed emission factors in Section 5.5.2.2 of the application are representative.[43]

Caster Mold, Slab Cutoff/Ripping Processes in Continuous Casting:
For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors are proposed in Section 5.5.3 of the 2022 application that are identical to the baseline particulate emission rates for these emission units as generally discussed in Section 5.2.2.11, 5.2.2.13 and 5.2.2.14 of the application. In these sections, the application explained that these emission factors reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative. In this regard, the statement that these factors were taken from a historic report prepared by the Illinois EPA does not show that this report included information showing why these factors should be considered representative and can be prescribed by a revised permit.

Mag-Lime Silo:

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for capture efficiency being representative of the levels of capture efficiency that were achieved for particulate emissions of the basic oxygen furnaces in the baseline period for the Project. Appendix C also does not provide support for the higher levels of capture efficiency (95% and 99.9%) that it uses for operation and emissions for the basic oxygen furnaces with the Project.

[42] It should generally be noted that the sections of the 2022 application that provide the explanation or basis for the emission factors used in the application are not the sections in which prescribed emission factors are proposed for certain units. The basis for the different emission factors is typically provided earlier in the application in the sections of the application where baseline emission rates are addressed. For example, the particulate emission rates or factors for the roof monitor on the blast furnace casthouse are discussed in Section 5.2.3.3 (2022 application, p. 5-3); the proposed prescribed emission factors for this emission point, which are the same numerically, are provided later in Section 5.5.1.2 without further discussion (2022 application, p. 5-14 and 5-15).

[43] The emission factors that the 2022 application proposes to be prescribed for particulate emissions from the roof monitor on the basic oxygen furnaces may be appropriate at the present time given the installation of a baghouse control system on these furnaces. Nonetheless, for a revised permit to be issued that prescribes emission factors for emission from the roof monitor, the application must show that those factors are representative with the emission control measures that are required by the permit. It must also be recognized that those prescribed factors would not be representative of emissions before the new baghouse system was installed and operation of this system was required. As such, particulate emissions factors that are representative of particulate emissions circa 1996, before installation of the baghouse system on the furnaces, should be used in the revised netting analyses for PM and PM_{10}.

For the Mag-Lime Silo, a prescribed emission rate of 0.009 pounds/hour is proposed (2022 application, Section 5.5.4.2). As explained in the application, this unit, which stores the reagent used in desulfurization of iron in the basic oxygen furnace shop, was overlooked in the original permitting of the Project (2022 application, Section 5.4.4 and Footnote 34, p. 5-16 and 5-17). US Steel elected not to address its baseline emissions in the revised netting analyses for PM and PM_{10} because emissions are low, i.e., potential annual emissions less than 0.1 tons. However, the application does not include calculations explaining how US Steel determined that potential particulate emissions of this unit are less than 0.1 tons/year, much less information showing that a prescribed emission rate of 0.009 pounds/hour should be considered representative of the emissions of this unit.[44]

[44] The application also does not explain how US Steel determined that the potential annual particulate emissions of the Mag-Lime Silo are less than 0.1 tons. In this regard, the application does not include calculations that identify any assumptions about operation of this unit or the control of its emissions made by US Steel when calculating the potential emissions of this unit. For example, for particulate matter, was the outlet emission rate of the filter that is part of this unit assumed to be less than the regulatory limit of 0.03 grains per dry standard cubic foot pursuant to 35 IAC 212.308 and 212.313?

9. FOR THE ROOF MONITOR OF THE CASTHOUSE, THE APPLICATION DOES NOT SHOW THAT THE METHODOLOGY THAT IS PROPOSED TO BE PRESCRIBED FOR THE DETERMINATION OF NOx AND VOM EMISSIONS WOULD BE REPRESENTATIVE

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a). 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* Relative to the revision to Permit 95010001 that is requested to establish a certain "prescribed emission determination methodology" for the uncaptured NOx and VOM emissions of the blast furnace casthouse, the 2022 application does not include information justifying the future use of such proposed methodology for the purpose of determining compliance with the revised limitations for the NOx and VOM emissions of the blast furnace casthouse that are requested. In particular, the 2022 application does not include information showing that the proposed methodology should be considered representative, accurate and appropriate. In this regard, the 2022 application does not show that changes in the levels of captured NOx and VOM emissions, as measured by emission testing, would be due to actual changes in the overall level of NOx emissions from the casthouse rather than other causes. For example, changes in the levels of measured NOx or VOM emissions could be due to changes in the manner of operation of either the iron making/tapping processes or the baghouse control systems as they function to capture NOx and VOM emissions. Changes in the levels of measured emissions could also be due to the variation in the results of emission testing that may be present with the applicable reference test methods.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would determine future uncaptured NOx and VOM emissions of the blast furnace casthouse based on the methodology proposed in the 2022 application. The 2022 application does not show that the proposed prescribed methodology would appropriately be relied upon for the purpose of addressing the future uncaptured NOx and VOM emissions of the blast furnace casthouse.

Discussion

For the NOx and VOM emissions of the roof monitor on the casthouse on the blast furnaces (i.e., uncaptured emissions, which do not pass through a control device), the 2022 application proposes a prescribed emission calculation methodology that involves the results of emission testing for the main baghouse for the casthouse and an assumed capture efficiency of 95 percent.[45] For example, for NOx emissions from the roof monitor, the application requests that,

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the blast furnace casthouse roof monitor based on application of 95% capture emissions to the NOx stack test result for the blast furnace casthouse baghouse.
>
> 2022 application, Section 6.5.1.2, Prescribed Emission Factors for Blast Furnaces Operations, p 6-9.

The application does not show that the "proposed methodology" would result in NOx and VOM emissions rates for the roof monitor that would be representative. In this regard, the proposed methodology would yield emission rates for the roof monitor that would be related directly to the measured emissions of the main baghouse on the casthouse. However, it would not address the effect of variation in capture efficiency on emissions. That is, with the proposed methodology, if emissions from the baghouse measured by a particular test were "lower," the calculated emission rate of the roof monitor would also be lower. The methodology would not address a situation in which the emissions measured by testing are lower because the capture efficiency of the baghouse system during testing was also lower. In this situation, there would actually be more emissions through the roof monitor. As such, unlike specific emission rates for NOx and VOM that would be prescribed in a revised permit, the "proposed methodology" would not address the NOx and VOM emissions from the roof monitor in a way that can reasonably be considered to be representative on an ongoing basis.[46, 47]

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[45] With the proposed methodology, the NOx or VOM emission rate for the uncaptured emissions of the casthouse would be derived from the emission rate of the main baghouse measured by periodic testing using the following formula:

[{Measured rate of the baghouse (lbs/ton) ÷ 0.95} x 0.05] = Calculated rate for the monitor (lbs/ton)

[46] This issue would not be present with an appropriate prescribed emission factor. As such, a factor would not change based on the results of periodic testing, the factor could be reviewed when processing the application to confirm that it was conservatively developed so as to be representative on an ongoing basis.

[47] Section 7.5.1.2 of the 2022 application, which addresses the proposed calculation methodology for the VOM emissions from the roof monitor on the casthouse, erroneously refers to the results of emissions testing of the main baghouse system on the casthouse for NOx rather than testing for VOM.

10. THE APPLICATION DOES NOT INCLUDE NECESSARY SUPPORT FOR THE EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS.

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* Relative to the revisions to Permit 95010001 that are requested to establish certain "prescribed emission factors" as specifically proposed by the 2022 application, the application does not include information justifying the future use of such proposed factors for the purpose of determining compliance with the revised limitations for the emissions of the Project-affected units that are requested. In particular, as the proposed factors are derived from emissions factors developed by USEPA, the 2022 application does not include information showing that the factors that were derived and are now proposed should be considered representative, accurate and appropriate. For example, for the blast furnace casthouse, the application proposes a prescribed emission factors for uncaptured emissions of particulate that are based on factors in USEPA's *Compilation of Air Pollutant Emission Factors*, AP-42, and achievement of at least 95 percent capture efficiency by the particulate control systems on the casthouse (i.e., 5 percent of the particulate emission being uncaptured). However, as support for reliance on these systems achieving at least 95 percent capture efficiency, the application only refers to a single memorandum by USEPA staff and a consultant.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include necessary information to allow a revised permit to be proposed for the Project, much less issued, that would determine future emissions of the subject emission units and emission points based on the factors proposed in the application. The application does not show that the proposed prescribed factors would appropriately be relied upon for the purpose of enforceably limiting the future emissions of the emission units and emission points for which they are proposed.

Discussion

The 2022 application does not include relevant supporting information for certain emission factors used in the application, as follows. Absent this information the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

Blast Furnace Casthouse Roof Monitor:
The prescribed particulate emission factors proposed for the roof monitor on the blast furnace casthouse (i.e., the uncaptured emissions from the casthouse) are identical to the baseline emission rates. These rates are based on emission factors from AP-42 for uncontrolled emissions with application of a 95 percent capture efficiency for the baghouse control systems on the casthouse. The application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency (2022 application, Section 5.2.3). Further support is needed for a prescribed emission factor based on achievement of 95 percent capture.

Slag Pits:
For particulate emissions from quenching of slag, the 2022 application does not include a copy of the "EPA assessment" that is the basis of the emission factors and material showing how the selected emission factors were derived from this assessment. For emissions from transfer of slag, the application does not include a copy of the calculations by which the emission factors were developed from the formulas provided in AP-42, Section 13.2.4. The application also does not address whether the emission factors rely on control by the application of water or the presence of residual moisture and, if so, the basis for the assumed levels of control efficiency. (2022 application, Section 5.2.2.5, p 5-4).

Iron Pellet Screen:
For the Iron Pellet Screen, the proposed prescribed emission factor for PM and PM_{10} emissions is identical to the baseline emission rates (2022 application, Section 5.2.2.16). While the emission factor for uncontrolled emissions for screening of crushed stone in Table 11-19.2-2 in AP-42 is identified as the basis of this emission rate, a control efficiency of 85 percent is applied, reducing the factor that is actually used to 15 percent of the cited AP-42 factor. The application does not describe the means by which the particulate emissions of this screen are controlled or reduced to show that 85 percent control of particulate emissions is achieved for the Iron Pellet Screen.[48]
In addition, AP-42 lists two emission factors for screening of crushed stone, one for PM and one for PM_{10}. The emission factor for PM is about three times the factor for PM_{10} (0.025 pounds/ton ÷ 0.0087 pounds/ton = 2.87, ~ 3). The 2022 application does not show that for screening of iron ore pellets, an emission factor that was developed for PM_{10} is directly transferable to PM emissions.

[48] The CAAPP permit, Condition 7.4.2 indicates that the Iron Pellet Screen is not served by emission control equipment.

11. THE DETERMINATIONS OF PARTICULATE EMISSIONS FROM HANDLING OF COKE, IRON PELLETS AND LIMESTONE ARE NOT SUPPORTED AND CANNOT BE CONFIRMED

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*,35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* For handling of coke, iron pellets and limestone, the baseline emissions of particulate matter (PM) and particulate matter-10 (PM-10) provided in the 2022 application are both 17.2 tons/year. The information for baseline emissions from handling these materials is not accompanied by supporting information. The application does not explicitly list the various units whose emissions are being addressed and describe the nature of the various units relative to their emissions of PM and PM-10. Data is not provided for the annual amounts of various materials that were handled by these units. Data is also not provided for the emission factors used to calculate annual emissions, the sources or basis of those factors, and why those factors should be considered representative of the emissions of the various types of units being addressed.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would restrict future PM and PM-10 emissions of the subject units. The issuance of a revised permit with limitations for the future emissions of these units that are practically enforceable necessarily requires that the application include supporting information as discussed above. For example, the Illinois EPA needs information on how baseline emissions were determined to confirm that the baseline emissions were reasonably determined. This information is also needed to determine what limitations on emissions should be set in the revised permit and if the permit should require any specific practices to assure emissions are controlled to levels relied upon in the calculations of baseline emissions. Finally, this information is needed so appropriate permit conditions can be developed setting forth how compliance with the limitations is to be demonstrated.

Discussion

With regard to baseline particulate emissions, the determination of baseline emissions from handling of coke, iron pellets and limestone provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not provide needed supporting information for the "corrected" determinations of baseline particulate emissions of

these operations as it is not accompanied by detailed calculations for the emissions from handling each material. (2022 application, Table 5-5. "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM Emissions Factors for Affected Emission Units" and Table 5-6, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM_{10} Emissions Factors for Affected Emission Units.")[49]

With regard to emissions with the Project, the 2022 application does not include information for particulate emissions from handling of coke, iron pellets and limestone. Since the by-product coke oven batteries were not shut down until 2015, emission information is needed for handling of coal for the period of operation with the Project before the batteries were shut down. Likewise for coke, emission information is needed to address handling of coke before US Steel constructed the conveyor system to receive coke directly from the heat recovery coke production facility built by Gateway.[50]

[49] Tables 5-5 and 5-6 do refer to "Table F-3 of the 1995 application" for these material handling operations. A copy of this table is provided in Appendix B of the 2022 application. However, this table only appears to address PM_{10} emissions, for which it provides annual emissions in tons/year. This table does not include calculations and background information showing how the annual emissions of PM_{10} were determined. Finally, the data for annual emissions of material handling operations appears to rely on the "PM10 SIP" requiring a 90 percent reduction from uncontrolled emissions without providing any support for this assumption.

[50] As this new system was constructed as part of a different project, i.e., the construction of the Gateway facility, rather than the Production Increase Project, US Steel should not address emissions that are specifically associated with this new system.

12. THE REQUESTED CHANGES TO THE GROUPING OF UNITS IN THE PERMIT FOR CONSISTENCY WITH THE GROUPINGS OF UNITS IN THE CAAPP PERMIT WOULD NOT ADDRESS ALL DIFFERENCES IN THE GROUPINGS OF UNITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152* and 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application requests certain changes to Permit 95010001 because the areas or sections of the CAAPP permit for the Granite City Works, Permit 96030056, in which certain emission units are addressed are not the same as those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with the units with which they are associated. For example, handling of fluxes and alloy materials for the BOFs is addressed with the provisions of the permit for the BOF Shop. In the CAAPP Permit, handling of fluxes and alloy materials for the BOFs and other discrete material handling and processing operations are addressed in a separate section of the permit (Section 7.1) rather than with Blast Furnace Operations (Section 7.4), the BOF Shop (Section 7.5), or Continuous Casting Operations (Section 7.6). While it is reasonable for Permit 95010001 to be revised so that the placement of units in this permit is the same as their placement in the CAAPP permit, several concerns are posed by the specific changes to Permit 95010001 that are requested to accomplish this. In particular, the 2022 application requests that Permit 95010001 be revised to address the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" with other ancillary operations in the BOF Shop, rather than with the Continuous Casting Operations. This change would be appropriate as these units would be placed with other units that are subject to the Iron and Steel NESHAP, 40 CFR 63 Subpart FFFF, as they are BOF Shop ancillary operations. However, the application also requests that the permit be revised to refer to these units as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." This change would not be appropriate as it would refer to the baghouse serving these units and its emissions rather than to the units themselves and their emissions. The application also does not request any changes to Permit 95010001 for the "Deslagging Station and Material HS [Handling System]." In the CAAPP permit, these units are currently addressed twice, both with the discrete material handling operations (Section 7.1) and with continuous casting operations (Section 7.6). More importantly, the placement of these units in Permit 95010001 should be directed by the emission standards that apply to these units. These units would be appropriately addressed with BOF Shop Operations (Section 7.5) as they entail either a "skimming station" or "ladle metallurgy" for purposes of the Iron and Steel NESHAP. Finally, for "Ladle Drying/Preheating," the application does not request revisions to Permit 95010001 although the CAAPP permit addresses these emission units both with BOF Shop Operations (Section 7.5) and with other Project-affected fuel burning units (Condition 5.6.2(a)(ii)). In Permit 95010001, these units are currently only addressed as Project-affected fuel burning units.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* As related to the location in permits where certain emission units are addressed, the 2022 application does not request all revisions that are known to be appropriate to Permit 95010001, and, by means of Integrated Processing of the revisions to Permit 95010001, are appropriate to the CAAPP permit for the facility. For certain units, the application would not address differences in where the units are addressed by the two permits and the related emission standards and requirements that may apply to those units. As related to the naming of units, the Applicant requests a change that is improper as well as unnecessary. As such, if Permit 95010001 were revised with the placement of units in the permit shifted as requested by the 2022 application, it would preclude Integrated Processing of the revised permit. This is because the revision of Permit 95010001 would otherwise allow discrepancies or errors in the provisions for certain units in the current CAAPP permit, which have now been identified and are within the potential scope of the revisions to Permit 95010001, to be perpetuated by the amendments to the CAAPP permit that would be authorized.

Discussion

As addressed in Section 2.2.2 of the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed, as discussed below, by the specific changes to Permit 95010001 that have been requested.

Requested Changes for the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)":

As explained in Section 11.1.2 of the 2022 application, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 950100001 with operations in the Basic Oxygen Furnace Shop. The application also requests that this unit be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term. In this regard, the application is not accompanied by an itemized list of the equipment and activities that would be covered by this new term or a diagram that identifies this equipment and activities. US Steel's request also does not explain how the requested revision to Permit 95010001 would do what has generally been requested as the proposed new term would refer to a "Material Handling Tripper." As the 2022 application requests changes to

terminology in Permit 95010001, the changes should act to better identify the emission units that would be addressed, improving the specificity and clarity of the revised permit.[51, 52]

Absence of A Request for Revisions for the "Deslagging Station and Material HS":
The 2022 application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System).[53] These emission units are currently addressed in Permit 95010001 with continuous casting operations (Permit 95010001, Condition 20 and Table 3). In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations (CAAPP permit, Condition 7.6.2(a)).[54] The 2022 application does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop. In this regard, for the argon stirring station, US Steel does explain in Section 11.1.2 of the 2022 application that this station should be addressed with operations in the basic oxygen furnace shop rather than with continuous casting operations. This is because this station is a "BOPF shop ancillary operation" for purpose of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF (2022 application, Section 11.1.2). US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations. Alternatively, US Steel does not request that this station be addressed with other BOPF shop ancillary operations.[55] Slag skimming is one of the operations that 40 CFR 63.7852 defines as being "Basic oxygen process furnace shop ancillary operations."[56, 57]

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[51] For example, the proposed new term would not make clear that the basic oxygen furnace shop actually has two ladle stirring stations and one ladle metallurgy furnace, all served by Baghouse 2.

[52] The requested change to the terminology for these emission unit(s) is also problematic as it would refer to a control device, Baghouse 2, rather than to the equipment or activities that generate emissions. Applied literally, the proposed term would only address captured emissions; it would not address the uncaptured emissions, which elude capture for control by the baghouse.

[53] For example, in Section 5.2, the 2022 application does not identify any updates or revisions to the pre-project actual emissions of the steel deslagging station and associated material handling system. Likewise, Appendix B – Emission Calculations does not identify any changes from the 1996 netting analyses that involve these units (Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised PM PSD Net Emissions Increase Analysis and Revised PM10 PSD Net Emissions Increase Analysis).

[54] The presence of a deslagging station that is physically located in the continuous casting building is indicated in the pending application for renewal of the CAAPP permit. This application indicates that the particulate emissions of this station are controlled.

> Deslagging Station:
> Molten steel from the BOF is transferred directly from the BOFs to the continuous casting building. The first operation carried out in this building is the skimming of slag from the surface of the molten steel. Slag removed by this operation is skimmed into slag pots for disposal. Baghouse #1 is used to control emissions from this process.
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> CAAPP Renewal Application, Appendix D: Process Descriptions, Section 7.6 Continuous Casting, Deslagging Station, p. D-56.

[55] The proper categorization of this steel deslagging station is important when considering US Steel's request for consolidation of the emission limits currently set by Permit 95010001. As a general matter, any new, "consolidated" limits set by a revised permit must be developed to apply to sensible groupings

For the "Deslagging Station and Material HS," the 2022 application also does not request revisions to Permit 95010001 as the CAAPP permit currently limits particulate emissions of this operation twice, once as a continuous casting operation and again as a material handling operation. In this regard, the CAAPP permit limits the particulate emissions of a "Deslagging Station and associated Material Handling System (Condition 7.6.6(a). As indicated by a reference in this condition, the CAAPP permit also limits emissions of a "Material HS and Deslagging Station" (Condition 7.1.6(b)(i)) in Section 7.1 of the CAAPP permit, where discrete material handling and processing operations are addressed. The 2022 application does not request revisions to Permit 95010001 to facilitate amendment of the CAAPP permit to appropriately address the emissions of this deslagging station and the associated material handling system. In the absence of such revisions, the current CAAPP permit would suggest that the revised netting analyses for particulate should address the emissions of these units twice, once as deslagging and once as material handling. On the other hand, if Permit 95010001 would address emissions of these units in this way, the consolidated emission limits for continuous casting and discrete material handling operations would be inappropriate as emissions of the deslagging station and the associated material handling system would be accounted for twice.[58]

For "Ladle Drying/Preheating," Absence of Any Request for Changes:

For "Ladle Drying/Preheating," the 2022 application does not request any changes to Permit 95010001 to maintain consistency with the approach to these units in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units (Permit 95010001, Table 4, Certain Fuel Combustion Units). In the CAAPP permit, these

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of units. The groupings of units should facilitate identification in the revised permit of the regulatory requirements that apply to various units. This is especially true as the consolidated limits would rely on certain applicable regulatory requirements, e.g., the work practices and operational monitoring requirements under 40 CFR 63 CFR Subpart FFFFF, to assure consistent operation of emission units so as to keep short-term emissions at or below the established emission rates for the units.

[56] For this steel deslagging station, there is a potential compliance issue relative to the NESHAP, 40 CFR 63 Subpart FFFFF. The CAAPP permit indicates that the emissions of this station are not controlled (CAAPP permit, Condition 7.6.2). On the other hand, if its emissions are controlled by Baghouse 2, the direct applicability of the NESHAP to this station becomes a minor matter. This is because Baghouse 2 is directly subject to requirements of 40 CFR 63 Subpart FFFFF as it controls emissions from "ladle metallurgy." Ladle metallurgy is defined by 40 CFR 63.7852 as "... a secondary steelmaking process that is performed typically in a ladle after initial refining in a basic oxygen furnace to adjust or amend the chemical and/or mechanical properties of steel. This definition does not include vacuum degassing."

[57] It is also noteworthy that as the steel deslagging station is identified as a continuous casting operation by Permit 95010001, the permit applies 35 IAC 212.458(b)(8), which sets a limit of 5 percent, 6-minute average, for the opacity of emissions from the various continuous casting operations (Permit 95010001, Condition 19). However, Permit 95010001 omits the introductory language for this standard that provides that it does not apply to fugitive emissions. The introductory language is present in the CAAPP permit, which addresses the standards that apply to both fugitive and non-fugitive emissions of continuous casting operations (Permit 96030056, Conditions 7.6.3((b), (b)(ii) and (c)).

[58] If there was not actually a material handling system associated with the steel deslagging station, this could be readily addressed in the application for revisions of Permit 95010001. The application could acknowledge the error in the original application, as reflected in the permit that was issued, accompanied by an accurate diagram for the deslagging station as it existed in 1995 and as it now exists. In this regard, it is perhaps noteworthy that Permit 95010001 does not identify the material(s) that are handled by the material handling operations associated with the steel deslagging station.

units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the Basic Oxygen Furnace Shop, as well as elsewhere in the permit with other Project-affected fuel burning units (e.g., Conditions 5.6.2((ii) and (iii)). In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop (Condition 7.5.6(b)). In the absence of appropriate changes to the CAAPP permit, since the ladle drying/preheating takes place in the basic oxygen furnace shop, the limit for the NOx emissions of the basic oxygen furnace shop would apply to the sum of the NOx emissions of the basic oxygen furnaces and the ladle dryers/preheaters.

13. THE 2022 APPLICATION DOES NOT REQUEST REVISIONS TO PERMIT 95010001 AND, INDIRECTLY, TO THE CAAPP PERMIT THAT WOULD ALSO BE NECESSARY AS THIS APPLICATION REQUESTS THAT THE REVISED PERMIT PRESCRIBE EMISSION FACTORS FOR CERTAIN UNITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not request that the revision to Permit 95010001 add condition(s) generally setting forth how compliance with annual emission limitations set by Permit 95010001 is to be determined. While revisions are requested to establish certain "prescribed emission factors" and "prescribed emission determination methodology," the application does not request related revisions to Permit 95010001 to generally address the procedures that are to be followed when determining compliance with the limitations on annual emissions set by Permit 95010001. In this regard, it is noteworthy that, if it were not stayed, Condition 5.13 of the CAAPP permit for the Granite City Works, Permit 96030056, would address the general procedures for how compliance with limitations on annual emissions set by Permit 95010001 is to be determined. (That condition is currently stayed following an appeal to the Pollution Control Board, PCB 2013-53.) That condition would generally require that compliance with limitations on annual emission be determined using "appropriate emission factors." However, that condition does not address nor would it provide for use of prescribed factors or methodology to determine compliance with limitations on annual emissions, as is being requested by the 2022 application.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* If a revised version of Permit 95010001 were issued that provided for use of prescribed emission factors and methodology without condition(s) generally setting forth how compliance with limitations for annual emissions in Permit 95010001 is to be determined for emission units which the permit establishes prescribed emission factors and methodology (similar to CAAPP Condition 5.13 as it currently addresses use of appropriate emission factors), the limitations on annual emissions in the revised permit would not be enforceable as a practical matter. In this regard, at this time, CAAPP Condition 5.13, which addresses the use of appropriate emission factors in determining compliance with annual emission limitations, cannot be relied upon for this purpose. As well as currently being stayed, that condition only provides for use of appropriate emission factors. It does not provide for the use of prescribed emissions factors or prescribed emission determination methodologies. Moreover, in the absence of a request in the 2022 application for suitable condition(s) generally addressing how compliance with limitations on annual emissions is to be determined, the

application does not show that the revision to Permit 95010001 that is requested would meet the criteria for Integrated Processing, as the application also specifically requests. That is, the 2022 application would not show that the request for a revised permit would provide for compliance requirements substantially equivalent to those provided for by the CAAPP since the application does not request that the revised permit include requirements substantially equivalent to those that would have been provided by CAAPP Condition 5.13 if it were not stayed.

Discussion

The 2022 application does not request revisions to general provisions in Permit 95010001 that would enable revisions to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by administrative amendment to allow prescribed emission factors to be used to determine ongoing emissions of certain emission units. In this regard, the CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. Permit 95010001 does not specify how emissions are to be determined for this purpose, much less specify that, for certain emission units and pollutants, prescribed emission factors are to be used.[59] Accordingly, the procedures to determine compliance with the emission limits set by Permit 95010001 were established in the CAAPP permit for the Granite City Works. This was necessary because the emission limits set by Permit 95010001 are applicable requirements under the CAAPP. The procedures that were established in the current CAAPP permit do not provide for the use of prescribed emission factors. Rather, the CAAPP permit generally requires US Steel to use "appropriate emission factors," i.e., emission factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that are used placed on US Steel.[60] The CAAPP permit also provides for recordkeeping and reporting by US Steel so that the Illinois EPA and interested parties can know and may review for the emission factors that are being used. However, the 2022 application simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors."[61]

14. THE 2022 APPLICATION DOES NOT ADDRESS THE AMENDMENT TO THE CAAPP PERMIT AUTHORIZED BY CONSTRUCTION PERMIT 11050006, AS IS

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[59] Condition 39(a) of Permit 95010001 did require "one-time testing" for various pollutant for certain emission units within 270 days of the date that this permit was initially issued. Additional time was subsequently provided to complete testing for the particulate emissions of a boiler when burning blast furnace gas. Unfortunately, the permit did not require testing of the NOx and VOM emissions of the BOFs. That testing was subsequently required by the CAAPP permit issued for the facility.

[60] This approach is consistent with a basic principle of the Title V permit program, as reflected in the CAAPP, that the responsibility for showing compliance with applicable air pollution control requirements for a facility lies with the source or Permittee for the facility, and not with the permitting authority.

[61] It should also be noted that in PCB 2013-53, the appeal that is pending before the Pollution Control Board for CAAPP permit 96030056, US Steel challenged Condition 5.13, General Procedures for Certain Permit Limits on Emissions. Condition 5.13 is relevant to the requested revisions of Permit 95010001 as it specifies procedures by which compliance is to be generally determined with the emission factor limits and annual emission limits set by Permit 95010001 for process units. In addition to not proposing revisions to Permit 95010001 to accommodate use of prescribed emissions factors, the 2022 application does not address related revisions to Condition 5.13 of Permit 96030056 to potentially facilitate resolution of PCB 2013-53 as Condition 5.13 is challenged in this appeal.

RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application was not accompanied by an application for an administrative amendment to incorporate changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are authorized by Construction Permit 11050006, issued April 1, 2013. That construction permit addresses the baghouse control system installed on the BOFs to improve control of the particulate emissions of these furnaces from charging and tapping. As that construction permit was subject to Integrated Processing, it provides for certain changes to then be made in the CAAPP permit to the requirements for the BOFs as needed to accommodate the use of both this new baghouse control system and the existing electrostatic precipitator (ESP) system for control of emissions. However, US Steel has not initiated a revision to the CAAPP permit to incorporate changes as authorized by Permit 11050006 by submitting an application for an administrative amendment of the CAAPP permit.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent the administrative amendment of the CAAPP permit as authorized by Construction Permit 11050006, as the 2022 application requests Integrated Processing, the application requests that revision of Permit 95010001 authorize changes to the current CAAPP permit. As such, the application effectively requests that separate from the revisions that are specifically requested by the application, the Illinois EPA reissue a CAAPP permit that, as related to the BOFs, contains provisions that are no longer accurate. For example, the description of the BOFs in CAAPP Conditions 7.5.1 and 7.5.2 does not indicate the use of the baghouse control system on the BOFs; only the ESP system is addressed. In addition, CAAPP Condition 7.5.5-1 does not address the corrective action procedures for baghouses required by 40 CFR 63.7800(b)(4). The addition of the baghouse system would be appropriately addressed in the CAAPP permit by the earlier amendment authorized by Construction Permit 11050006. As such, it would be contrary to the CAAPP to authorize further revisions to the CAAPP permit by means of Integrated Processing, as is requested by the 2022 application, without first making the revisions to the CAAPP permit authorized by Permit 11050006. Otherwise, the amendment of the CAAPP permit authorized by means of the revision of Permit 95010001 would be deficient. For the BOFs, as such a CAAPP permit, would not address certain applicable requirements, the permit would not contain provisions to assure compliance with all applicable requirements. It would also continue to include requirements that, as addressed by Permit 11050006, would have become obsolete with the addition of the baghouse control system.

Discussion

The 2022 application does not identify the version of the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Construction Permit 11050006, issued April 1, 2013. This permit addresses the addition of a baghouse system to improve control of particulate emissions of the basic oxygen furnaces from charging and tapping of the furnaces. With the addition of this new system, the furnaces have three points of emissions, i.e., the new baghouse, the historic ESP, and the roof monitor on the furnace shop.[62] Certain work practices that were required by Permit 95010001 for control of particulate emissions of the furnaces with only an ESP system conflicted with the use of the baghouse system or would no longer be appropriate when emissions were also controlled with the new system. To address the fact that these work practices were also present in the CAAPP permit for the facility, Construction Permit 11050006 was subject to Integrated Processing and allowed certain changes to be made to the CAAPP permit by administrative amendment.[63] This was intended to enable use of the new baghouse system for improved control of particulate emissions in compliance with the CAAPP permit without the need for a subsequent permit proceeding to modify the CAAPP permit. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[64]

Section 39.5(13)(a) of the Illinois Environmental Protection Act provides that "The Agency shall take final action **on a request** for an administrative permit amendment within 60 days after **the receipt of the request**." (Emphasis added.) Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the 2022 application can only request Integrated Processing

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[62] The new baghouse system required a construction permit because this system would affect the requirements that then existed for control of particulate emissions of the basic oxygen furnaces, including their emissions of lead. For purposes of NSR, the construction permit was issued based on the new baghouse system being a project that would reduce the emissions of particulate and lead from these furnaces rather than increase these emissions. The permit was also based on this new system not increasing the emissions of other pollutants from these furnaces. As such, the construction permit for the new baghouse system, Permit 11050006, did not set limits for emissions from the baghouse system. This permit also did not lower the existing limits for the emissions of the basic oxygen furnaces.

[63] To address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, in its entirety. The new version of Section 7.5 addresses the basic oxygen furnace shop with the new baghouse system. Given the extent of the changes to Section 7.5 that were needed to accommodate addition of a baghouse to the particulate control system for the basic oxygen furnaces, this approach was taken to Permit 11050006 to provide accuracy, clarity and simplicity in the revisions to the CAAPP permit that were being authorized.

[64] The 2022 application does address the addition of the baghouse control system for the basic oxygen furnaces as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the basic oxygen furnaces.

to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[65, 66]

[65] The timing of the physical issuance of a revised CAAPP permit by the Illinois EPA is critical as a procedural matter because it starts the period within which the Permittee may appeal such action to the Pollution Control Board. Moreover, in PCB 2013-62, US Steel has already appealed certain elements of the changes to the CAAPP permit that are addressed by the administrative amendment to the CAAPP permit authorized pursuant to Permit 11050006.

Given this appeal, the Illinois EPA would not "reinstate" those provisions when issuing the amended CAAPP permit. Instead, it is expected that the amended CAAPP permit would contain notes that explain that the appealed provisions continue to be present in the that existing CAAPP permit as they were appealed. Nevertheless, it is possible that US Steel would appeal those notes in the amended permit as they would acknowledge the continued existence of the appealed provisions.

[66] Concerns are posed by certain conditions in existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The 2022 application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit. One concern is that the deadlines in Permit 11050006 for performing emission testing on the new baghouse and completing certain other actions were based on the basic oxygen furnaces being in routine use once the construction of the new baghouse system was completed. The permit did not contemplate the over two yearlong interruption in production that began in December 2015. US Steel undertook this interruption in production in response to the poor markets for domestic steel at that time. As such, although failures to meet certain deadlines in Permit 11050006 likely were reasonable, it is not clear that they would be excused as being due to *force majeur* (i.e., event(s) that could not reasonably be anticipated or controlled by the source).

The other concern with existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 is that they overlook the role of the existing ESP control system in controlling particulate emissions from charging and tapping of the basic oxygen furnaces. Instead, Permit 11050006 incorrectly indicates that the new baghouse system will control emissions from charging and tapping of the furnaces and the existing ESP system will control emissions from the refining process. In fact, the new baghouse system was constructed to improve control of emissions from charging and tapping, with capture hoods to collect particulate emissions that are not captured by the hoods that serve the ESP system. This is perhaps most clearly shown in the 2010 Memorandum of Understanding between US Steel and the Illinois EPA (MOU) as this MOU addresses improvement in the control of emissions from charging of the furnaces. Section 4(d) of the MOU acknowledges the presence of the existing control for charging with the ESP. It also indicates that control of emissions from charging could be improved by ducting either some or all of these emissions to a new baghouse system. In any case, the errors in the description of the new baghouse system for the basic oxygen furnaces in Permit 11050006 should also be corrected so that erroneous information is not perpetuated in the amendments to the CAAPP permit.

15. THE 2022 APPLICATION WOULD NOT CLARIFY THE RELATIONSHIP BETWEEN FUGITIVE DUST CONTROL MEASURES REQUIRED BY PERMIT 95010001 AND MEASURES REQUIRED BY 35 IAC PART 212 SUBPART K

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* As related to practices to reduce emissions of fugitive dust from roadways, parking areas and open areas at the Granite City Works and certain public roadways near this facility, the 2022 application does not propose revisions to clarify the interplay between the associated recordkeeping and reporting that are required by Permit 95010001 and the associated recordkeeping and reporting that are required by Board rules. In this regard, except for Condition 25, Permit 95010001 does not address the Board's rules for control of emissions of fugitive dust. (Condition 25 addresses 35 IAC 212.316(e)(1), which limits the opacity of emissions from roadways and parking areas at the facility to no more than 5 percent, average of four vehicle passes, 3 opacity readings for each pass.) While the CAAPP permit for the facility addresses requirements in Board rules for control of fugitive dust, it is unclear whether the requirements for recordkeeping and reporting in 35 IAC 212.316(g) are applicable for the public roadways for which specific measures to reduce emissions of fugitive dust are required by Permit 95010001. This is because Condition 7.13.9(a) in Part 7.0 of the CAAPP permit, which contains "Unit Specific Conditions for Specific Emission Units," provides that the requirements of 35 IAC 212.316(g) apply for "… any fugitive particulate matter emission unit subject to 35 IAC 212.316," without further elaboration on whether public roads are subject to 35 IAC 212.316. However, Condition 5.3.2(c)(ii) in Part 5.0 of the CAAPP permit, which contains "Overall Source Conditions," explicitly applies the requirements for Fugitive Particulate Matter Operating Programs, 35 IAC 212.309, 212.310 and 212.312, to the public roadways for which measures to reduce emissions of fugitive dust are required. Accordingly, for the subject public roadways, the CAAPP permit indirectly indicates that the requirements of 35 IAC 212.316(g) also apply.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent clarifying information as described above, the 2022 application does not include the necessary information to allow a revision to Permit 95010001 to be proposed, much less issued, for the Project with Integrated Processing, as is also requested by the application. This is because the amendment of the CAAPP permit that would be authorized by means of the requested revision of Permit 95010001 would be deficient. For roadways, parking areas and other open areas, such an amended CAAPP permit, would not clearly delineate the standards for opacity of emissions pursuant to Board rules that apply to the different

categories of emission units (e.g., 5 percent for roadways and parking areas at the facility, 10 percent for storage piles, and 20 percent for the on-site landfill). In addition, if provisions of 35 IAC 212.316 should not be applied to public roadways, as they are not part of the Granite City Works, such an amended CAAPP permit would improperly perpetuate errors in the current CAAPP permit regarding applicability of Board rules.

Discussion

For roadways, parking areas, and open access areas, Conditions 23, 24, 26, 27, 28, 29 and 30 of Permit 95010001 require implementation of control measures for emissions of fugitive dust. The 2022 application does not make clear the relationship between these requirements established by permit and state regulatory requirements for fugitive emissions in 35 IAC Part 212 Subpart K.[67] In particular, Condition 29 requires daily recordkeeping for the implementation of required measures for on-site dust control. However, it does not address the relationship between these permit-mandated records and the recordkeeping required by 35 IAC 212.316(e)(2).[68] At the same time, Permit 95010001 does address one requirement of 35 IAC Part 212 Subpart K as Condition 25 restates the requirement of 35 IAC 212.316(e)(1), which provides that the opacity of fugitive particulate matter emissions from any roadway or parking area at the Granite City Works shall not exceed 5 percent.[69] That Permit 95010001 does not currently deal with regulatory requirements for fugitive dust is an issue as Integrated Processing of a revision of this this permit

[67] Incidentally, the CAAPP permit for the Granite City Works appears to erroneously apply the requirements of 35 IAC Part 212 Subpart K, to the requirements for off-site dust control in Permit 95010001. These regulatory requirements, including that subject sources must be operated under the provisions of an operating program designed to significantly reduce fugitive particulate matter emissions, are applicable to US Steel for sources of fugitive dust at the Granite City Works. However, 35 IAC 212.302 appears to provide that the various emission standards and control requirements in 35 IAC Part 212 Subpart K, other than the general standard for the opacity of fugitive emissions in 35 IAC 212.301, apply for emission units for fugitive dust at certain types of facilities, including manufacturing facilities. Accordingly, these regulatory requirements would not apply to off-site roadways and the compliance procedures for the control measures for off-site roadways should instead be established by permit.

[68] For example, for roadways and parking areas at a steel mill in Granite City (i.e., the Granite City Works), 35 IAC 212.316(g)(2) requires the owner or operator to keep the following detailed records related to the application of control measures for these units:

> 35 IAC 212.316(g)(2) ...
>
> D) For each application of water or chemical solution to roadways by truck: the name and location of the roadway controlled, application rate of each truck, frequency of each application, width of each application, identification of each truck used, total quantity of water or chemical used for each application and, for each application of chemical solution, the concentration and identity of the chemical;
> E) For application of physical or chemical control agents: the name of the agent, application rate and frequency, and total quantity of agent, and, if diluted, percent of concentration, used each day;
> F) A log recording incidents when control measures were not used and a statement of explanation.

[69] In Condition 31, Permit 95010001 also refers to 35 IAC Part 212 Subpart U, which also addresses fugitive emissions. For certain facilities, including the Granite City Works, it requires that the owner or operator prepare a contingency measure plan for reductions in particulate emissions that could be implemented in the event of an exceedance of the NAAQS for PM10, 24-hour average. Incidentally, Illinois has never needed to implement the contingency plans required by 35 IAC Part 212 Subpart U.

requires that the compliance procedures in the revised permit be consistent with those required by the CAAPP.

16. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT ARE NEEDED DUE TO REVISIONS TO 40 CFR 63 SUBPART FFFFF, AS COULD BE EXPEDITED BY INTEGRATED PROCESSING OF PERMIT 95010001

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a) .

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not address or identify changes to Permit 95010001 and, by means of Integrated Processing of the revision to Permit 95010001, the changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are appropriate as a result of certain revisions of the Iron and Steel NESHAP, 40 CFR 63 Subpart FFFFF. Those revisions, which took effect in January 2022, provide that the emission standards in 40 CFR 63 Subpart FFFFF apply at all times. The prior exemptions from these standards for a subject unit during periods of startup, shutdown and malfunction no longer apply. The provisions of 40 CFR 63 Subpart FFFFF are relevant to Permit 95010001 as it directly or indirectly relies on these rules for the compliance procedures that accompany the permit limitations for the particulate emissions of the NESHAP-subject units, as needed to make those limitations enforceable as a practical matter. For the BOFs, Permit 95010001 directly relies on 40 CFR 63 Subpart FFFFF as Condition 9 refers to applicable provisions of 40 CFR 63 Subpart FFFFF for the work practices, opacity limits, operational limits, emission testing, operational monitoring, recordkeeping and reporting that are required. For the blast furnace casthouse and units other than the BOFs that are subject to 40 CFR 63 Subpart FFFFF, the applicable compliance provisions of this NESHAP are currently indirectly relied upon as those requirements are addressed in the CAAPP permit for the facility,. (For the BOFs, the CAAPP permit also addresses the applicable compliance procedures of 40 CFR 63 Subpart FFFFF.)

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent explicit recognition in the 2022 application of the recent revisions to 40 CFR 63 Subpart FFFFF, the version of Permit 96030056 that would be authorized by means of the Integrated Processing of revised Permit 95010001 could continue to reflect the historic version of 40 CFR 63 Subpart FFFFFF, prior to the revisions related to startup, shutdown and malfunction. For example, the current CAAPP permit addresses provisions of 40 CFR 63 Subpart FFFFF that required startup, shutdown and malfunction plans that were removed in the revision of these rules. (Refer to CAAPP Condition 7.4.5-2(a) for the "affected blast furnaces and casthouses [sic]" and CAAPP Condition 7.5.5-2(a) "for BOF [sic].") This would be an impediment to Integrated Processing of a revision to Permit 95010001 if the revised permit would not provide for compliance requirements that are substantially equivalent to those

required by the CAAPP. It would clearly be contrary to the compliance requirements of the CAAPP if for the casthouse and the BOFs, the amended CAAPP permit that would be authorized be issued by means of Integrated Processing would still include provisions of the historic version of 40 CFR 63 Subpart FFFFF that have ceased to apply.

Discussion

The 2022 application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. (85 Federal Register, pages 42,074 – 42,130, July 13, 2020). Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources,

These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the 2022 application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the basic oxygen furnaces and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate. This reliance occurs as the emission limits that are set or would be set by a revised permit would be restated in the CAAPP permit for the Granite City Works, Permit 96030056. The provision currently in CAAPP Permit 96030056 that reflect the exceptions to the requirements of 40 CFR 63 Subpart FFFFF for SSM create a break or interruption in this reliance on the NESHAP for purposes of enforceability of permit limits for emissions, even if the actual nature and effect of this break or interruption is uncertain. Any concern over such interruptions would be eliminated if the former provisions of the NESHAP regulations, which USEPA acted to strike in July 2020, were also no longer present in the CAAPP permit.[70]

[70] From a legal and practical perspective, the continued presence of the former provisions of 40 CFR 63 Subpart FFFFF in the CAAPP permit would be problematic. Would US Steel have to maintain startup, shutdown and malfunction plans as related to particulate emissions of NESHAP-subject units relative to permit limits for particulate emissions? Would the continued presence of these provisions in the CAAPP permit throw Integrated Processing of Permit 95010001 into question as the compliance procedures that would accompany the limits for particulate emissions in revised Permit 95010001 would not be consistent with the procedures required by the CAAPP? Would US Steel and the Illinois EPA have to delineate and then implement a secondary version of the compliance procedures that would deal with emissions of particulate from NESHAP-subject units during SSM events?

17. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT HAVE RESULTED FROM SHUTDOWN OF EMISSION UNITS, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not identify or address changes to the CAAPP permit for the facility, Permit 96030056, that result from the permanent shutdown of certain emission units at the facility. US Steel has also not taken other action to initiate issuance of a revision of Permit 96030056 that would remove provisions for emission units that are now permanently shutdown. In this regard, for example, Permit 96030056 currently includes provisions addressing the two by-product recovery coke oven batteries at the facility that were permanently shut down in 2015.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information in the 2022 application or other appropriate action by US Steel, as addressed above, the application does not include the necessary information to enable a revision to Permit 95010001 to be issued with Integrated Processing. This is because the application would not show that such a revision to Permit 95010001 would meet the criteria for Integrated Processing, as is specifically requested by the application. That is, the 2022 application would not show that the revisions to Permit 95010001 would provide for procedural and compliance requirements in Permit 96030056 that are substantially equivalent to those provided for by the CAAPP. The application would not support subsequent amendment of Permit 96030056 by means of Integrated Processing that would remove provisions for units that are now shutdown. Instead, absent an appropriate request, the application, would only support issuance of an amended CAPPP permit that would include the current provision for units that are now shut down. In this regard, the Integrated Processing of a construction permit only allows for subsequent amendments to a CAAPP permit as provided for by the construction permit. The Illinois EPA is not given independent authority to revise a CAAPP permit to remove provisions for units that are now shut down but are not otherwise the subject of the construction permit application.

Discussion

The 2022 application does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. ...

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes.[71, 72] In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary.[73] It would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.[74] The responsibility to identify provisions in

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[71] The elimination of COG also affected the applicability of emission standards to certain units. For example, 35 IAC 212.458(b)(23) is no longer applicable, to ladle dryers/preheaters, contrary to what is stated in Condition 7.5.3-1 of the CAAPP permit.

[72] US Steel's current application for renewal of CAAPP Permit 96030056, which was received by the Illinois EPA on December 3, 2013, also does not address shut down of the by-product coke oven batteries and other related operations at the facility. This application only acknowledges that changes to the CAAPP permit will be needed in the future to address the addition of the baghouse to the particulate control system for the basic oxygen furnaces when construction of the baghouse is complete.

> The existing equipment descriptions for the individual processes at GCW (Granite City Works) in the CAAPP permit sections 7.1 to 7.4 and 7.6 to 7.13 are generally accurate. However, the Basic Oxygen Furnace process described in the CAAPP permit condition 7.5 will eventually need to be updated with the new secondary baghouse added as part of the Emission Reduction Project (Construction Permit No. 11050006) once construction is complete.
>
> Application for Renewal of CAAPP Permit 95030056, Section 2.2.2, "Process Changes."

[73] Irrespective of whether certain provisions in the CAAPP permit related to use of COG are still necessary, Condition 5.6 of the CAAPP permit limits the SO_2 emissions of these units from use of COG. (This condition restates limits from Federally Enforceable State Operating Permit 94120017, originally issued December 12, 1994.) The absence of COG does not act to excuse US Steel from required recordkeeping and periodic reporting for emissions of SO_2 and PM_{10} from these units from use of COG (CAAPP permit, Conditions 5.9(e) and 5.10.3). It also does not excuse US Steel from required operational monitoring for the use and sulfur content of COG (CAAPP permit, Conditions 5.6(a) and 7.3.9(f)). In this regard, the emission units addressed by CAAPP Condition 5.6, which are addressed by these requirements for operational monitoring, recordkeeping and reporting, have not been shut down.

[74] A fundamental requirement of the CAAPP is that applications for CAAPP permits must be truthful, accurate and complete. In this regard, Section 39.5(5)(e) of the Environmental Protection Act provides that "Each submitted CAAPP application shall be certified for truth, accuracy, and completeness by a responsible official in accordance with applicable regulations." Section 10(a)(i) of the Act provides that one of the standards of issuance for a CAAPP permit by the Illinois EPA is that "... the applicant has submitted a complete and certified application for a permit, permit modification, or permit renewal

the CAAPP permit that should not be carried forward initially falls on US Steel as it is the CAAPP Permittee for the Granite City Works.[75] Moreover, as the 2022 application requests Integrated Processing of the requested revisions to Permit 95010001, the subsequent revisions to the CAAPP permit that would be authorized by the revisions to Permit 95010001 must fulfill the requirement that a CAAPP permit issued for a source accurately identify or address the emission units that constitute the source is being permitted.

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consistent with subsection 5 and 14 of this Section [Section 39.5 of the Act], as applicable, and applicable regulations." The requirement for an application to be truthful, accurate and complete is applicable to US Steel's current request for revisions to Permit 95010001 as it includes a request for Administrative Amendment to the CAAPP permit for the Granite City Works by means of Integrated Processing under the CAAPP. The scope of this requirement's applicability is not limited to only certain types of CAAPP applications, such as applications for initial CAAPP permits or renewals of CAAPP permits.

[75] As US Steel is the Permittee for a CAAPP source, it must periodically report compliance or noncompliance with each of the requirements set forth in the CAAPP permit. If US Steel believes that it is "in compliance" with regard to certain requirements in the CAAPP permit because those requirements have been affected by Condition 9.11 of the CAAPP Permit, it is appropriate for US Steel to request appropriate changes to the CAAPP permit by means of an appropriate application for amendment or modification of the CAAPP permit. This is especially true as certain requirements in the CAAPP permit that relate to use of COG apply to emission units that have not been shut down.

18. THE EVALUATION OF BEST AVAILABLE CONTROL TECHNOLOGY (BACT) IN THE 2022 APPLICATION FOR CARBON MONOXIDE (CO) IS NOT SUFFICIENT AND DOES NOT ADEQUATELY SUPPORT US STEEL'S PROPOSAL FOR BACT

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were ranted as requested:* Sections 9(a), 9(b)(2), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*, 201.152***, 201.160(a), 204.280, 204.330, 204.810, 204.820 and 204.1100(c).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* For the blast furnace casthouse, for which BACT for CO must now be set as it has been realized that the casthouse emits CO, the BACT demonstration in the 2022 application does not show that options for BACT for CO other than add-on control devices were considered. For the blast furnace stoves, for which BACT for CO must now be reevaluated as increases in permitted emissions are requested, the application is not accompanied by diagrams and cost data supporting the claim that it is not feasible to conduct emission testing by USEPA reference methods for the CO emissions of the stoves. This information is necessary for the stoves if BACT for CO is to not be set as a numerical standard. (The 2022 application requests that the revised permit recognize CO emissions from the casthouse of about 300 tons/year, of which about 100 tons/year would be the increase from the Production Increase Project; the requested increase in permitted CO emissions from burning blast furnace gas (BFG) in the blast furnace stoves is almost 10,000 tons/year, with an overall increase, also considering the BFG flares and boilers, of more than 20,000 tons/year.) For both the casthouse and the blast furnace stoves, the BACT demonstrations in the application do not include descriptions or documentation for the investigations that were conducted into available options for control of CO.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as addressed above, the BACT demonstrations in the 2022 application for CO are not complete. They do not show that BACT would be utilized for CO with changes in permitted CO emissions of the Project as requested by the application. As such, they cannot be relied upon to conclude that BACT is utilized for CO for the casthouse and blast furnace stoves, much less, for the Illinois EPA to set appropriate requirements as BACT for CO in a revision to Permit 95010001.

Discussion

The evaluation of Best Available Control Technology (BACT) for CO in Section 8 of the 2022 application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for

CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the 2022 application requests that the revision of Permit 95010001 allow for more emissions of CO from these units.

The Scope of the Evaluation

As explained in the 2022 application, consistent with the definition of BACT in Section 169(3) of the Clean Air Act (42 US Code Section 7479(3)) and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices.

> In the BACT analyses herein, the term "available" is used, consistent with U.S. EPA guidance to refer to any control strategy that is potentially applicable to the source type in question (i.e., a technology or control option that has a practical potential for application to the source category in general). These may include fuel cleaning, inherently lower polluting processes, and end of pipe control devices. All identified control strategies that are not inconsistent with the fundamental purpose and basic design of the proposed [sic] facility are listed in this step.
>
> 2022 application, Section 8.2.1.4, "Available Control Options," p. 8-4.

For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices (2022 application, Section 8.2.3.3). In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option. i.e., "Work Practice Standards, including good combustion practices" (2022 application, Section 8.2.2.3). The evaluation does not explain why process-related control options are not available for the casthouse.[76]

Support Provided for the Scope of the BACT Evaluation

For both the casthouse and the blast furnace stoves, the BACT evaluation in the 2022 application is not accompanied by supporting documentation for the investigation that was

[76] Incidentally, with regard to the blast furnace stoves, the evaluation does not explain why "good combustion practices" are considered to be a type of work practice standard rather than a separate control option. In Section 8.2.2.6 "Step 5 - Establish CO BACT," the evaluation proposes operational monitoring for temperature and oxygen levels to confirm operation of the stoves for efficient combustion of fuel, thereby maintaining CO emissions within the level that is achievable given the nature of the physical and operational design of the stoves. The evaluation also separately proposes the less prescriptive practices that are more often considered to constitute good combustion practices. For example, Section 8.2.2.6 also proposes to, "Conduct annual adjustment and tune-up to include, **at a minimum**, inspecting, adjusting, cleaning, or replacing instrumentation and operational control system components and inspecting the air-to-fuel ratio control system and adjusting as **appropriate** for **proper** operation." [Emphasis added.] Moreover, this statement of what would constitute "good combustion practices" for the stoves would be problematic as it would not be enforceable given the various qualifications, as highlighted, on the actions that are required actions to be taken.

conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. For example, for the casthouse, the evaluation states:

> Based on a review for BACT determinations in U.S. EPA's RBLC (RACT/BACT/LAER Clearinghouse) database and other literature, the control options that are potentially available to control CO emissions from the blast furnace casthouse are:
>
> * Capture system and thermal incineration and
> * Capture system and catalytic incineration.
>
> 2022 application, Section 8.2.3.3, p. 8-8.

When a BACT evaluation is submitted, it may be appropriate or necessary[77] for the application to also include documentary support for the review of available control options that was conducted. In this regard, BACT evaluations commonly include copies of information from the RBLC that is potentially relevant to the determination of BACT that must be made. Further explanation is also provided if some of that information is not considered applicable to the units that are the subject of the BACT determination. Likewise, as there is relevant information in the literature, especially as it is addresses available control options for the subject pollutant, copies of that information should be included in a BACT evaluation. This information enables the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for a BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

Support Provided for Work Practices As BACT for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the 2022 application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard.[78]

> USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions --*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel emissions units subject to the BACT requirements for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack

[77] For the 2022 application, this information is considered necessary. BACT determinations for the CO emissions of casthouses for blast furnaces and blast furnace stoves are uncommon. The Illinois EPA does not have the ability based simply on its own experience and knowledge to confirm that the potential control options for CO BACT were reasonably identified in the BACT evaluations in the application.
[78] The definition of BACT at 35 IAC 204.280 provides that:

> If the Agency [Illinois EPA] determines that technological or economic limitations on the application of measurement methodology to a particular emission units would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set further the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means that achieve equivalent results.

serving the blast furnace B stoves there is no sampling port satisfying the location requirement in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.

For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves.

Footnote 45. For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.
Footnote 46. Appendix A-1 to 40 CFR part 60.

2022 application, Section 8.2.2.6 "Step 5 – Establish CO BACT," p. 8-7.

Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. For example, the application does not include diagrams for the existing ductwork of the stoves to address whether the configuration of this ductwork would accommodate installation of test ports at a location that would satisfy USEPA Reference Method 1. The application also does not show how the refractory lining on the stacks or their age, approximately one hundred years old, would present significant technical challenges and costs so that the installation of test ports at a suitable location should be considered infeasible. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

19. THE APPLICATION DOES NOT ADDRESS BACT FOR SULFUR DIOXIDE (SO_2) AND CO FROM USE OF COKE OVEN GAS (COG) IN THE BLAST FURNACE STOVES

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*, 201.152***, 201.160(a), 204.280, 204.330, 204.810 and 204.1100(c).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include demonstrations of BACT for sulfur dioxide (SO_2) and CO from the burning of coke oven gas (COG) in Project-affected fuel burning units.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not allow a revision to Permit 95010001 to be issued for the Production Increase Project (Project)that considers baseline emissions from burning COG. This is because the application does not provide the demonstrations of BACT that is required as the Project is a major modification for SO_2 and CO under PSD. In this regard, unlike the initial permitting of the Project, the 2022 application now quantifies emissions of particulate, NOx and VOM from burning COG and these emissions are included in revised determinations of baseline emissions. (In 1996, the Project was permitted as a major modification for SO_2 and CO but did not quantitatively address emissions from burning COG.) If emissions from burning of COG are to be relied upon for the issuance of a revised permit, the 2022 application must also address the BACT requirements of PSD for the SO_2 and CO emissions from use of COG, as would have been applicable in 1996, when the Project commenced. The fact that the by-product recovery coke batteries at the Granite City Works were shutdown in 2015 and COG is no longer available at the facility, does not alter the applicable requirements under PSD that must be satisfied. PSD would be violated if a revised permit were issued for the Project based on revised NSR applicability analyses that considered use of COG, as contained in the 2022 application, absent demonstrations that the Project utilized BACT for emissions of SO_2 and CO from use of COG.

Discussion

The 2022 application does not demonstrate that Best Available Control Technology (BACT) was utilized as an aspect of the Project for the SO_2 and CO emissions of the blast furnace stoves, as required under the PSD program (e.g., 35 IAC 204.1100(c)). In this regard, unlike the original application, the 2022 application addresses emissions from use of coke oven gas (COG) as fuel in certain Project-affected units. (Refer to the revised netting analyses for the Project for particulate, NOx and VOM and in the 2022 application.) As the 2022 application now addresses

emissions of certain pollutants from burning of COG in fuel-burning units, including the blast furnace stoves, this application must also address the related consequence for emissions of SO_2 and CO under the PSD program from burning COG in the stoves. SO_2 and CO are pollutants for which the Project is a major modification subject to PSD. However, the 2022 application does not address BACT for SO_2 and CO as applied to use of COG in the stoves. As such, the 2022 application does not demonstrate that prior to February 2015, when the by-product recovery coke oven batteries at the Granite City Works were shut down and COG ceased to be available, BACT was being utilized for the SO_2 and CO emissions from use of COG in the stoves.

With respect to CO, it is relevant that the BACT demonstration in the 2022 application focuses on CO emissions from burning of fuels other than COG. For fuel burning units, the 2022 application states that "CO emissions of these units result primarily from incomplete combustion during the firing of BFG and natural gas." This ignores the historic contribution of COG to the CO emissions of the stoves prior to February 2015. The 2022 application also does not state that, as of February 2015, it was no longer necessary to address CO emissions from use of COG because COG was no longer produced and available for use.

20. AS RELATED TO SO_2 EMISSIONS FROM USE OF BFG, THE 2022 APPLICATION IS INCONSISTENT WITH A PENDING 2008 APPLICATION

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9(b)(2)), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* As related to emissions of sulfur dioxide (SO_2) from burning blast furnace gas (BFG), the 2022 application is inconsistent with and conflicts with an earlier application for revisions to Permit 95010001 that was received on February 8, 2008 (the "2008 application"). For the emissions of SO_2 from burning of BFG, the 2008 application requests increases in the emissions that are allowed by Permit 95010001. The 2022 application does not request such increases and does not request any changes to Permit 95010001 related to SO_2 emissions. The 2022 application does not even address the 2008 application to explain why the revisions to Permit 95010001 requested by the 2008 application are no longer needed. US Steel has also not taken other actions that would act to resolve the conflict between the 2022 application, which is being addressed in this proceeding, and the earlier 2008 application, which is still pending. For example, US Steel has not requested withdrawal of the 2008 application. In this regard, it is noteworthy that the approach taken in the 2022 application to SO_2 emissions from burning BFG is different from the approach that is taken for NOx, VOM and particulate. For example, for the BOFs for NOx and VOM, the 2022 application requests revisions to Permit 95010001 to increase permitted emissions so as to facilitate future compliance.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* The conflict between the 2008 application and the 2022 application is an impediment to revision of Permit 95010001 as requested by the 2022 application. Absent resolution of this conflict, either by appropriate information or request in the 2022 application or by other appropriate action by US Steel, the 2022 application should not be considered to show compliance with the SO_2 emission limits for burning BFG that are currently in Permit 95010001. As such, the 2022 application does not meet the standards for issuance of a construction permit.

Discussion

In 2008, US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of BFG and the SO_2 emissions resulting from the use of BFG. That application (the 2008 application) was received on February 4, 2008. The 2022 application is inconsistent with and conflicts with the 2008 application. As such, these applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "... does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." (2022 application, p. 2-2.) The 2008 application does request changes to the provisions of the permit for SO_2., as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors." (October 2008 application, p. 1-1.)

In particular, in the 2008 application:

> ...US Steel seeks to revise the Production Increase Permit (95010001) to account for US Steel's revised method for calculating the SO_2 emissions from BFG combustion. This will increase the total allowable SO_2 emissions on an annual basis from combustion of BFG in the Production Increase Permit.
>
> 2008 application, pp. 2-2 and 2-3

The 2008 application specifically requests that the SO_2 emission factor limit for BFG be increased from 6.65 to 16.00 pounds/million cubic feet of gas burned. With the revised emission factor, the permitted SO_2 emissions from use of the 185,030 million cubic feet of BFG per year, as allowed by the permit, would increase from 615.22 to 1480.24 tons/year. However, the 2022 application provides that the limits for SO_2 for use of BFG should be unchanged. As such, the 2022 application indicates that for use of BFG the requested revised permit should continue to limit SO_2 emission to 6.65 pounds/million cubic feet burned and 615.22 tons/year.

Moreover, the existence of the 2008 application suggests that the revisions to SO_2 emission limits that it requested were needed at the time of that application. The 2022 application does not show that this was not the case, as it does not address historic SO_2 emissions from use of BFG to show that an SO_2 emission factor of 6.65 pounds/million cubic feet was appropriate when Permit 95010001 was originally issued in 1996 and that annual SO_2 emissions have never exceeded 615.22 tons/year.

21. AS RELATED TO EMISSION LIMITS FOR SO_2, LEAD AND CO, THE 2022 APPLICATION IS INCONSISTENT WITH PENDING BOARD APPEALS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* For various processes, the 2022 application does not request or propose appropriate changes to the current emission factor limits in Permit 95010001 for SO_2, lead and CO to resolve pending permit appeals (PCB 2013-52 and PCB 2013-62). For these pollutants, Permit 95010001 sets emission factor limits for the blast furnace casthouse and the slag pits for SO_2; for the BOFs for lead and CO; and for desulfurization and reladling for lead. Alternatively, the 2022 application does not indicate that the inclusion of the current emission factor limits in a revised permit is not expected to result in another appeal as these limits are now considered acceptable. For the BOFs for CO, the application also does not indicate that the current emission factor limit, which applies only to the stack emissions from the electrostatic precipitator (ESP), would still be considered acceptable if applied to stack emissions. That is, the current limit would still be acceptable if it applied in aggregate to the CO emissions from the stack of the ESP and the stack of the baghouse, which was subsequently installed to improve control of the particulate emissions of the BOFs (Construction Permit 11050006). This change would be appropriate as particulate emissions of the BOFs are now addressed by two control systems. (Besides particulate, these systems capture emissions of CO and other pollutants from the BOFs but only act to reduce particulate and lead emissions.)

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include information necessary for the Illinois EPA to include conditions in a revised permit to prevent noncompliance with certain current emission factor limits that apply to the subject processes. As the subject limits, as they are or, in the case of PCB 2013-62, would be present in the CAAPP permit, are currently the subject of appeals, it is reasonable for these limitations for the review of the application to be based on compliance not being achieved. Moreover, absent information as described above, the 2022 application does not show that, as the subject limits are appealed and could be stayed in any revised CAAPP permit, these limits should be considered to still meet the substantive requirements of the CAAPP. Finally, it is noteworthy that for the subject processes for the various emission factor limits for PM, PM-10, NOx and VOM, the application does request revisions to the emission factor limits. For those requested revisions, the 2022 application, page 2-3, explains that "USS Granite City anticipates that these revisions will enable settlement of the permit appeals currently before the Board because they involve provisions of the permit addressing emission factors."

Discussion

As already mentioned, the 2022 application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. The application states, "This permit application also does not request any changes to the SO_2 and lead emission limits in Construction Permit No. 950100001, so SO_2 and lead emissions will not be discussed further." [2022 application, Section 2.2, "General Description of Requested Permit Revisions." p. 2-2.][79, 80, 81] For CO, the 2022 application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[82] However, the application does not request revisions to the emission limits currently in Permit

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[79] In Section 3 of the application, in which support for elimination of emission factor limits and use of group limits is generally provided, the application only addresses limits for particulate, NOx and VOM. For example, the application states that,

> The approach proposed by USS Granite City with respect to the PM, PM_{10}, NOx and VOM emissions caps to be used in any revised Construction Permit No. 95010001, including the proposed revisions to certain emission limitations, compliance demonstration requirements, and other permit conditions as discussed in detail in Sections 5 through 7 of the permit application ["Proposed Changes to Permit Terms for PM and PM_{10} Emissions Increases Analyses," "Proposed Changes to Permit Terms for NOx Emission Increases Analysis, and "Proposed Changes to Permit Terms for VOM Emission Increases Analyses," respectively] is consistent with policy and precedent and will improve the enforceability of the PTE limitations in Construction Permit No, 95010001. In particular, USS Granite City emphasizes that removal of certain conditions and provisions addressing emissions individual emission units or emission points, including both limits on annual emissions and provisions emission addressing emissions factors will not result in impairment of the enforceability of the PTE limitations.
>
> 2022 application, Section 3, "Discussion of Permit Conditions Used to Restrict PTE [Potential to Emit]," 3-3.]

[80] For process operations, Permit 95010001 currently limits SO_2 emissions from the casthouse and slag pits associated with the blast furnaces in pounds per ton of iron produced and tons per year. For the casthouse, the SO_2 emissions of the main baghouse for the casthouse, the baghouse for the iron spouts at the casthouse, and the uncaptured emissions from the casthouse are limited, respectively, to 0.2006, 0.0073, and 0.0104 pounds per ton of iron produced. The SO_2 emissions of the slag pits are limited to 0.0100 pounds per ton of iron produced. (Permit 95010001, Condition 5 and Table 1.)
Although the emission factor limits for the SO_2 emissions of the casthouse are not identified as Best Available Control Technology (BACT) by Permit 95010001, these limits are considered to be the determination of BACT for SO_2 and should have been identified as such in this permit. BACT is required for the casthouse for SO_2 because the Project was a major modification for SO_2 under the PSD program, as is stated in this permit. Accordingly, as Project included physical changes to the blast furnaces to increase their production capability, BACT is required for the SO_2 emissions of the casthouse.

[81] For operations in the basic oxygen furnace shop, Permit 95010001 currently limits lead emissions in pounds per hour and tons per year. For the basic oxygen furnaces, the lead emissions from the ESP stack and roof monitor are limited to 0.01934 and 0.0129 pounds per hour, respectively. The lead emissions from desulfurization and hot metal transfer are limited to 0.0133 pounds per hour. (Permit 95010001, Condition 18 and Table 2.) The permit does not address the lead emissions of the basic oxygen furnaces that are now captured and controlled by the new baghouse system nor does the 2022 application request any revisions to the permit to address the lead emissions of these furnaces that now occur from the stack of the baghouse.

[82] In the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests certain updates to the limits for CO emissions from use of blast furnace gas and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

95010001 for the CO emissions of the basic oxygen furnaces, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack.[83] As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. As previously discussed, in these appeals, US Steel challenged all emission factor limits set by Permit 95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the t emission factor limits that are set for SO_2, CO and lead. In addition, in the 2022 application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.[84]

With regard to the CO emissions of the basic oxygen furnaces, the 2022 application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the basic oxygen furnaces, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system. Moreover, as the 2022 application does not propose such revisions to the current limits for CO emissions of these furnaces, the application effectively requests a relaxation of the current limits. This is because the revised permit would not address the CO emissions of these furnaces that now occur through the baghouse stack. That is, the limits in the revised permit would not account for any CO emissions that are no longer being captured with the ESP system and are instead now being emitted from the baghouse system.[85]

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[83] Permit 95010001 currently limits CO emissions of the basic oxygen furnaces through the ESP stack to 8.993 pounds per ton of liquid steel produced and 16,097.47 tons/year. (Permit 95010001, Condition 18, Table 2, Section 1, BOF ESP Stack.) The permit does not address CO emissions that are now captured by the new baghouse system and emitted from its stack or any uncaptured CO emissions, which occur through the roof monitor.

[84] If the subject emission factor limits were included in a revised permit, the Illinois EPA could explain that, if these limits in the revised permit were stayed pursuant to an appeal to the Pollution Control Board, the limits would continue to be enforceable pursuant to Permit 95010001 as issued before the revision of the permit and any appeal of the revised permit to the Board.

[85] The 2022 application also does not request revisions to Permit 95010001 to address uncaptured CO emissions of the basic oxygen furnaces or otherwise address the uncaptured CO emissions of these furnaces. This is not consistent with the approach taken for the casthouse on the blast furnaces. For the casthouse, the application requests that the revised permit limit the overall emissions of CO from the stacks on the control systems serving the casthouse. The application also includes information for the overall CO emissions of the casthouse, including other captured emissions and uncaptured emissions.

> As discussed in Section 8.2.3.7 of this permit application [BACT Evaluation for Blast Furnace Casthouse], USS Granite City is proposing a CO BACT emission limit of 70 lb/hr based on total emissions of these two baghouses [main casthouse baghouse and iron spout baghouse], assuming 95% capture efficiency for the capture system associated with the cast baghouse, as discussed in Section 5.2.3 of this permit application {A&B Blast Furnace Casthouse Roof Monitor Emissions PM_{10} Revised], the fugitive CO emissions from the casthouse roof monitor are 3.1 lb/hr. Total CO emissions from the casthouse roof monitor, including both baghouse and fugitive emissions are 73.1 lb/hr and 320 tons per year ("TPY").

22. THE 2022 APPLICATION DOES NOT INCLUDE A SIGNED CERTIFICATION FOR THE ACCURACY AND COMPLETENESS OF THE APPLICATION

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 39(a)* and 39.5(5)(e).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.159 and 270.401(f).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include a certification for the truth, accuracy and completeness of the application, as submitted on October 7, 2022. The certification in the 2022 application is a photocopy of an earlier certification dated February 25, 2020, that accompanied a prior application received on March 2, 2020, several years earlier. That certification cannot serve as the required certification. Also note that the 2022 application replaced the prior 2020 application. The transmittal letter accompanying the 2022 application states that, "Due to the nature of revisions throughout this application, the Illinois EPA should refer to this application for permit processing."

   The 2022 application also was not signed as required by 35 IAC 201.159. Even if Integrated Processing had not been requested so that the procedural requirements of the CAAPP were not applicable, the application still did not meet the procedural requirements for construction permit applications because the application was not signed.

   With respect to the "certification" and "signature" provided in US Steel's Comments responding to the Initial Draft Denial Letter, this was not sufficient to correct these omissions. First, this material, which is dated September 8, 2023, was an attachment to those comments and was not submitted as a supplement to the 2022 application. Second, the certification is not accompanied by an errata or other material correcting erroneous information in the application as either identified by the Illinois EPA in the Initial Draft Denial or identified by US Steel when developing its response to the Initial Draft Denial. Thus, even if the certification had been submitted as a supplement to the 2022 application, its truthfulness and validity would be questionable. The fact that the 2022 application was not certified and signed puts the entire application under a cloud.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* The 2022 application does not include the certification required by the Act, the Illinois EPA's regulations, and the Board's regulations.

2022 application, Section 4.4, "Updated CO Emissions Information for Blast Furnace Casthouse."

Discussion

The 2022 application does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022, as required by 35 IAC 201.159 and Section 39.5(5)(e) of the Illinois Environmental Protection Act. In its place, the 2022 application includes a photocopy of an earlier certification, dated February 25, 2020 ~~2022~~, which was submitted with a prior application (2022 application, "Appendix A – Application Forms (Copies of Previously Submitted Versions)"). However, the 2022 application is a revision of the earlier application and US Steel intends the 2022 application to replace the earlier application submitted in March 2020 in its entirety (2022 application, Cover Letter). Accordingly, the 2022 application must include a new certification for its truth, accuracy and completeness.

Appendix A: Listing of Sections of the Illinois Environmental Protection Act (Act) That Are Cited for the Different Denial Points Detailed in Attachment 1 As Sections of the Act Which May Be Violated If a Revised Permit Were To Be Granted As Requested by the 2022 Application

Note: The text of the Act (415 ILCS 5) is available on a website for Illinois Compiled Statutes maintained by the Illinois General Assembly: https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1585&ChapterID=36

Section 9(a): General prohibition against air pollution as it provides that no person shall "Cause or threaten to allow the discharge or emission of any contaminant into the environment in any State … so as to violate regulations or standards adopted by the Board (Pollution Control Board) under this Act." For various denial points in the Denial Letter, this general provision of the Act is cited as a provision of the Act that may be violated if a revised construction permit were issued as requested in the 2022 application as such permit would threaten to allow violations of Board regulations.

Section 9(b)(2): Prohibition against violating conditions imposed by air pollution control permits. The introductory language of Section 9 and Subsections 9(b) and 9(b)(1) of the Act provide that, "No person shall … Construct, install and equipment, facility … of any type designated by the Board … without a permit granted by the Agency unless otherwise exempt by this Act or Board regulations…." For persons with permits, the prohibition against violating permit conditions is in Subsection 9(b)(2), serving to provide that no such person shall operate any equipment or facility, "In violation of any conditions imposed by such permit."

Section 9.1(d): Prohibition against violations of certain sections of the federal Clean Air Act, including Section 165 (Prevention of Significant Deterioration (PSD)) and Section 173 (Permit Requirements for Nonattainment New Source Review Programs).

Section 39(a)*: Standard under the Act for issuance of permits. The designation "Section 39(a)*" or "39(a)*" is used to refer to the second clause of the first sentence in Section 39(a) of the Act. This clause provides that "…it shall be the duty of the Agency to issue a permit upon proof by that the applicant that the facility, equipment, vehicle vessel, or aircraft will not cause a violation of this Act or regulations thereunder." In the Denial Letter, this provision of the Act is routinely cited as a provision that may be violated because the 2022 application does not include proof that the Act or air pollution control regulations would not be violated if a revised permit were issued as requested by the application.

Section 39(a)**: Permit procedures under the Act. The designation "Section 39(a)**" or "39(a)**" is used to refer to the fifth sentence of Section 39(a) of the Act as it addresses imposition of conditions on permits. In particular, this sentence provides that in granting permits, "In granting permits, the Agency may impose such other conditions as may be necessary to accomplish the purposes of this Act, and as are not inconsistent with the regulations promulgated by the Board hereunder." (As addressed below, this

Section of the Act also provides that the Illinois EPA may impose reasonable conditions in a permit related to an applicant's compliance history as necessary to correct, detect or prevent noncompliance.) For various points in the Denial Letter, this provision of the Act is cited as one that may be violated because the 2022 application does not include information that may be needed for the Illinois EPA to impose necessary permit conditions in a permit that would be revised as requested by the application.

Section 39(a)***: Permit procedures under the Act. The designation "Section 39(a)***" or "39(a)***" is used to refer to the fourth sentence of Section 39(a) of the Act as it provides, "In granting permits, the Agency may impose reasonable conditions in a permit specifically related to an applicant's past compliance history with this Act as necessary to correct, detect or prevent noncompliance." (As discussed above, the Act also provides that permits may include conditions as may be necessary to accomplish the purposes of the Act and as are not inconsistent with Board regulations.) For certain points in the Denial Letter, this provision of the Act is cited as one that may be violated because the 2022 application does not include information that may be needed for the Illinois EPA to impose conditions to enable or facilitate future compliance.

Section 39.5(5)(e): A paragraph in Subsection 39.5(5) of the Act, "Applications and Completeness," in Section 39.5 of the Act, "Clean Air Act Permit Program." This provision requires that "Each submitted CAAPP application shall be certified for truth, accuracy and completeness by a responsible official in accordance with applicable regulations [i.e., 35 IAC 270.102 and the definition of "responsible official at Subsection 39.5(1) of the Act]. This provision is applicable for the review of the 2022 application as US Steel requests in this application that the processing of the revised permit that is requested be subject to Integrated Processing. As a consequence, the procedural and substantive requirements of Section 39.5 of the Act apply to the 2022 application pursuant to Section 39.5(13)(c)(v) of the Act, which provides the authorization for Integrated Processing of a construction permit.

Section 39.5(5)(i): A paragraph in Subsection 39.5(5) of the Act, "Applications and Completeness," in Section 39.5 of the Act. As already explained, the procedural and substantive requirements of the CAAPP are applicable to the Illinois EPA's review of the 2022 application as US Steel has requested that this application and any resulting revised permit prepared pursuant to this application be subject to Integrated Processing. The first sentence in this provision requires that:

> Any applicant who fails to submit any relevant facts necessary to evaluate the subject source and its CAAPP application or has submitted incorrect information in a CAAPP application shall, upon becoming aware of such failure or incorrect submittal, submit supplementary facts or correct information to the Agency."

For several denial points, Subsection 39.5(5)(i) of the Act is identified as a provision of the Act that might be violated if a revised permit were issued as requested by the 2022 application because it does not include "relevant information" necessary for the evaluation of the application. That is, as related to the particular applicable requirements, the application lacks information addressing the requirements, the information in the application addressing the requirement is insufficient, or the information in the application supports a finding that the requested revisions might not comply with the requirements. Note that as Subsection 39.5(5)(i) of the Act would not be satisfied by an

application, a CAAPP permit cannot be issued pursuant to such application. This is because Subsection 39.5(10)(a)(iv), one of the standards for issuance of a CAAPP permit, would also not be satisfied.

Section 39.5(7)(a): A paragraph in Subsection 39.5(7) of the Act, "Permit Content," in Section 39.5 of the Act. This paragraph requires that "All CAAPP [Clean Air Act Permit Program] permits shall contain limitations and conditions and other enforceable terms and conditions, including but not limited to operational requirements, and schedules for achieving compliance at the earliest reasonable date, which are or will be required to accomplish the purposes and provisions of this Act and to assure compliance with all applicable requirements [emphasis added]." For various points in the denial letter, this provision is cited as a provision of the Act that may be violated because the 2022 application does not include information that may be needed for the Illinois EPA to impose necessary permit conditions in a revised version of Permit 95010001 that would be revised as requested by the application. This provision is relevant to the Illinois EPA's review of the 2022 application as US Steel has requested that the application and any resulting permit be subject to Integrated Processing. As provided by Sections 39.5(13)(a) and (a)(iv), as listed below, this makes the application subject to substantive requirements of the CAAPP. It is also noteworthy that, absent Integrated Processing, any revised construction permit that is issued pursuant to the 2022 application would not resolve US Steel's pending appeal of the current CAAPP permit for the Granite City Works (PCB 2013-53) or the related appeal of Construction Permit 11050006 (PCB 2013-62). Resolution of these appeals would require a separate CAAPP permit application and a permit proceeding to revise the CAAPP permit. Moreover, the revised CAAPP permit that would result from the CAAPP proceeding would not necessarily reflect the terms and conditions established in the earlier revision of Permit 95010001. As such, resolution of these appeals could require two more permit proceedings, i.e., a proceeding to modify the CAAPP permit and another proceeding for revisions to Permit 95010001 to address issues identified during the modification of the CAAPP permit.)

Section 39.5(10)(a)(iv): A paragraph in Subsection 39.5(1) of the Act. As Subsection 39.5(5)(i) of the Act would be violated if a revised permit were issued as requested, the 2022 application also would not satisfy Subsection 39.5(10)(a)(iv) of the Act, one of the standards for issuance of a permit under the CAAPP. This is because this application would not include all "relevant information." Subsections 39.5(10)(a) and (a)(iv) of the Act provide that:

> The Agency shall issue a CAAPP permit, permit modification, or permit renewal if all of the following conditions are met:
>
> ...
>
> (iv) The Agency has received a complete application and if necessary, has requested and received additional information from the application consistent with Subsection 5 of this Section and applicable regulations.

Section 39.5(13)(c)(v): Paragraphs (a) and (c)(v) in Subsection 39.5(13) of the Act, "Administrative Permit Amendments," in Section 39.5 of the Act. The designation "Section 39.5(13)(c)(v)" or "39.5(c)(v)" are used to refer to these paragraphs. These paragraphs contain the authorization for the Integrated Processing of a construction permit so as to allow the related revisions to the CAAPP

permit to be made by administrative amendment, thereby avoiding the need for a subsequent modification of the CAAPP permit by either a minor or significant modification, as appropriate. These paragraphs of Subsection 39.5(10)(c) of the Act provide:

> c. For purposes of this Section [Section 39.5 of the Act] the term "administrative amendment " shall be defined as a permit revision that can accomplish one or more of the changes described below:
>
> ...
>
> v. Incorporates into the CAAPP permit the requirements from preconstruction review permits under a USEPA-approved program [i.e., Illinois construction permit program for sources of emissions and air pollution control equipment], provided the program meets procedural and compliance requirements substantially equivalent to those contained in this Section [emphasis added].

For various denial points in the denial letter, these paragraphs are cited as provisions of the Act that may be violated because the 2022 application is not sufficient for the Illinois EPA to impose necessary permit conditions in a new version of Permit 95010001 that would be revised as requested by the 2022 application. That is, this application does not include information that is necessary to enable such a revised permit to meet the compliance requirements, i.e., the substantive requirements, that must be satisfied by a CAAPP permit. For example, for certain emissions units, the Application requests that Permit 95010001 be revised to prescribe the actual emission factors that are to be used to determine compliance with limitations on annual emissions set by this permit. However, the application does not provide the supporting information that USEPA has found necessary for a permitting authority, e.g., the Illinois EPA, to set "prescribed emission factors" when issuing a Title V Permit. Similarly, the 2022 application requests certain revisions to the organization and terminology in Permit 95010001 for consistency with the CAAPP permit. However, the application does not request all such revisions that may be appropriate to reasonably achieve consistency in the organization and terminology of these permits.

Appendix B: Listing of Provisions in Subtitle B of Title 35 of the Illinois Administrative Code (IAC) That Are Cited for the Different Denial Points Detailed in Attachment 1 As Provisions Which May Be Violated If a Revised Permit Were To Be Granted As Requested by the 2022 Application

Note: The text of Illinois' regulations for control of air pollution (Illinois Administrative Code (IAC), Title 5, Subtitle B: Air Pollution, are available on a website maintained by the Board: https://pcb.illinois.gov/SLR/IPCBandIEPAEnvironmentalRegulationsTitle35

35 IAC Part 201, Permits and General Provisions

35 IAC 201.152*, Contents of Application for Construction Permit
This rule requires that applications for construction permits include certain data and information. The designation "201.152*" is used to refer to this rule as it requires this data and information to include "information concerning processes to which the emission unit or air pollution control equipment is related.

35 IAC 201.152**, Contents of Application for Construction Permit
This rule requires that applications for construction permits include certain data and information. The designation "201.152**" is used to refer to this rule as it requires this data and information to include "the quantities and types of raw materials to be used in the emission source or air pollution control equipment."

35 IAC 201.152***, Contents of Application for Construction Permit
This rule requires that applications for construction permit include certain data and information. The designation "201.152**" is used to refer to this rule as it requires this data and information include "... the nature, specific points of emissions and quantities of uncontrolled and controlled air contaminant emissions at the source that includes the emission unit or air pollution control equipment ...."

35 IAC 201.159, Signatures
This rule requires applications for air pollution control permit submitted to the Illinois EPA to be signed. It provides that, "All applications and supplements thereto shall be signed by the owner and operator of the source, or their authorized agent, and shall be accompanied by evidence of authority to sign the application."

35 IAC 201.160(a)(1), Standards for Issuance

In 35 IAC 201.160(a) and (a)(1), the Pollution Control Board (Board) restates the standard of issuance in Section 39(a) of the Act for the Illinois EPA to issue a permit as applied specifically to air pollution control construction permits. This rule provides:

> a) No construction permit shall be granted unless the applicant submits proof to the Agency that:
>
> 1) The emission unit or air pollution control equipment will be constructed or modified to operate so as not to cause a violation of the Act or of this Chapter [Title 35, Subtitle B, Chapter I)];

35 IAC Part 203, Major Stationary Sources Construction and Modification

(35 IAC Part 203 is potentially of concern for the Production Increase Project for emissions of NOx, VOM and particulate. This is because, in 1996, when Permit 95010001 was initially issued for this project, the Granite City Works was in areas that were designated nonattainment for the National Ambient Air Quality Stands (NAAQS) for ozone (emissions of NOx and VOM) and particulate matter (emissions of $PM_{2.5}$). The Granite City Works is still in an area that is designated nonattainment for ozone.)

35 IAC 203.123, Federally Enforceable (Definition)
This definition provides that "Federally Enforceable" means enforceable by the United States Environmental Protection Agency [USEPA]." This definition is cited as a basis for certain denial points as the 2022 application requests revisions to Permit 95010001 to set limitations that would take the place of limitations currently in Permit 95010001. However, the application does not include information showing that these proposed limitations should be considered enforceable as a practical matter.

35 IAC 203.128, Potential to Emit (Definition)
This definition of "potential to emit" is cited as a basis for denial points as related to the role of permit limitations, as distinguished from the physical and operational design of a stationary source, in restricting the potential emissions of emission units. 35 IAC 203.128, along with 35 IAC 203.122, are cited as a basis for denial as the 2022 application does not show that certain emission limitations that are proposed, which would replace emission limitations currently in Permit 95010001, should be considered enforceable as a practical matter. In this regard, the second sentence of this definition of "potential to emit" provides that:

> Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable [emphasis added].

35 IAC 203.201, Prohibition
This provision requires an entity that would undertake a project that is "major" for a pollutant in an area that is designated a nonattainment area for the pollutant to comply with the substantive

requirements of 35 IAC Part 203 for that pollutant. The various substantive requirements are then addressed later in Subpart C of 35 IAC Part 203. In this regard, the first two sentences of 35 IAC 203.201 provide:

> In any nonattainment area, no person shall cause or allow the construction of a new major stationary source or major modification that is major for the pollutant for which the area is designated a nonattainment area, except as in compliance with this Part [Part 203]for that pollutant. In areas designated nonattainment for ozone, this prohibition shall apply to new major stationary sources or major modifications of sources that emit volatile organic materials or nitrogen oxides.

As the revised NSR applicability analysis for NOx in the 2022 application does not show that the Production Increase Project would not have been a major modification for NOx with the increases in permitted NOx emissions that are being requested, 35 IAC 203.201 is cited as a basis for denial of this application. This is because the application also does not show that the substantive requirements of 35 IAC Part 203 would be fulfilled as the Project is now a major modification. For example, the 2022 application does not address the requirement in 35 IA3.302 that, as related to the role of emissions of NOx on air quality for ozone, an entity undertaking a major project for NOx in an ozone nonattainment area must provide emission offsets for NOx to compensate for the effect of the project's NOx emissions on ozone air quality.

35 IAC 203.203(b), Construction Permit Requirements and Application
For major projects that would be subject to 35 IAC Part 203, this rule sets forth the information that a permit application must contain. This rule provides that:

> Applications for construction permits required under this Section shall contain sufficient information to demonstrate compliance with 35 Ill. Adm. Code 201 [Permits and General Provisions] and the requirements of this Part [Part 203] including, but not limited to, Subpart C [Requirements for Major Stationary Sources in Nonattainment Areas, including the requirements for the Lowest Achievable Emission Rate (LAER) and the requirement to provide emission offsets].

35 IAC 203.208*, Net Emissions Determination – The Increase in Emissions from a Project
Among other aspects of "netting," this rule sets forth how the increases in emissions from a project should be addressed if a source elects to rely on netting with contemporaneous emissions decreases to show that a project would not be a major modification under 35 IAC Part 203. The first paragraph of this rule, referred to as "35 IAC 203 208*" is cited as a basis for denial of the 2022 application as the revised NSR applicability analysis for NOx in the application, which should address NOx emissions of the Production Increase Project, with the increases in permitted NOx emissions that are now being requested. For certain units, this analysis does not show that the increases in NOx emissions from the Project have been properly addressed. For a project, itself, this rule provides that the increase in actual emissions due to the project should be addressed. However, since the amount of this increase should be determined during permitting, i.e., before the project is implemented and the modified units begin normal operation with the project, 35 IAC 203.104(c) further provides that the Illinois EPA shall presume that the potential emissions of units with the project are equivalent to their actual emissions for purposes of permitting. (The circumstances are similar for permitting for a project that was improperly constructed without first obtaining a construction permit. This is because such source cannot rely

on permit limitations in lieu of potential emissions absent enforceable limitations.) In particular, the first sentence in 35 IAC 203.208 provides:

> A net emissions increase is the amount by which the sum of any increase in actual emissions from a particular physical change or change in method of operation at a source [emphasis added], and any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable, exceeds zero.

35 IAC 203.208**, Net Emissions Determination - The Contemporaneous Time Period and Creditability of Emission Decreases

As discussed above, 35 IAC 203.208 lays out the requirement for a NSR Applicability Analysis if a source elects to rely on netting to show that a project would not be a major modification under 35 IAC Part 203. 35 IAC 203.208(a) and (c)(1), referred to as 35 IAC 203.208**, are also cited as a basis for denial of the 2022 application. This is because the revised NSR applicability analysis for NOx in the application, which addresses NOx emissions with the increases in permitted emissions that are being requested for certain units, would improperly rely on certain decreases in NOx emissions that are neither contemporaneous nor creditable. This is contrary to 35 203.208(a) and (c), which do not allow credit in the revised NSR applicability analysis for NOx based on decreases in emissions due to the shutdown of Boilers 1 through 10 and, due to the shutdown of the two by-product recovery coke oven batteries at the Granite City Works, coke oven gas (COG) no longer being available for use in Project-affected fuel burning units.as a fuel. These actions and the accompanying emission decreases occurred after the implementation of the Production Increase Project and were not contemplated by Permit 95010001. In particular, the introductory paragraph in 35 IAC 203.208 and paragraphs 35 IAC 203.208(a) and (c)(1) provide:

> A net emissions increase is the amount by which the sum of any increase in actual emissions from a particular physical change or change in method of operation at a source, and any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable, exceeds zero. The following steps determine whether the increase or decrease in emissions is available.
>
> a) Except for … [alternative provisions for projects in in serious and severe ozone nonattainment areas], an increase or decrease in actual emissions is contemporaneous only if it occurs between the date that an increase from a particular change occurs and the date five years before a timely and complete application is submitted for the particular change. …
>
> …
>
> c) A decrease in actual emissions is creditable to the extent that:
>
> 1) It is federally enforceable at and after the time that actual construction on the particular change begins;

35 IAC 203.301, Lowest Achievable Emission Rate

For a project that is a major modification subject to 35 IAC Part 203, 35 IAC 203.301 sets forth the requirements for a permit application related to Lowest Achievable Emission Rate (LAER) for the emissions units for which LAER is required. 35 IAC 203.301(c) sets forth the requirement that LAER be demonstrated for such emission units. (Ongoing operation of LAER-subject units to comply with LAER is required by 35 IAC 203.601 once a permit is issued setting forth what LAER is for those units.) For the emission units and pollutant(s) for which LAER is required, 35 IAC 203.301(d) explicitly requires that the application include a detailed showing that the emission limitations proposed for the LAER-subject units would constitutes LAER. In this regard, these rules provide that:

c) Except as provided in subsection (e) or (f) below [Alternative provisions for projects ozone nonattainment areas that are classified as serious or severe nonattainment] the owner or operator of a major modification shall demonstrate that the control equipment and process measures applied to the major modification will produce LAER. This requirement applies to each emissions unit at which a net increase in emissions of the pollutant has occurred or would occur as a result of a physical change or change in the method of operation.

d) The owner or operator shall provide a detailed showing that the proposed emission limitations constitute LAER. Such demonstration shall include:

1) A description of the manner in which the proposed emission limitation was selected, including a detailed listing of information resources,

2) Alternative emission limitations, and

3) Such other reasonable information as the Agency may request as necessary to determine whether the proposed emission limitation is LAER.

35 IAC 203.302(a), Maintenance of Further Reasonable Progress and Emission Offsets

For a major project that is subject to 35 IAC Part 203 for a pollutant, this rule sets forth the basic requirement that project be accompanied by emission offsets. Emission offsets are enforceable reductions in the emissions of the subject pollutant, usually by existing source(s) other than the source at which the project would take place, that affect the quality of the ambient air that the emissions of the subject pollutant from the project would affect. The role of the offsets is to counterbalance the effect of the emissions of the subject pollutant from the project on ambient air quality that exceeds the applicable National Ambient Air Quality Standard. In this regard, 35 IAC 203.302(a) provides that:

a) The owner or operator of a new major source or major modification shall provide emission offsets equal to or greater than the allowable emissions from the source or the net increase in emissions from the modification sufficient to allow the Agency to determine that the source or modification will not interfere with reasonable further progress as set forth in Section 173 of the Clean Air Act (42 U.S.C. 7401 et seq.).

35 IAC Part 204, Prevention of Significant Deterioration

(35 IAC Part 204 is of concern or potential concern for the Production Increase Project for emissions of NOx, SO_2, CO and lead. This is because, when Permit 95010001 was initially issued, the Granite City Works was in various areas that were designated attainment or unclassified, rather than nonattainment, for the NAAQS for CO, SO_2 and lead. It was also in an area designated as attainment or unclassified for the NAAQS for nitrogen dioxide (NO_2). The areas in which the Granite City Works is located are still designated attainment or unclassified for these pollutants. (After the NAAQS for lead was revised in 2008, an area that includes the Granite City Works was then designated nonattainment for lead in 2010. This area was later redesignated to attainment for lead in 2018.)

35 IAC 204.280, Best Available Control Technology (BACT) (Definition)
This definition reflects USEPA's guidance at 40 CFR 51.166(b)(12) for the meaning of this term. It is noteworthy that this definition provides that BACT is to reflect the maximum degree of reduction of emissions for the unit(s) and pollutant(s) for which it is required as determined to be achievable ".. through production processes or available methods, systems and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant." As such, in addition to the use of add-on air pollution control equipment, both a BACT demonstration and a BACT determination must consider approaches to reducing emissions other than tradition air pollution control equipment. In addition, this definition provides that while it is preferred that BACT be codified in a permit as an emission limitation or a limitation for visible emissions, "If the Agency determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT."

35 IAC 204.330, Complete (Definition)
For an application for a permit for a major project subject to PSD [Prevention of Significant Deterioration], this definition provides that, "'complete' means, that the application contains all of the information necessary for processing the application."

35 IAC 204.400, Federally Enforceable (Definition)
This definition of "federally enforceable" in 35 IAC Part 204 is similar to the definition at 35 IAC 203.123. This definition also expressly identifies certain limitations that are, by definition, considered enforceable by USEPA (e.g., "...requirements within the SIP, any permit requirements established under 40 CFR 52.21... or this Part [Part 204} or under regulations approved under 40 CFR 51 Subpart I ..., including operating permits issued under a USEPA-approved program that is incorporated into the SIP and expressly requires adherence to any permit issued under such program"). However, it does not provide that limitations in a construction permit are still federally enforceable even if they are not enforceable as a practical matter.

35 IAC 204.550*, Net Emissions Increase (Definition) – The Increase in Emissions from a Project
This provision, which is similar to at 35 IAC 203.208, "Net Emissions Determination," sets forth how the increases in emissions from a project should be addressed if a source elects to rely on netting to show that a project would not be a major modification under 35 IAC Part 204. 35 IAC 204.550(a)(1), referred to as 35 IAC 204.550*, is cited as a basis for denial of the 2022 application as the revised NSR applicability analysis for NOx in the application, which addresses

NOx emissions with the increases in permitted emissions that are now being requested for certain units, does not show that certain increases in emissions from the project have been properly addressed. For a project itself, this rule, which did not become effective until October 12, 2021 (86 Federal Register 50459), provides that the increase in actual emissions due to the project should be addressed. However, the application does not address post-project actual emissions. As such, 35 IAC 204.600(a)(4) provides that the potential emissions of units with the project are to be used as their actual emissions for purposes of evaluating applicability of PSD. In 1996, when the Production Increase Project was initially permitted, the requirements for Net Emission Determinations and Net Emission Increase, under the NaNSR and PSD programs respectively, were essentially identical.

35 IAC 204.550**, Net Emissions Increase (Definition) - The Contemporaneous Time Period and Creditability of Emission Decreases

As discussed above, 35 IAC 204.550 lays out the requirement for a NSR Applicability Analysis if a source elects to rely on netting to show that a project would not be a major modification under 35 IAC Part 204. 35 IAC 204.550(b)(2)) and (e)(2), referred to as 35 IAC 203.208**, are also cited as a basis for denial of the 2022 application. This is because the revised NSR applicability analysis for NOx in the application, which addresses NOx emissions with the increases in permitted emissions that are being requested for certain units, would improperly rely on certain decreases in NOx emissions that are neither contemporaneous nor creditable. This is contrary to 35 204.208(b)(2)) and (c)(2), which do not allow credit in the revised NSR applicability analysis for NOx based on decreases in emissions due to the shutdown of Boilers 1 through 10 and the elimination of coke oven gas (COG) with the shutdown of the by-product recovery coke oven batteries at the facility. These actions and the resulting emission decreases occurred after the implementation of the Production Increase Project and were not contemplated by Permit 95010001. In particular, the introductory paragraph in 35 IAC 204.550(b) and (b)(2) and 35 IAC 204.550(e) and (e)(2) provide:

> b) An increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if it occurs between:
>
> ...
>
> 2) The date that the increase from the particular change occurs.
>
> e) A decrease in actual emissions is creditable only to the extent that:
>
> ...
>
> 2) It is enforceable as a practical matter at and after the time that actual construction on the particular change begins;

35 IAC 204.560, Potential to Emit (Definition)

This definition of "potential to emit" is cited as a basis for denial points as related to the role of permit limitations, as distinguished from the physical and operational design of a stationary source, in restricting the potential emissions of emission units. 35 IAC 204.560, along with 35 IAC 204.400, are cited as a basis for denial as the 2022 application does not show that certain emission limitations that are proposed, which would replace emission limitations currently in Permit 95010001, should be considered enforceable as a practical matter. In this regard, this definition of "potential to emit" provides that:

"Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable or legally and practicably enforceable (emphasis added) by a state or local air pollution control agency. Secondary emissions do not count in determining the potential to emit of a stationary source.

35 IAC 204.810(a)(3), Source Information
This rule, with the introductory language in 35 IAC 204.810 and 204.810(a), addresses the information that an applicant must include in a permit application if a determination of BACT is required for the requested permit to be issued. In this regard, they provide that:

The owner or operator of a proposed major stationary source or major modification shall submit all information necessary to perform any analysis or make any determination required under this Part.

a) With respect to a source or modification to which Sections 204.1100, 204.1110, 204.1130, and 204.1140 apply, such information shall include:

...

3) A detailed description as to what system of continuous emission reduction is planned for the source or modification, emission estimates, and any other information necessary to determine that BACT, as applicable, would be applied.

35 IAC 204.820, Source Obligation
Any owner or operator who constructs or operates a source or modification not in accordance with the application submitted under this Part or with the terms of any approval to construct (emphasis added), or any owner or operator of a source or modification subject to this Part [35 IAC Part 204] who begins actual construction after September 4, 2020 without applying for and receiving approval under this Part, shall be subject to appropriate enforcement action.

35 IAC 204.1100(c), Control Technology Review
This rule sets forth the BACT requirement for a project that is a major project for pollutant(s) for purposes of Part 204. It provides that:

A major modification shall apply BACT for each regulated NSR pollutant for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.

35 IAC 204.1110, Source Impact Analysis
This rule requires that the applicant for a permit for a project that is a major project for pollutant(s) for purposes of Part 204 demonstrate that the project would not cause or contribute to violation(s)

of the relevant National Ambient Air Quality Standard (NAAQS). In this regard, this rule provides that:

> The owner or operator of the proposed source or modification shall demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases [emphasis added] or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of:
>
> a) Any NAAQS in any air quality control region; …

35 IAC 204.1130, Air Quality Analysis
This rule requires that an applicant for a permit for a project that is a major project for pollutant(s) for purposes of Part 204 address the ambient air quality in the area that the project would affect for those pollutant(s). In this regard, 35 IAC 204.1130(a)(1) addresses a "Preapplication Analysis," requiring that:

> 1) Any application for a permit under this Part [35 IAC Part 204] shall contain an analysis of ambient air quality in the area that the major stationary source or major modification would affect for each of the following pollutants:
>
> A) For the source, each pollutant that it would have the potential to emit in a significant amount;
>
> B) For the modification, each pollutant for which it would result in a significant net emissions increase.
>
> …
>
> 3) With respect to any such pollutant for which such a NAAQS does exist, the analysis shall contain continuous air quality monitoring data gathered for purposes of determining whether emissions of that pollutant would cause or contribute to a violation of the standard or any maximum allowable increase.
>
> 4) In general, the continuous air quality monitoring data that is required shall have been gathered over a period of at least one year and shall represent at least the year preceding receipt of the application. However, if the Agency determines that a complete and adequate analysis can be accomplished with monitoring data gathered over a period shorter than one year (but not less than four months), the data that is required shall have been gathered over at least that shorter period.
>
> …

35 IAC Part 270 Clean Air Act Permit Program Procedures

35 IAC 270.401(f), General Application Information (Certification)
This rule expands upon the certification that Clean Air Act Permit Program (CAAPP) applications must contain pursuant to Subsection 39.5(5)(f) of the Act, requiring that such certifications by a responsible official for the source must be based upon information and belief after reasonable inquiry. It provides that:

A CAAPP application shall contain a certification by a responsible official that, based on information and belief formed by the responsible official after reasonable inquiry, the statements and information in the application are true, accurate, and complete. This certification shall be dated and signed by the responsible official.

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

December 2023

Project Summary for the Proposed Denial of an Application* from United States Steel Corporation – Granite City Works for Revisions to a Construction Permit/PSD Approval Issued for a Production Increase Project at its Mill in Granite City

Note : This Project Summary has been prepared to accompany the public comment period that the Illinois EPA is holding on a Revised Draft Denial Letter, which has been prepared in response to certain comments that were received on the initial Draft Denial Letter.

Site Identification No.: 119813AAI
Permit/Application No.: 95010001

Illinois EPA Contacts:
Review Engineers: Minesh Patel, Christopher Romaine and Jason Schnepp
Community Relations Coordinator: Brad Frost

Schedule for Public Comment Period:
Comment Period Begins: December 8, 2023
Comment Period Scheduled to Close: January 8, 2024

* In its application, U. S. Steel asks that the requested revisions of Permit 95010001 be processed by the Illinois EPA with "Integrated Processing," as is allowed by Section 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act. Integrated Processing of the revised permit would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit. Integrated Processing would require that the revision of the permit provide for compliance requirements that are substantially equivalent to those that are required in CAAPP permits. The processing of the permit must also be subject to procedural requirements that are substantially equivalent to those that apply for issuance CAAPP permits, including an opportunity for USEPA to review and comment upon a proposed version of the revised permit following completion of a public comment period on the draft of the revised permit.

1. Introduction

United States Steel - Granite City Works (US Steel) has applied to the Illinois EPA for revisions to an air pollution control construction permit (Permit 95010001) for a project at its Granite City Works, the steel mill in Granite City. This project (the "Project") involved increases in the permitted production of iron and steel by this facility. As this facility is a source of emissions, Permit 95010001 provided approval for the Project under both Illinois' construction permit programs for sources of emissions and the Prevention of Significant Deterioration (PSD) program under the federal Clean Air Act. This permit was originally issued in January 1996 to National Steel and was transferred to US Steel after it became the owner of the facility. This proposed denial involves the US Steel's revised application submitted in October 2022 (the "2022 application").

A key reason why revisions to Permit 95010001 are needed is that emission testing conducted in 2014 on the two basic oxygen furnaces (BOFs), in which steel is produced, showed their emissions of nitrogen oxides (NOx), as well as volatile organic material (VOM), are higher than is allowed by this permit. This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit were based on information in the original application.

US Steel has worked to prepare an application for revisions to Permit 9501001 that would allow more emissions of NOx and VOM from the BOFs. The 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted and subsequent changes that have occurred at the facility. Notably, the emissions of carbon monoxide (CO) of certain units have also been found to be higher than stated in the original application. A baghouse control system has been installed for the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. The byproduct coke oven batteries formerly at the facility were shut down in 2015. A brief description of some of the revisions to Permit 95010001 that US Steel has requested is provided at the back of this document in Appendix 1. The requested revisions do not include increases in the permitted iron and steel production of the facility as allowed by this permit as issued in 1996.

The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this are now set forth in the revised draft of the proposed denial that has been prepared. Brief descriptions of the reasons why the Illinois EPA has determined that the 2022 application should be denied are provided in Appendix 2 of this document. For some requested revisions to Permit 95010001, the application should be denied because it does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply to this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application should be denied because it would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

As required by the PSD program, the Illinois EPA **must** hold a public comment period on its preliminary determination that the 2022 application should be denied and the draft denial letter that has been prepared. This will allow for the public to consider and comment on this planned action

and the draft of the denial letter that the Illinois EPA has prepared. The Illinois EPA previously prepared a draft of its proposed denial letter and made it available for a public comment period that began in July 2023. The Illinois EPA has now prepared a revised draft of its proposed denial letter and is again making it available for public review and comment. This revised draft of the proposed denial letter more clearly sets forth the sections of the Illinois Environmental Protection Act, the provision(s) of Title 35 Subtitle B: Air Pollution of the Illinois Administrative Code, and the reasons that would be the basis for the Illinois EPA's proposed denial on the 2022 application. For this purpose, for each denial point, Attachment 1 of the revised draft denial letter now includes an overview of the laws, rules and reasons that would be the basis for the Illinois EPA's proposed denial of this application. This is followed by the explanation and discussion that were provided in the initial draft denial letter with, as specifically denoted, corrections to certain numerical emission data and a date in the initial draft denial letter. The revised permit denial letter also has two appendices. Appendix A lists the various sections of the Act that are cited in Attachment 1 as the statutory basis for this denial letter, with description and, in some cases, general explanation why the section might be violated if Permit 95010001 were to be revised as requested by this application. Appendix B lists the various provisions in Subtitle B of Title 35 of the Illinois Administrative Code that are cited as the regulatory basis for this denial letter, with description and, in some cases, general explanation why the provision might be violated if Permit 95010001 were to be revised as requested by this application.

This project summary for the revised draft of the proposed denial letter is identical to the initial project summary except as it explains that a revised draft denial letter has now been prepared and is being made available for public review and comment and this project summary now also makes corrections to certain details in the project summary that accompanied the initial draft denial letter.

2. Background on the Granite City Works

The Granite City Works are an integrated steel mill, making both iron and steel. It has two blast furnaces to make iron from iron ore and an associated casthouse located between them in which tapping of iron and slag from the furnaces take place . Two basic oxygen furnaces (BOFs) are used to process iron from the blast furnaces, together with scrap metal, into steel. Before molten iron from the blast furnaces is charged to a BOF vessel, the iron undergoes "desulfurization" with a reagent to remove sulfur from the iron. Ladles of molten steel produced in the BOFs are transferred to "ladle metallurgy" where with the final additions of alloying materials are made to the molten steel. The two basic oxygen furnaces, the iron desulfurization operation, and the ladle metallurgy operations are all located in the basic oxygen furnace shop (BOF shop). From ladle metallurgy, the ladles of molten steel are transferred to the continuous casters in an adjoining building. The solid steel slabs from continuous casting are processed in rolling mills at the source, which make long, thin strips of steel that are wound in coils. Steel slabs from the casters also go to other plants to be made into finished steel.

Other operations at the Granite City Works include raw material handling and storage, steam boilers, and fuel-burning process equipment. The raw material handling and storage operations handle raw materials, such as iron ore pellets, limestone and other fluxing agents, coke, and alloy materials, for the iron and steel making operations. The steam boilers can burn both natural gas and blast furnace gas (BFG). BFG is a low heat content gaseous byproduct from the blast furnaces. BFG is the principal fuel for the blast furnace stoves in which the blast air supply for these furnaces is

heated. Other fuel-burning process equipment at the source burns natural gas. Vehicle traffic on roads and parking lots at the Granite City Works also is a source of emissions of fugitive dust.

The Granite City Works formerly included two by-product recovery coke oven batteries and associated by-product processing plant. These operations were permanently shut down in February 2015. The primary source for coke used in the blast furnaces is now two heat recovery coke oven batteries in Granite City that are operated by Gateway Energy. With the shutdown of the by-product recovery coke oven batteries, coke oven gas is no longer produced and available for use in the blast furnace stoves, boilers and other fuel-burning equipment at the Granite City Works that previously used coke oven gas to provide a portion of their fuel.

Granite City is located in Madison County, which is part of the S. Louis Major Metropolitan Area. Madison County is designated nonattainment under the federal Clean Air Act for the National Ambient Air Quality Standard (NAAQS) for ozone.[1] For other pollutants for which there are NAAQS, i.e., carbon monoxide (CO), lead, nitrogen dioxide (NO_2), particulate matter$_{10}$ (PM_{10}), particulate matter$_{2.5}$ ($PM_{2.5}$) and sulfur dioxide (SO_2), Madison County is designated attainment or unclassifiable. USEPA maintains information about current ambient air quality for ozone and particulate on the internet at AirNow (airnow.gov). The Illinois EPA prepares annual reports for ambient air quality as measured by its network of air monitoring stations around the states. These reports are also available on the internet (epa.illinois.gov/topics/air-quality-reports).

The Granite City Works are in an area that is of concern for Environmental Justice. As such, any proposed permit actions involving this facility are subject to the Illinois EPA's "Environmental Justice Policy." As addressed in this policy, the Illinois EPA is committed to protecting the environment and the health of the residents of Illinois, and to promoting equity in the administration of its environmental programs.

3. The Production Increase Project or the "Project"

In January 1996, National Steel, the former owner of the Granite City Works was issued Construction Permit 95010001 for increases in the allowable production of iron and steel by the Granite City Works, also referred to as the "Production Increase Project" or the "Project." As explained at that time, the increases in production would in part involve continuing improvements in the operation and maintenance of equipment, which is something that normally occur over the course of time. These would involve things such as the availability and use of ore pellets with higher yield, the availability and use of better refractories linings for furnaces, and ongoing improvements in maintenance practices that would reduce the frequency and duration of furnace outages for maintenance. However, the Project also involved certain physical changes to emission units to enable increased production of iron, i.e., changes to the blast furnace stove blowers to increase their air flow capacity. As such, the Project entailed a modification to the Granite City Works for which an air pollution control construction permit was needed.

[1] Air quality designations are adopted by USEPA. The designations for Illinois are found at 40 Code of Federal Regulations (CFR) 81.314.

National Steel's application for a construction permit for the Project addressed its implications for emissions of the iron and steel making operations and other operations at the Granite City Works that would be affected. The application showed that the increases in emissions from the Project would be significant so that the Project was a major modification for sulfur dioxide (SO_2)and carbon monoxide (CO) under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, as governed in 1996.[2] In this regard, in 1996, Granite City was located in areas that were designated attainment for the NAAQS for SO_2 and CO. The application submitted by National Steel addressed the substantive requirements of the PSD rules, as they applied to the Project for SO_2 and CO. For example, the application addressed the use of Best Available Control Technology (BACT) for the casthouse at the blast furnaces as it was identified as emitting SO_2 and the blast furnace stoves as they were identified as emitting SO_2 and CO. The Illinois EPA found that emissions of these pollutants from these units would be appropriately controlled with measures that reflected BACT.

National Steel's application showed that Project was not a major modification for other pollutants. For lead, the application showed that the increase in lead emissions would not be significant. For particulate matter (PM),[3] particulate matter$_{10}$,[4] nitrogen oxides (NOx) and volatile organic material (VOM), the application showed that the net increases in emissions from the Project, considering contemporaneous decreases and increases in emissions, would not be significant. For example, the shutdown of ingot casting and the associated blooming mill at the Granite City Works provided emission decreases that were contemporaneous with the emission increases from the Project. Accordingly, for lead, PM, PM_{10}, NOx and VOM, the permitting of the Project did not address the substantive requirements of PSD or Illinois's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203 (more generally referred to as Nonattainment New Source Review or "NaNSR").

In this regard, in 1996, Granite City was located in areas that were attainment for PM and NO_2.[5] National City's application showed that the net increases in emissions of these pollutant from the Project (i.e., the increases in emissions after considering contemporaneous increases and decreases in emissions) would be below the rates that would be considered to be significant under PSD (25 and 40 tons/year for PM and NOx , respectively). In 1996, Granite City was located in areas that

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[2] In 1996, the Illinois EPA administered the USEPA's PSD rules at 40 CFR 52.21 under a delegation agreement with USEPA. The Illinois EPA now implements the PSD program through states regulation at 35 IAC Part 204, which have been approved by USEPA as part of Illinois' State Implementation Plan.

[3] Particulate matter (PM), as addressed by the application and relevant USEPA and Illinois rules, only includes filterable particulate and not condensable particulate. Relevant rules provide that measurements of PM emissions are to be made by test methods that are designed to only measure filterable particulate.

[4] For particulate matter$_{10}$, the application only addressed filterable emissions and not condensable emissions. As subsequently addressed in USEPA rules, emissions of condensable particulate were not regulated as a constituent of particulate matter$_{10}$ before January 1, 2011 [40 CFR 51 Appendix S, Emission Offset Interpretative Ruling, Part II, (A)(31)(ii)(*a*)].
In Illinois' rules, filterable particulate matter$_{10}$ is referred to as "PM-10;" condensable particulate as "condensible PM-10." This usage is confirmed in 35 IAC 212.108(a) and (b) by the methods that are specified for emissions testing.

[5] For purposes of PSD and MSSCAM, NOx was initially regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere. As addressed in the Clean Air Act as amended in 1990, NOx also became also regulated as a precursor to the formation of ozone. Finally, NOx is now also regulated as it is a precursor to $PM_{2.5}$.

were designated nonattainment for NAAQS for ozone and PM_{10}. Madison County was and continues to be nonattainment for ozone. The part of Madison County that was nonattainment for PM_{10} included Granite City. For VOM and NOx, as they are regulated as precursors to ozone in the atmosphere, National City's application showed that the net increases in emissions from the Project would be below the rates that would be significant under MSSCAM (40 tons/year for both VOM and NOx). For PM_{10},the application showed that the net increase in PM_{10} emissions from the project would also be below the rate that would be significant under MSSCAM (15 tons/year).

When issuing Permit 95010001 for the Project in 1996, the Illinois EPA included various limits to hold National Steel to the representations made in the application and make those representations enforceable. The future annual production of iron by the blast furnaces and steel by the BOFs were limited to the maximum production levels requested by National Steel in the application. The future annual emissions of different pollutants from the various process units affected by the Project were limited. For the BOFs, whose particulate emissions were only controlled by an electrostatic precipitator (ESP) add-on control system in 1996, separate emission limits were set for the emissions from ESP and the uncaptured emissions from open roof monitor above the BOFs. For fuel-burning units, e.g., the blast furnace stoves and boilers, emissions limits for different pollutants were set collectively for the group of such units, rather than individually. However, separate limits were set for the emissions from burning BFG, natural gas and fuel oil.[6] The annual emission limits for different pollutant were accompanied by "emission factor limits" that addressed emissions in pounds per ton of iron or steel produced or handled, or for the fuel-burning units, emissions in pounds per volume of fuel burned. The permit required emission testing to be conducted for certain units following issuance of the permit to verify compliance with the requirements of the permit. [7, 8]

The Illinois EPA also included certain requirements in Permit 95010001 for the BOFs that were more stringent than those that had previously applied.[9] The opacity of emissions from the roof

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[6] For fuel burning units, the permit did not set limits for emissions from the burning of coke oven gas (COG). The operation of the by-product coke oven batteries at the Granite City Works and the associated production of COG was considered to be unaffected by the increased production of iron by the blast furnaces. As a matter of good practice, coke oven batteries are operated at a stable production rate that is consistent with the design and conditions of the batteries. To the extent that the amount of coke produced at a source is more or less than is needed by the source, surplus coke can readily be shipped to other sources, or the deficit made up with coke shipped in from other sources.

[7] For the blast furnaces, emission testing was required for the baghouse that controls particulate emissions of the casthouse, i.e., the structure that encloses the area where molten iron and slag are periodically tapped from the bottoms of the blast furnaces, with testing required PM, VOM, SO_2 and NOx, as well as for opacity. For the BOFs, testing was required for the ESP control system for emissions of PM, CO and lead, as well as for opacity. Testing for emissions of PM was also required for the baghouse that control iron molten iron desulfurization operation that precedes the BOFs and from a representative steam boiler while burning BFG.

[8] The permit stated that the BACT requirement of the PSD rules would be met for SO_2 and CO. However, the permit did not identify specific emission limits or practices that were determined to be BACT for the BACT-subject units. For CO, the specific limits or practice that would be considered to be BACT would be addressed with the proposed revisions to this permit. For CO. US Steel has identified the existence of emissions and higher levels of emissions from the blast furnace casthouse and stoves, respectively. As such, for these unit, BACT for CO must be reevaluated. For SO_2, US Steel has not requested increases in permitted annual emissions. Therefore, BACT for SO_2 does not need to be reevaluated. It would nevertheless be reasonable in the revised permit to identify requirements that are considered to be BACT for SO_2.

[9] The PM-10 emissions of the Granite City Works with the Project were of singular concern to the Illinois EPA. In 1996, an area that included Granite City was designated as nonattainment for PM_{10} air quality. The

monitor was limited to 20 percent on a 3-minute average, from 30 percent on a 6-minute average. Specific practices that were required to be used to reduce particulate emissions of the BOFs. For example, use of flame suppression was required during tapping of a BOF, when molten steel and slag are poured from a BOF into a ladle. Minimum values were set for the air flow through the hoods that capture the particulate emissions of the BOFs for control by the ESP, with different values set for the charging, refining, and tapping steps in the operation of a BOF. A housekeeping program was required for the area below the ESP where collected particulate is transferred from hoppers on the bottom of the ESP into fabric containers for transport off-site. For roadways at the Granite City Works, the permit set specific requirements for the frequency of treatment of different road segment to reduce emissions of fugitive dust due to vehicle traffic on the roadway. These requirements were accompanied by requirements for daily recordkeeping for the treatment of roadways and the implementation of the cleaning program for these roads. The permit also required periodic treatment of certain public roads that serve the source to their reduce emissions.

4. Improved Control of Particulate Emissions of the BOFs (the New Baghouse)

The version of Permit 95010001 that is the subject of US Steel's 2022 application is the revised permit issued on December 17, 2012. In this regard, in 2010, US Steel agreed to install a baghouse control system with fabric filter that would operate along with the existing ESP system to improve control of particulate emissions of the BOFs from charging and tapping. The commitment to the additional control system was made in an agreement between US Steel and the Illinois EPA[10] for several measures to reduce particulate emissions from steelmaking.[11] For the BOFs, installation of a baghouse system was required to improve control of emissions from tapping, when steel and slag are poured from a BOF vessel into a ladle. US Steel was also required to evaluate whether the new baghouse system could be designed to also improve the control of emissions from charging, when iron and scrap metal are poured and unloaded into a BOF vessel. US Steel determined that the new

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Illinois EPA performed computerized dispersion modeling for the future PM_{10} air quality of the Granite City area with the Project. The modeling analysis showed that the National Ambient Air Quality Standards (NAAQS) for PM_{10} would be met with PM-10 emissions from the Project-affected units at the Granite City Works at the maximum rates in reflected by the application. In May of 1998, the USEPA redesignated the area in which Granite City is located to attainment for PM_{10}.

Incidentally, the Granite City area is now also designated attainment for the NAAQS for $PM_{2.5}$. The NAAQS for $PM_{2.5}$ were initially adopted by USEPA in 2006, with the NAAQS on an annual average subsequently being lowered in 2012. The ambient air monitoring stations conducted in Granite City by the Illinois EPA continue to show attainment of the NAAQS for PM_{10} and $PM_{2.5}$.

[10] "United States Steel Corporation Granite City Works and IEPA Memorandum of Understanding," signed by US Steel on June 30, 2010, and by the Illinois EPA on July 1, 2010 (the Agreement).

[11] In addition to the new baghouse system for the BOFs, the Agreement also provided for use of "steam rings." In a BOF, oxygen is used during the refining step to remove carbon and silica from the molten iron by oxidation. The oxygen lances are inserted into the BOF through openings in the hood over the BOF. Steam rings inject steam in the annular areas between the lances and the openings for the lances. This interferes with outward flow through the openings in the hood improving capture of particulate. by the hood. The Agreement also provided for limits for emissions of particulate matter, in grains per dry standard cubic foot (gr/dscf), that were more stringent than the emission standards that were applicable under state rules. and 40 CFR 63 Subpart FFFFF:

Baghouses for iron desulfurization, slag skimming and ladle metallurgy: 0.005 gr/dscf (compared to 0.01 gr/dscf)

ESP for the BOFs: 0.01 gr/dscf (compared to 0.02 gr/dscf)

New baghouse for the BOFs: 0.005 gr/dscf (compared to 0.01 gr/dscf).

baghouse system could be designed to improve control of emissions from both charging and tapping. As such, once the new baghouse system began operation, the existing ESP system continued to control emissions for the BOFs from refining; the emissions from charging and tapping began to be controlled by a combination of the ESP system and the new baghouse system.

The new baghouse system for the BOFs was initially addressed by Construction Permit 11050006, as issued on August 31, 2011. For purposes of PSD and MSSCAM, this permit was based on the new system being a project that would reduce the emissions of particulate and lead from these furnaces AND NOT increase any emissions. US Steel subsequently applied for a revision of this permit, which was issued on April 1, 2013. In the application for revision of this permit, US Steel formally requested Integrated Processing so as to allow certain related changes to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by means of an administrative amendment. This would assure that the baghouse system could be used in compliance with requirements in the CAAPP permit, which did not address the possibility that a baghouse might be added for the BOFs. For example, for tapping of a BOF, flame suppression was required by the CAAPP permit reduce particulate emissions. However, this would not be appropriate with the new baghouse system.[12]

It was not possible to simply revise Permit 11050006 with Integrated Processing to enable the revisions to the CAAPP permit that were needed to facilitate the installation and use of this system. It was first necessary to revise Permit 95010001, the permit that is now the subject of the 2022 application.[13] This is because the requirements in the CAAPP permit that were impediments to moving forward with the baghouse system were actually established by Permit 95010001.[14] For example, Condition 11 of Permit 95010001 required the use of flame suppression for tapping; the CAAPP permit merely restated this requirement. Accordingly, Permit 95010001 was revised to provide that this requirement, as well as similar operational requirements that would be inconsistent with the use of the new baghouse system would cease to apply when the new system began to be operated.[15] In their place, US Steel was broadly required to operate and maintain the BOFs and

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[12] In flame suppression, the use of natural gas burners reduces generation of particulate by depleting the amount of oxygen in the air that comes in contact with molten metal. To improve control of emissions from tapping, the new baghouse system includes local hoods specifically to capture emissions from tapping, as well as local hoods to capture emissions from charging. With local capture hoods for tapping, the continued use of flame suppression would be unsafe, posing hazards both to personnel and equipment, as well as being of uncertain effectiveness to reduce emissions. The high levels of draft provided by the local capture hoods are incompatible with flame suppression as they can act to interfere with the stability and orientation of the flame and pose risks of blowing out the flame.

[13] The revision of Permit 95010001 was completed several months before the revision of Permit 11050006, the permit for the baghouse system. As a PSD permit issued pursuant to 40 CFR 52.21, the revision to Permit 95010001 did not take effect on December 13, 2012, when it was issued. It became effective later in January 2013 after the date for filing an appeal of the revised permit with USEPA's Environmental Appeals Board had passed without any appeal. With the effectiveness of revised Permit 95010001, the revision to Permit 11050006 with Integrated Processing could then be completed.

[14] If Permit 95010001 had not been revised to remove operational requirements that precluded the use of the new baghouse system, these requirements could not have been removed from the CAAPP permit by means of Integrated Processing of a revision to Permit 11050006. These operational requirements would still have been applicable since these requirements would have continued to be present in Permit 95010001.

[15] To address the period before the new baghouse system was operational, the revision to Permit 95010001 provided that the use of flame suppression for tapping and other measures that would obstruct the use of the

associated emissions capture and control systems in accordance with the applicable requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Facilities, 40 CFR 63 Subpart FFFFF.[16]

In the revision to Permit 95010001, operational requirements for the BOFs and the ESP system that were considered to be obsolete or outdated with the new requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, were also removed. The operational requirements of this NESHAP were determined to better address proper operation of emission control systems for BOFs. For example, as related to capture of secondary emissions,[17] the NESHAP addresses the operation of the capture hoods and the air flow entering the control device(s), rather than the aggregate air flow at the stack of the control device(s).[18] Likewise, the compliance procedures of the NESHAP (e.g., requirements for emission testing and operational monitoring) were determined to be more appropriate for the BOFs and their control systems than the requirements in Permit 95010001.[19]

In summary, the previous revisions to Permit 95010001 were narrowly focused on enabling the installation of the new baghouse system. This was done by removing specific requirements that were inconsistent with the use of this system and, more generally, by removing requirements that were no longer appropriate because of applicable requirements in 40 CFR 63 Subpart FFFFF. The revisions to Permit 95010001 did not extend to other requirements, such as the emissions limits set by this permit for the BOFs. Likewise, the changes to the CAAPP permit that were authorized by means of the Integrated Processing of the revision of Permit 11050006 were focused on enabling the future operation of new baghouse system, including the related changes that had been made in the December 2012 revision to Permit 95010001.[20] The changes authorized to the CAAPP permit

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new baghouse system cease to apply when US Steel began operation of the new system. [Revised Permit 95010001, Condition 11(b).]

[16] US Steel became subject to the requirements of this NESHAP, which applies to the BOFs and certain other operations at the Granite City Works, beginning May 22, 2006. This is because the facility is considered an existing source under 40 CFR 63 Subpart FFFFF.

[17] In common usage, the particulate emissions of BOFs from refining are often referred to as the "primary emissions;" the emissions from charging and tapping are referred to as "secondary emissions." However, in the NESHAP, 40 CFR 63.7852, the primary particulate emissions of a BOF are defined as the emissions that are captured for control by the primary emission control system; the secondary emissions are the emissions that are not captured for control by the primary emission control system. As such, the Granite City Works, the ESP control system is the primary control device for the BOFs under the NESHAP. All emissions that are captured by this system, including emissions from charging, refining and tapping, are primary emissions.

[18] The NESHAP also places the burden for establishing the specific measures that will be implemented to ensure proper operation of the capture systems and control devices for BOFs on the source rather than on the permitting authority. The measures that are required to be used are the ones that were present when performance testing for particulate matter emissions shows compliance with the applicable standard.

In light of the applicable requirements of the NESHAP, the operating procedures and requirements in Attachment A, as formerly addressed by Condition 10, were also considered overly prescriptive. For example, Attachment A set out actions that were to be to be taken by employees, e.g., the emission control foreman and operator, rather than practices that the Permittee was required to implement.

[19] A practical concern also existed because certain operational requirements of Permit 95010001 were similar to but different than those of the NESHAP. Given the requirements of the NESHAP, which were newer and developed through rulemaking, the continuing implementation and oversight of the older requirements in Permit 95010001 was not considered to be an appropriate or effective use of resources.

[20] The 2012 revision of Permit 11050056 provided that the changes to the CAAPP permit for the facility that were authorized by means of Integrated Processing could only happen or take effect after the new baghouse

also included relevant requirements for the ongoing operation of the baghouse system that were actually set in Permit 11050006 and would appropriately be restated in the CAAPP permit. However, changes were not authorized to the emissions limits in the CAAPP permit for the BOFs and various other emission units as those limits were still present in Permit 95010001.[21]

5. US Steel's Current Application for Revisions to Permit 95010001

US Steel's current application (the "2022 application" or "application") requests a number of revisions to Permit 95010001. A key reason why revisions to Permit 95010001 are needed is that emission testing for the two basic oxygen furnaces (BOFs) shows their emissions of nitrogen oxides (NOx), as well as their emissions of volatile organic material (VOM), are higher than is allowed by this permit.[22] This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit reflected information in the application. US Steel has also determined that emissions of carbon monoxide (CO) of the casthouse on the blast furnaces and certain Projected-affected fuel burning units are higher than are addressed by the permit. This is because original application did not address CO emissions from the casthouse and understated CO emissions from Project-affected fuel burning units

Accordingly, the 2022 application requests revisions to Permit 9501001 to allow more emissions of NOx and VOM from the BOFs, which the original application understated. In particular, the application requests that the permitted NOx emissions of the casthouse and the BOFs be increased by 19.4 and 220.2 tons/year, respectively. To support these increases in emissions, the application includes revised netting analyses that attempt to show that the Project would not be a major modification for purposes of either PSD or MSSCAM with the requested increases in emissions.

US Steel also requests that the revised permit address CO emissions from the casthouse and allow more CO emissions from fuel burning units.[23] For CO, the application attempts to show that the

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system for the BOFs began operation (Permit 11050056, issued April 1, 2013, page 16). US Steel has not yet applied to the Illinois EPA to initiate issuance of an administrative amendment to the CAAPP permit that would reflect the changes to this permit authorized by Permit 11050056.

[21] US Steel filed an appeal of revised Permit 11050056 with the Illinois Pollution Control Board (Board), PCB 13-62. Similar to the appeal of CAAPP permit for the facility (PCD-53), Permit 11050056 was appealed because it also provided for the emission limits for the BOFs and other units in the BOF shop set by Permit 95010001 to again be restated in the CAAPP permit. In this regard, to address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for the complete replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, with a new, revised Section that addresses the basic oxygen furnace shop with the new baghouse system. As an appeal was filed, the provision of Permit 11050056 that would have restated those limits have been stayed pending resolution of the appeal.

[22] This emissions testing of the BOFs for NOx and VOM was first conducted in 2014, with further testing conducted in 2018 and 2021.

[23] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse, for which CO emissions were not identified and addressed in the original permitting for the project. This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than ten boilers that are now retired. For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas (BFG) used in the blast furnaces stoves, understated CO emissions.

Project would still comply with the substantive requirements of PSD, which are applicable as the Project originally was a major modification for CO under the PSD program. The application includes an evaluation of BACT for CO for the casthouse and blast furnace stoves, i.e., the units that are or would become subject to the BACT requirement of the PSD program.[24] The application also includes a new air quality impact analysis for CO that would address the Project with the increases in CO emissions as are requested.

This 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted. For PM, PM_{10}, NOx and VOM (i.e., pollutants other than CO, sulfur dioxide (SO_2),and lead), the application requests that the revised permit not include the provisions in Permit 95010001 that would address emissions of individual "processes" in pounds/ton of production or throughput. (For convenience, these provisions in the permit that address emissions in pounds/ton of production or throughput or, for lead, in pounds per hour, are generally referred to by the Illinois EPA as "emission factor limits." The Illinois EPA set the emission factor limits and limits on annual emissions in Permit 95010001to ensure that the Project would not be a major modification for purposes of PSD or MSSCAM.[25] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes or emission points, the application requests "group limits" for the annual emissions of groups of related emission units.[26] For emission units for which routine emission testing is feasible, the emissions contributed by units towards the group limits would be determined using emissions rates that reflect the results of emission testing. For certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the BOFs), for which routine emission testing is not feasible, the application requests that the revised permit set "prescribed emission factors." For these units or emission points, the prescribed emission factors would effectively replace the provisions currently

[24] The BOFs were not physically modified as part of the Project. Accordingly, they would not become subject to requirements for BACT or LAER even if the Project were a major modification for a pollutant.

[25] The removal from Permit 95010001 of the "emission factor limits" would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62, as these appeals address PM, PM_{10} and NOx and VOM emissions. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, before issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing "emission factors" were considered to constitute enforceable limits on emissions.

[26] For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period.

in Permit 95010001 for process units that currently restrict emissions in pounds/ton of input or production or in pounds/hour.[27]

Lastly, the application also recognizes subsequent changes at the facility, which occurred after the Project, that were not contemplated in 1996 and not provided for when Permit 95010001 was originally issued. The changes at the facility include the addition of a baghouse control system for the BOFs to improve control of their particulate emissions. The changes also include the shutdown of the by-product coke oven batteries that were formerly at the facility, which eliminated emissions from these operations. In this regard, the application requests revisions to Permit 95010001 to provide for increased use of natural gas by Project-affected fuel burning units. The application explains that this is necessary with the shutdown of the by-product coke oven batteries because COG is no longer available and more natural gas may need to be used.

The Illinois EPA has reviewed the 2022 application to determine whether the application shows compliance with applicable regulatory requirements and would support issuance of a revision to Permit 95010001 as requested by US Steel. The Illinois EPA has also considered whether the application would support issuance of such a revised permit with Integrated Processing, as has also been requested, so that related revisions to the CAAPP permit for the Granite City Works may be made by administrative amendment. The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this determination are set forth in the draft of the proposed denial letter that has been prepared.[28] As discussed in further detail below, for some of the revisions requested to Permit 95010001, the application does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply for this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

6. Discussion of Key Reasons for the Planned Denial of the Application

6.1. The Revised Netting Analysis for the Project for NOx

A. Overview

The revised netting analysis for NOx submitted for the Project with additional NOx emissions as requested does not show that the Project would not become a major modification for NOx. Accordingly, a revised permit cannot be issued as requested because, for emissions of NOx, the 2022 application does not address or show fulfillment of the substantive requirements of the rules for Prevention of Significant Deterioration (PSD) and Major Stationary Sources Construction and

[27] Unlike the emission factor limits in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors established in a revision to Permit 95010001 would instead be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit.

[28] Brief descriptions of the reasons why the Illinois EPA's preliminary determination for this application is that it should be denied are provided in Appendix 2 of this document.

Modification related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and MSSCAM (35 IAC 203.301) for NOx. This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx. The application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the application must show for NOx that the relevant substantive requirements of PSD and MSSCAM are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and MSSCAM would be met for the Project for NOx.

The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[29] However, the application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would be such that the Project would not be a major modification for NOx.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at

[29] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

certain fuel burning units after the initial issuance of Permit 95010001. The application proposes to rely upon the decreases in NOx emissions due to these changes, which were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as it does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed below, the application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

B. The Analysis Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application relies on decreases in emissions that occurred long after 1996. This includes decreases from the shutdown of ten of the twelve boilers at the facility that were originally addressed by Permit 95010001 in 1996. The shutdown of Boilers 1 through 10 was required by Construction Permit 06070023, which was originally issued in July 2006 for construction of a cogeneration boiler that would burn blast furnace gas (BFG) and natural gas. The application does not show that NOx emissions of these ten boilers, as existed in the period prior to 2009, were considered in the "future" NOx emissions with the Project from the Project-affected fuel burning units. In addition, with regard to the two remaining old boilers at the facility, Boilers 11 and 12, that continue in operation, flue gas recirculation systems have been installed pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to reduce NOx emissions to facilitate compliance with 35 IAC 217.164. The application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from these boilers that are now being achieved with the new systems, rather than the NOx emissions as previously existed with the Project in the period before these systems were installed.

The application also indicates baseline NOx emissions from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12. In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[30]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application. This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the BOFs. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the application reflect maximum actual NOx emissions

[30] The revised netting analysis does address increased use of natural gas by Project-affected fuel burning units because COG is no longer available and more natural gas may need to be used to make up for this.

beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[31]

C. Insufficient Information to Independently Confirm the Revised Baseline NOx Emissions

The revised determination of baseline NOx emissions of Project-affected fuel burning units that is part of the revised netting analysis is not accompanied by information that would allow it to be independently verified. In this regard, the application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, concerns exist with the determination of the overall baseline NOx emissions for the Project. In particular, this application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The application utilizes a NOx emission factor for Boilers 11 and 12 for use of COG that the application states is based on emission testing conducted on the stack for underfiring of one of the coke batteries, rather than testing on one of these boilers or other similar boiler. For burning of natural gas, the application does not show the emission factor that is utilized for boilers would also be appropriate for ladle preheaters and casting operations.

D. Supporting Date Is Not Provided For Future NOx Emissions of Fuel-Burning Units

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically. The application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

6.2. The Application Does Not Address the Potential for Uncaptured Emissions of NOx, VOM and CO Through the Roof Monitor of the BOF Shop

The application is deficient in its approach to the uncaptured emissions of NOx, VOM and CO emissions of the BOFs. For the BOFs, consistent with the original permitting of the Project, the application only quantifies stack emissions of NOx, VOM and CO. Moreover, the revised netting analyses for NOx and VOM assume that all emissions of these pollutants from the BOFs are now captured. That is, with the new baghouse system to improve control of particulate emissions, all

[31] Indeed, with the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of affected fuel burning units indicated in the application are emissions that could have been allowed by this permit in 1996. The future NOx emissions of these units indicated in the application are less than their baseline NOx emissions. As the Project did not include any elements that would lower the NOx emissions of fuel burning units, the production of more iron and steel would have been accompanied by increased utilization of the blast furnace stoves and boilers so that in 1996 the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.).

NOx and VOM emissions of the BOFs that originally were not captured and were emitted through the roof monitor are now captured and emitted through the stack on the baghouse system.

This assumption is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were not addressed in the original permitting for the Project, likely because they were considered negligible. Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the application to the particulate and lead emissions of these furnaces, which assumes that there are uncaptured emissions that still occur through the roof monitor. By way of contrast, the 2022 application requests that the revised permit establish prescribed emission factors for the particulate emissions of the BOFs that occur through the roof monitor.

The fact that there are emissions of NOx and VOM from the BOFs that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. In this regard, the application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions. However, the application does not propose any such revisions for the BOFs or explain why such revisions are not needed. For example, the application also does not explain why it would not be inappropriate for any revised permit to set a limit for the annual emissions of CO from the BOFs through the stacks of the control systems, with associated requirements for periodic emission testing.

6.3. The Inventory Used in the Air Quality Analysis for CO Omits Certain Emissions

The results of the analysis of the impacts of the Project on ambient air quality for CO cannot be relied upon because the inventory for the CO emissions of the facility with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The application includes an air quality analysis for CO because the Project was originally permitted as a major modification for CO under the PSD program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted. To support this request, an air quality analysis for CO must be part of the application pursuant to 35 IAC 204.1130, since this request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program. In this regard, the air quality analysis in the 2022 application does not address uncaptured CO emissions of the casthouse. As discussed earlier, the application does not address uncaptured emissions from these furnaces or does not explain why uncaptured emissions would not be present. In this regard, the application does not show 100 percent capture of the particulate emissions of these furnaces by the control systems for particulate. The application also does not explain why the

air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the facility. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. In addition, the air quality analysis uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.

6.4. The Proposed Scope of Proposed Group Emission Limits Is Overly Broad

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate. In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two BOFs. These are principal emission units at this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two BOFs to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the BOFs should not both continue to be limited individually.

In this regard, the application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted. The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[32] However, the application does not show that the specific circumstances of the Project are such that the current limits for annual emissions of the principal emission units should be replaced with group limits that apply to the combined emissions of the principal emission units and other lesser emission

[32] The application cites two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

units.[33] The circumstances of the Granite City Works are not the same as those presented by the cited permits. The Granite City Works are a manufacturing facility at which iron is produced from iron ore and then converted into steel in BOFs. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station.

6.5. Inadequate Justification for Elimination of Current Limits for Project-Affected Fuel Burning Units

The justification provided in the application for revisions to Permit 95010001 to eliminate limits on usage of fuel and, presumably, emission by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and blast furnace gas currently set by Permit 95010001, it does not propose any new limits in their place. This rationale is deficient because it does not consider that the application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the application does not show that new limits for fuel usage would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shut down. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

6.6. The Application Does Not Show That the Emission Factors Proposed As Prescribed Factors for Certain Units Would Be Representative

A. Introduction

To calculate baseline emissions for certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on

[33] For the casthouse, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the main baghouse for the casthouse, the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited for the permit to restrict the overall emissions of pollutants other than CO from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. (As the Project is subject to BACT for CO, the limit could only apply to stack emissions.)
The circumstances of the BOF are similar, as the current permit separately addresses emissions of particulate and lead from the ESP stack and the roof monitor. It would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of each pollutant from the BOFs.

source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3.

For the Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Relative to prescribing emission factors, the USEPA's finding, as is provided below, should be considered *dicta* since the permit that was the subject of the appeal did not actually provide for use of prescribed emission factors. As the order addresses the possibility of using prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
>
> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

B. Particulate Emissions of the BOFs Through the Roof Monitor

The application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the BOF shop (i.e., the uncaptured emissions from the BOFs). In this regard, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the BOFs. As capture and control for particulate improved, the factor for future uncaptured emissions would be different and lower (better) than the factor for baseline uncaptured emissions.

C. Continuous Casting Lines

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors that are proposed reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative.

D. Particulate Emissions of the Casthouse Through the Roof Monitor

For the casthouse roof monitor (uncaptured emissions particulate emissions of the casthouse), the application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency. Further support is needed for a prescribed emission factor for uncaptured emissions of the casthouse that is based on achievement of this level of capture.

E. Emissions of the Slag Pits and Iron Pellet Screen

For the slag pits and the iron pellet screen, the application does not provide support for the background information or inputs that were used to adjust the published factors for the operating conditions or circumstances of these units at the facility. Absent this information, the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

F. Current Provisions of the CAAPP Permit Requiring Use of Appropriate Emission Factors

The application is also deficient as it simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors." To facilitate the use of prescribed emission factors, the application also needs to propose or request revisions to general provisions in Permit 95010001 so as to also enable subsequent revisions to be made by administrative amendment to the CAAPP permit for the facility, Permit 96030056, to allow prescribed emission factors to actually be used to determine ongoing emissions of certain units.[34]

6.7. Requested Changes for Consistency with the Grouping of Units in the CAAPP Permit

In the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete

[34] The CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. These procedures do not provide for the use of prescribed emission factors. Rather, US Steel is generally required to use "appropriate emission factors," i.e., factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that being are used resting on US Steel. The CAAPP permit also provides for recordkeeping and reporting by US Steel so that information about the factors that are being used is publicly available and the Illinois EPA, the USEPA and interested parties can review the factors that are in use.

material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed by the specific changes to Permit 95010001 that have been requested. For example, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 95010001 with operations in the Basic Oxygen Furnace Shop and be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term.

On the other hand, the application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System). These emission units are currently addressed in Permit 95010001 with continuous casting operations. In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations. The application does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop as it would constitute a "BOPF {basic oxygen process furnace] shop ancillary operation" for purpose of 40 CFR 63 Subpart FFFFF. US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations.[35]

6.8 The Application Does Not Address the Amendment to the CAAPP Permit Previously Authorized Pursuant to Construction Permit 11050006

The 2022 application does not identify the version of the CAAPP permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Permit 11050006, issued April 1, 2013, for the addition of a baghouse system to improve control of particulate emissions of the BOFs. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[36]

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[35] For Ladle Drying/Preheating, the application also does not request any changes to Permit 95010001 to maintain consistency with the approach taken in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units. In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the BOF Shop, as well as elsewhere in the permit with other Project-affected fuel burning units. In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop.

[36] The 2022 application does address the addition of the baghouse control system for the BOFs as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points

Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[37]

6.9. The Application Does Not Address Changes to the CAAPP Permit That Are Needed Due to Revisions To 40 CFR 63 Subpart FFFFF

The application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources. These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the BOFs and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate.

6.10. Changes to the CAAPP Permit That Have Resulted from Shutdown of Emission Units

The application is deficient as it does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. …

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for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the BOFs.

[37] Concerns are posed by certain conditions in existing Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit.

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes. In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary. It would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.

6.11. The Evaluation of BACT for CO in the Application Is Not Sufficient

The evaluation of BACT for CO in the application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the application requests that the revision of Permit 95010001 allows for more emissions of CO from these units.

A. <u>The Scope of the Evaluation of Available Control Options</u>

As provided in the definition of BACT in Section 169(3) of the Clean Air Act and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices. For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices. In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option. i.e., "Work Practice Standards, including good combustion practices." The evaluation does not explain why process-related control options are not available for the casthouse.

B. <u>Documentations for the Investigation into Available Control Options</u>

For both the casthouse and the blast furnace stoves, the BACT evaluation in the application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. This is not sufficient for the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for the BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

C. <u>Support for Not Setting Numerical BACT Limits for the Blast Furnace Stoves</u>

For the blast furnace stoves, the BACT evaluation for CO in the application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard. Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While

certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

6.12. Inconsistency of the Application with a Pending 2008 Application & Pending Appeals

A. Pending 2008 Application

On February 4, 2008,[38] the Illinois EPA received an application from US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of blast furnace gas (BFG) and the SO_2 emissions resulting from the combustion of BFG. The 2022 application is inconsistent with and conflicts with that prior application (the "2008 application"). As such, these two applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "... does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." The 2008 application does request changes to the provisions of the permit for SO_2, as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors."

B. Pending Board Appeals

The application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. For CO, the application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[39] However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the BOFs, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack. As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. In these appeals, US Steel challenged all emission factor limits set by Permit

[38] Several things interfered with work on the 2008 application. These include the amount of effort needed by the Illinois EPA to issue the initial CAAPP permit for the Granite City Works. The first two CAAPP permits issued for this facility had to be enhanced and reissued to address certain deficiencies identified by USEPA in Orders responding to petitions requesting the USEPA object to the permits that had been issued. Then, additional revisions to Permit 95010001, as US Steel has tried to address with the 2022 application, were found to be necessary because the NOx and VOM emissions of the basic oxygen furnaces exceed or may exceed the limits established in this permit. Work on the current application for revisions to this permit was also disrupted by an interruption in the iron and steel production of the facility that began in December 2015. This interruption, which ultimately lasted for over two years, meant that it was uncertain that the facility would resume production of iron and steel.

[39] As already discussed, in the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests updates to the limits for CO emissions from use of BFG and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the emission factor limits that are set for SO_2, CO and lead. In addition, in the application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.

With regard to the CO emissions of the BOFs, the application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the BOFs, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system.

6.13. Other Deficiencies in the Application

There are also a number of other lesser reasons why the Illinois EPA determined that the application should be denied, as are set forth in the draft of the denial letter. For example, this application does not include a signed certification for its truth, accuracy and completeness. While this deficiency could be remedied with a supplement to the application that provides both this certification and corrections to the errors in the application that have been noted, this would not be sufficient for a revised permit to be issued given more substantial deficiencies in the application that have been identified..

7. Request for Comments

It is the Illinois EPA's preliminary determination that US Steel's 2022 application for revisions to Permit 95010001 should be denied. The Illinois EPA has prepared a draft of the denial letter that it proposes to issue for the 2022 application. The draft denial letter details the reasons why the Illinois EPA has determined that this application should be denied.

The Illinois EPA is providing the public with an opportunity to review and comment on this proposed denial of this application and the reasons for such action identified by the Illinois EPA as set forth in the draft of the denial letter.

Appendix 1

Brief Descriptions of the Revisions to Permit 95010001 Requested By US Steel

- Raise permitted NOx and VOM emissions of the basic oxygen furnaces (steel production) to correct for data in the original application that understated emissions. This revision would facilitate resolution of two appeals to Illinois' Pollution Control Board (PCB), PCB 2013-053 and PCB 2013-062 as they address NOx and VOM emissions of the BOFs. The first appeal addresses the Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) as issued in 2013 as it repeats emission limits set by Permit 95010001. The second appeal addresses Construction Permit 11050006, a construction permit issued in 2013 for improvements to the particulate control for the BOFs, as this permit also refers to emission limits set by Permit 95010001.

- Eliminate limits set by the permit for individual process operations for emissions of particulate matter and particulate matter$_{10}$ (collectively particulate), NOx and VOM. These limits, which are in pounds/ton of throughput and tons/year, were set for purposes of New Source Review (NSR). In place of these limits, set "group limits" for the annual emissions of groups of related operations, e.g., limits for the overall emissions of the casthouse for the blast furnaces and other units involved in production of iron. This would also facilitate resolution of the two appeals to the PCB as they both challenge the limits in pounds/ton of throughput. These requested revisions would make the permit less stringent. Any "overage" of emissions by certain unit(s) in a group could potentially be balanced by lower levels of emissions by other units in the group. Group limits have been allowed by USEPA for purposes of PSD in certain construction permits issued outside of Illinois.

- Address the CO emissions of the casthouse for the blast furnaces, which were not identified in the original application and are not currently addressed by the permit.

- Provide for an increase in usage of natural gas by Project-affected fuel burning units because coke oven gas is no longer available with the shutdown in 2015 of the byproduct coke oven batteries at the facility.

- Update the construction permit to be consistent with the grouping of units in the CAAPP permit for the facility, including addressing discrete material handling operations as a group of units.

- Process the revised construction permit with "Integrated Processing" so that appropriate revisions can be made to the CAAPP permit for the facility by Administrative Amendment rather than by a separate proceeding for a major modification of the CAAPP permit.

- Update Permit 95010001 with a number of minor revisions as requested to US Steel.

Appendix 2:

Brief Descriptions of Deficiencies in the Application Identified in the Draft Denial Letter

- The revised netting analysis for the Production Increase Project (the "Project") for NOx in the 2022 application attempts to show that the Project would still not be a major modification for purposes of Prevention of Significant Deterioration (PSD) or Major Stationary Source Construction and Modification (MSSCAM) with higher permitted emissions of nitrogen oxides (NOx) from the basic oxygen furnaces, as are being requested. However, the revised netting analysis for NOx does not fulfill relevant requirements of the rules governing netting analyses. As a result, the revised analysis does not show that the Project would still not be a major modification for purposes of PSD and MSSCAM with the requested increases in NOx emissions to correct erroneous data in the original application. In addition, for NOx, the application does not address applicable requirements of the PSD and MSSCAM programs that would become applicable as the Project would now be a major modification. As related to the effect of the Project on air quality, these include an air quality impact analysis for nitrogen dioxide (NO_2) under the PSD program and emission offsets for NOx under MSSCAM. As related to control of NOx emissions, this entails use of appropriate control measures for the NOx emissions of the casthouse on the blast furnaces and the stoves associated with the blast furnaces. This is because the Project included physical modifications to the blast furnaces so that the control measures for NOx must reflect Best Available Control Technology (BACT) under PSD and the Lowest Achievable Emission Rate (LAER) under MSSCAM.

  In particular, the application relies on decreases in NOx emissions due to actions at the facility that occurred after 1996, i.e., the shutdown of ten older boilers in 2010 and the shutdown of the by-product coke oven batteries in 2015. These actions are not contemporaneous with the Project, which occurred in 1996. As such, the accompanying decreases in NOx emissions cannot be relied upon to show that the Project should still be considered non-major.

- Certain emissions data underlying the revised netting analysis cannot be independently confirmed by the Illinois EPA.

- The application lacks detailed supporting information for the contribution of various Project-affected fuel burning units to the actual annual NOx emissions under the requested revised permit.

- The application does not show that the proposed groups of operations for the requested "group limits" for annual emissions are appropriate. In this regard, the 2022 application requests that emission limits currently set by Permit 95010001 that apply to emissions of various pollutants from individual emission units or points of emissions from the casthouse on the blast furnaces and the BOFs, which have both captured/controlled emissions and uncaptured emissions, be replaced with limits that apply to the emissions of groups of related emission units. This would not provide for emission limits that only apply to the blast furnaces casthouse and the two BOFs. These are principal emission units at this facility and their emissions should be directly limited separate from the emissions of other units. The construction permits issued by other jurisdictions cited in the application as support for setting group limits do not eliminate the need

for the Illinois EPA to exercise its technical judgment when deciding whether and to what extent to set group limits.

- The 2022 application does not show that certain emission factors that the application requests be prescribed by the revised permit should be considered representative and acceptable. In this regard, the application requests that for certain emission units, the revised permit specify or prescribe the emission factors that are to be used on an ongoing basis for purposes of assessing compliance with limits on emissions set by the permit.

- As related to sulfur dioxide (SO_2) emissions from burning blast furnace gas, a fuel byproduct from the blast furnaces, the 2022 application is inconsistent with an earlier application for revisions to Permit 95010001. This earlier application was submitted in 2008 pursuant to a state consent decree (*People of the State of Illinois v. US Steel Corporation, Inc.*, Madison County Circuit Court No. 05-CH-750 (December 18, 2007)). This earlier application is still pending. It requests revisions to Permit 95010001 to allow more emissions of SO_2 from burning blast furnace gas, both in pounds of SO_2 per million cubic feet of gas burned and in tons per year. However, the current application does not request any such changes and instead states that the limits for SO_2 emissions from blast furnace gas should not be changed.

- The application does not include information to facilitate Integrated Processing of a revised permit, as requested by US Steel. Most significantly, the application does not provide information to support removal of provisions in the CAAPP permit for the now shutdown coke oven batteries and for use of coke oven gas that should not be included in any amended CAAPP permit.

- US Steel has not taken necessary action to enable Integrated Processing of the requested revised permit. This is because it has not initiated the amendment of the CAAPP permit authorized by Permit 11050006, as issued in 2013, which is an earlier construction permit that was subject to Integrated Processing. That permit addresses the addition of the baghouse control system to the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. Prior to installation of the baghouse system, the particulate emissions from charging and tapping were only controlled with the electrostatic precipitator (ESP) control system.

- There are also a number of other lesser deficiencies in the 2022 application that also warrant the denial of this application.

Granite City Works
United States Steel
20th & State Street
Granite City, IL 62040
(618) 451-3456

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Environmental Protection Agency
BUREAU OF AIR

October 3, 2022

Bill Marr
Manager, Permit Section
Bureau of Air
Illinois Environmental Protection Agency
1021 North Grand Avenue
PO Box 19276
Springfield, IL 62794

RE: United States Steel Corporation - Granite City Works
Facility I.D. No. 119813AAI
Construction Permit No. 95010001

Dear Mr. Marr:

In March of 2020, United States Steel Corporation - Granite City Works ("U. S. Steel") submitted an application to revise Construction Permit No. 95010001. U. S. Steel and Illinois EPA have been in discussions regarding this application. U. S. Steel has updated the permit application to reflect those discussions. Due to the nature of revisions throughout the application, the Illinois EPA should refer to this application revision for permit processing.

U. S. Steel appreciates Illinois EPA's attention to this matter. If you should have any questions about this, please contact Chris Hardin at cwhardin@uss.com, or (412) 433-5904.

Sincerely,

Michael Patton
General Manager
Granite City Works

Application for Revisions to the Construction Permit / Prevention of Significant Deterioration (PSD) Approval for The 1996 Expansion of the Granite City Works Permit Number 95010001

U. S. Steel

Submitted to:

Division of Air Pollution Control
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794

Prepared by:

RTP Environmental Associates, Inc.
304-A West Millbrook Rd.
Raleigh, NC 27609

Submitted by:

U. S. Steel Corporation
Granite City Works
20th and State Streets
Granite City, Illinois 62040

February 2020
Revised October 2022

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1. Introduction

United States Steel Corporation Granite City ("USS Granite City") owns and operates an integrated iron and steel manufacturing facility in Granite City, Madison County, Illinois ("Granite City Works," ID # 119813AAI). The prior owner of this facility was National Steel Corporation. U.S. Steel acquired the assets of the National Steel Granite City facility on May 20, 2003. On January 25, 1996, prior to U.S. Steel acquiring these assets of National Steel Corporation, the Illinois Environmental Protection Agency ("Illinois EPA") issued Construction Permit No. 95010001, which also serves as a Prevention of Significant Deterioration ("PSD") approval, to National Steel Corporation. Construction Permit No. 95010001 authorized increases in the allowable production rate of iron and steel at the Granite City facility (the "1996 Project" or "Project"). This permit has been revised several times. The most recent revision was made on December 17, 2012, when the permit was revised to accommodate a proposed improvement to the air pollution control systems serving the Basic Oxygen Furnace ("BOF") Shop Operations at the facility, *i.e.*, the addition of a fabric filter baghouse and associated capture system to improve control of particulate matter emissions from charging and tapping the BOFs.[1]

Requirements of Construction Permit No. 95010001 are also incorporated in the Clean Air Act Permit Program ("CAAPP") (Permit Number 96030056 or "CAAPP Permit") for the facility that was issued on March 4, 2013. USS Granite City timely appealed some of the terms of the CAAPP Permit.[2]

This application requests several revisions to Construction Permit No. 95010001 to address correction of emission data for several emissions units involved in the 1996 Project. Most significantly, this application requests that the Illinois EPA revise certain permit conditions relating to emissions of carbon monoxide ("CO") and arising under the PSD permitting regulations at 35 Illinois Administrative Code ("IAC") Part 204.[3] The application includes updated control technology analyses and impact analyses in support of those requested revisions.

In 1996, at the time of Construction Permit No. 95010001 was initially issued, the Granite City area was designated nonattainment for ozone and particulate matter with aerodynamic diameter of 10 micrometer or less ("PM_{10}") national ambient air quality standards ("NAAQS"). The area was designated attainment or unclassifiable for all other regulated New Source Review ("NSR") pollutants. The permit included limitations on emissions sufficient to ensure that the Project did not trigger applicability of the Illinois Nonattainment New Source Review ("NNSR") program codified at 35 IAC Part 203 for oxides of nitrogen ("NO_X") and volatile organic matter ("VOM") (both as precursors for ozone) and PM_{10} and did not trigger PSD permitting requirements for

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[1] The improvements to the BOF Shop were authorized under Construction Permit No. 11050006, issued by Illinois EPA on August 31, 2011.

[2] CAAPP Permit Appeal IPCB No. 2013-053, pending before the Illinois Pollution Control Board ("Board").

[3] The 1996 Construction Permit is a PSD permit with respect to increases in emissions of two pollutants – CO and sulfur dioxide ("SO_2"). The PSD permit was issued pursuant to the federal PSD regulation at 40 CFR § 52.21, which Illinois EPA was then implementing under a delegation of authority from U.S. EPA. The federal PSD rule is no longer applicable, as the Illinois PSD regulation was approved by U.S. EPA in 2021 as a part of the Illinois State Implementation Plan ("SIP"), and the authority to administer and enforce federal PSD permits was fully transferred to Illinois EPA. See, 86 Fed. Reg. 50459 at 50464 (Sept. 9, 2021). This permit application does not request any changes relating to the PSD approval for SO_2 emissions from the Project.

particulate matter ("PM"), nitrogen dioxide ("NO_2"), or lead. Certain emission limits in Construction Permit No. 95010001 that were considered by Illinois EPA in making NNSR and PSD non-applicability determinations for the 1996 Project are the subject of revisions requested by USS Granite City in this application. The revisions requested by USS Granite City in this application are designed to ensure the continued non-applicability of the NNSR program for ozone precursors and PM_{10}, and the continued non-applicability of the PSD program for emissions of PM and NO_2, to the Project.[4] The application includes revised Project emission increase calculations, updated net emissions increase analyses, and discussion of compliance requirements in support of those non-applicability determinations.

The requested changes will resolve the issues raised in the CAAPP permit appeal filed by USS Granite City.

USS Granite City also requests that Illinois EPA process the revisions to Construction Permit No. 95010001 in accordance with the integrated processing procedures and issue the revised permit utilizing procedures and compliance requirements that are substantially equivalent to those utilized for issuance of a CAAPP permit, including a public notice period for the revised permit. See 35 IAC 270.302(e). USS Granite City understands that the CAAPP permit would be modified by means of the administrative amendment process to address the revisions that have been made to the applicable requirements in Construction Permit No. 95010001.[5]

No physical changes are proposed in conjunction with the requested revisions to Construction Permit No. 95010001.

1.1 Description of Facility

The Granite City Works is an integrated steel mill employing raw material handling, processing, and preparation; iron production; steel production; steel finishing; and boilers and other ancillary operations. In 1996, at the time of the Project, National Steel Corporation, owner of the Granite City Works produced metallurgical coke in a by-product coke plant. The by-product coke plant was among the assets acquired by USS Granite City in 2003 and continued to operate until 2015 at which time it was permanently idled. Coke is now obtained from the heat recovery coke batteries located adjacent to the steel mill, which are owned and operated by Gateway Energy and Coke Company, and from other sources.

1.2 Application Organization

This application contains the following analyses and supporting information for requested updates and revisions of Construction Permit No. 95010001.

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[4] Madison County is currently designated attainment for all criteria pollutants except ozone. For the 2015 ozone standard, the County is designated marginal nonattainment. Alton Township in Madison County is designated nonattainment for SO_2. However, USS Granite City is outside the Alton Township.

[5] A similar process was followed for the issuance of Construction Permit No. 11050006, for the emission reduction project serving the BOF Shop Operations, in 2011.

- Section 2 presents an overview of the requested permit revisions.
- Section 31 presents a discussion of permit conditions used to restrict potential to emit ("PTE") and the consideration of such conditions in determining applicability of the PSD and NNSR programs.
- Section 4 presents a discussion of proposed changes pertaining to carbon monoxide (CO) emissions. The demonstrations and analyses required under the PSD regulations in conjunction with these proposed changes are addressed in Sections 8, 9, and 10.
- Section 5 provides details of requested changes to permit terms for PM and PM_{10} emissions and updated emissions increase analyses.
- Section 6 addresses requested changes to permit terms for NOx emissions and updated emissions increase analysis.
- Section 7 addresses requested changes to permit terms relating to the VOM emissions and updated emissions increase analysis.
- Section 8 contains a best available control technology (BACT) demonstration for CO for the emissions units for which BACT is required.
- Section 9 summarizes the source impacts analyses, including air dispersion modeling, for CO.
- Section 10 provides analyses of additional impacts, including impacts of the Project's CO emissions on soils, vegetation, and visibility.
- Section 11 summarizes pertinent regulatory applicability and changes thereto.

2. Overview of Requested Permit Revisions

2.1 Background on Construction Permit No. 95010001

National Steel Corporation submitted an application on January 3, 1995 for a construction permit for a proposed increase in production at the Granite City Works ("1995 Application"). Illinois EPA issued Construction Permit and PSD Approval No. 95010001 on January 25, 1996. The permit authorized National Steel Corporation to increase throughput and fuel use at the Granite City Works as follows:

(a) The limits on production of hot metal (*i.e.*, iron) from the two blast furnaces were increased to 9,849 net tons per day, calendar month average, and 3,165,000 net tons per calendar year. [Permit Conditions 2(a) and (b).]

(b) The limits on production of liquid steel from the two BOFs were increased to 11,000 net tons per day, calendar month average, and 3,580,000 net tons per calendar year. [Permit Conditions 6(a) and (b).]

(c) The limits on use of blast furnace gas ("BFG") at the units in which BFG was burned (*i.e.*, boilers #1 through #12, blast furnace stoves, BFG flare #1, and ladle drying preheaters) were increased to 30,800 million cubic feet (MMcf) per calendar month and 185,030 MMcf per calendar year. [Permit Condition 21(b).]

(d) Construction Permit No. 95010001 also includes limits on use of natural gas at the project-affected units in which natural gas could be burned (*i.e.*, boilers #1 through #12, blast furnace stoves, BFG flare #1, and ladle drying preheaters.[6,7] The limits in the original Construction Permit No. 95010001 issued in 1996 were 190 MMcf per calendar month and 1,145 MMcf per calendar year. [Permit Condition 21(a).] These limits did not represent increases, as the same limits had previously been in effect in Construction Permit No. 95090167. As most recently revised in 2012, the natural gas consumption limits in Construction Permit No. 95010001 are 225 MMcf per calendar month and 1,346 MMcf per calendar year. [Permit Condition 21(a).]

These increases in permitted production and fuel usage resulted in increases in emissions from the various project-affected emissions units. The net emissions increase analysis for the Project as summarized in Construction Permit No. 95010001 are presented in Table 2-1 below.

For PM, PM_{10}, NO_x, and VOM, the net emissions increases, including contemporaneous changes, were below the applicable significant emission rates for these pollutants. For lead, the

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[6] Construction Permit No. 95010001 also includes limits on use of fuel oil in the units in which fuel oil could be burned. Fuel oil is no longer burned at Granite City Works. .With this application, USS Granite City is requesting that Construction Permit No. 95010001 be revised to remove all permit conditions relating to the use of fuel oil in the project-affected combustion units.

[7] Construction Permit No. 95010001 did not address the use of coke oven gas or the emissions resulting from burning that gas as fuel in boilers #1 through #12 and in the blast furnace stoves. (Coke oven gas is a by-product fuel produced in by-product coke oven batteries.)

project emissions increase was below the significant emission rate. Finally, for SO_2 and CO, the project resulted in net emissions increases that were greater than the significant emission rates. As the 1996 Project was a major modification for SO_2 and CO, the PSD review requirements for these pollutants were addressed by National Steel Corporation in the 1995 Application and by Illinois EPA in Construction Permit No. 95010001.

Table 2-1. Summary of Net Emissions Increase Analysis for the Project

	Emissions (tons/year)						
	PM	PM_{10}	NO_X	SO_2	CO	VOM	Lead
Project Emissions Increases	-52.0	51.6	238.8	476.0	5,685.0	59.3	0.54
Contemporaneous Decreases	-58.0	-58.0	-226.5	-0.38	-23.31	-32.8	n/a
Contemporaneous Increases	20.3	20.7	26.0	0.25	11.8	1.6	n/a
Net Emissions Increases	**-89.2**	**14.3**	**38.3**	**475.9**	**5,673**	**28.1**	**0.54**
Significant Emission Rate	25.0	15.0	40.0	40.0	100.0	40.0	0.6

2.2 General Description of Requested Permit Revisions

This application proposes five categories of changes as described in Sections 2.2.1 through 2.2.5 below. USS Granite City is requesting neither authorization for changes to emissions units nor increases in the limits on hot metal production rate and liquid steel production rate. This permit application also does not request any changes to the SO_2 and lead emission limits established in Construction Permit No. 95010001, so SO_2 and lead emissions will not be discussed further.

2.2.1 Requested Changes Relating to CO Emissions

The Project was a major modification for CO and was subject to PSD review for this regulated NSR pollutant. USS Granite City is requesting revisions to Construction Permit No. 95010001 associated with the PSD review and approval. These changes are briefly summarized below and are discussed in detail in Section 4 of this permit application.

The primary changes requested by USS Granite City relating to CO emissions are (1) requested increases in the permitted emissions from burning of BFG and natural gas and (2) provisions to address CO emissions from the blast furnace casthouse. The emission limits established in Construction Permit No. 95010001 were based upon information in the 1995 Application submitted by National Steel Corporation, which in turn was based on published emission factors and other literature information. However, actual emissions testing data generated since the original PSD application was submitted and updated literature information indicate that corrections to the emission factors and corresponding limits are necessary and appropriate. Because these revisions are not necessitated by or associated with any changes to emissions units subsequent to the Project, these changes would be revisions to the original PSD permit based upon better emissions information; accordingly, updates to the substantive PSD reviews presented in the 1995 Application are provided in Sections 8, 9 and 10 herein. In addition, revisions are requested with respect to certain other permit terms to clarify compliance demonstration requirements and to improve operational flexibility .

2.2.2 Cleanup of Labeling & Organization of Individual Units (Independent of Emissions)

USS Granite City is requesting changes to the names of certain emissions units and control devices in Construction Permit No. 95010001 to reflect more accurately their functions within the process. In addition, USS Granite City is requesting changes to the groupings of emissions units. The requested organizational changes with respect to material handling operations are generally consistent with the approach that Illinois EPA used when issuing the CAAPP permit for the facility, to address material handling operations separately from the iron- and steelmaking operations and continuous casting operations as discussed in Section 5.3 of this permit application. Other organizational changes are requested in order to ensure the BOF Shop Operations grouping is consistent with federal emission standards for those operations as discussed in Section 11.1.2 herein.

2.2.3 Requested Changes Relating to PM, PM_{10}, NO_X, and VOM Emissions from Project-Affected Emissions Units

Construction Permit No. 95010001 includes a number of emission limitations and other permit conditions that are not explicitly required by any regulation. These emission limitations and permit conditions were included in the permit in order to restrict the PTE of certain operations at the Granite City Works and thereby memorialize non-applicability determinations under the PSD and NNSR permitting programs with respect to net emissions increases of PM, PM_{10}, NO_X, and VOM resulting from the Project. USS Granite City is requesting that certain permit conditions addressing individual emissions units or points, including both limits on annual emissions and provisions addressing emission factors, be removed or revised.

In this regard, the annual emission limitations for the various processes and activities at the Granite City facility listed in Table 5 of Construction Permit No. 95010001, referred to herein as "emissions caps," can address the PTE and serve to limit the net emissions increases of PM, PM_{10}, NO_X, and VOM to less than the corresponding significant emission rates under the PSD and NNSR permitting programs. The support for these revisions is provided in Section 1 of this permit application. USS Granite City anticipates that these revisions will enable settlement of the permit appeals currently before the Board because they involve provisions of the permit addressing emission factors.

For PM and PM_{10}, USS Granite City is requesting minor revisions to the emissions caps both to accommodate the revised grouping of material handling operations as discussed in Section 2.2.2 above and to reflect updated emissions information. The specific requested changes to permit terms relating to PM and PM_{10} emissions, accompanied by demonstrations that the net emissions increase for these pollutants remain below the corresponding significant emission rates, are discussed in Section 5 herein.

For NO_X and VOM, USS Granite City is requesting increases in permitted emissions from the BOF Shop Operations based upon updated emissions information and not related to any post-1996 changes at the source. The specific requested changes to permit terms relating to NO_X and VOM emissions, respectively, accompanied by demonstrations that the net emissions increase for these pollutants remain below the corresponding significant emission rates, are discussed in Sections 6 and 7 herein.

USS Granite City is also requesting revision/elimination of gaseous fuel usage limits for project-affected combustion units. In 2015, USS Granite City shut down its by-product coke oven batteries. This eliminated the ability to use coke oven gas ("COG") as a fuel at the mill. In addition, ten of the twelve boilers that existed at the mill at the time of the Project in 1996 have been retired. These actions have greatly reduced the emissions from fuel combustion in project-affected emissions units and obviate the need to preserve limits to restrict PTE of the remaining units.

2.2.4 New Net Emissions Increase Calculations Pursuant to "Source Obligation" Provisions of PSD and NNSR Rules

The emissions caps for PM, PM_{10}, NO_X, and VOM in Construction Permit No. 95010001 and certain other permit terms, and the resultant restrictions on PTE, appear to have been deemed by Illinois EPA to be necessary to prevent the Project from being a major modification.[8] Because the requested revisions to Construction Permit No. 95010001 include increases in certain emissions caps and other changes to permit terms that could allow increases in emissions of these four pollutants, the following "source obligation" provisions of the PSD and NNSR regulations are pertinent to this permit application:

> At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in, or expiration of, any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of this Part shall apply as though construction had not yet commenced on the source or modification. 35 IAC 203.210(b).

> At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation, established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of Sections 204.810, 204.820, 204.830, 204.840, 204.850, 204.1100, 204.1110, 204.1120, 204.1130, 204.1140, 204.1200, and 204.1400 shall apply to the source or modification as though construction had not yet commenced on the source or modification. 35 IAC 204.850.

In Sections 5 through 7 of this permit application and in Appendix B of this permit application, USS Granite City presents updated net emissions increase calculations for PM, PM_{10}, NOx, and VOM. Unlike the calculations in the 1995 Application submitted by National Steel Corporation, these calculations address all emissions from fuel burning units affected by the Project, including emissions from the burning of COG. (See Sections 5.2.2.15, 6.2.2.1, and 7.2.2.1.) These updated calculations demonstrate that the changes to permit terms requested by USS Granite City will not

[8] USS Granite City does not agree with this interpretation. The definitions of "major modification" and related provisions in the PSD and NNSR rules in effect in 1996 were based on increases in actual emissions, except in the narrow circumstances where the emissions unit at issue had not begun normal operations at the time of the project. *See, e.g.*, 56 *Fed. Reg.* 27630 (June 14, 1991). Nonetheless, for purposes of this permit application, USS Granite City has demonstrated that the Project, as it would be addressed by the revised construction permit that is requested herein, is not a major modification even under use of what Illinois EPA and U.S. EPA refer to as the "actual-to-potential" test.

trigger after-the-fact PSD or NNSR permitting for emissions of PM, PM_{10}, NO_X, or VOM under the "source obligation" provisions because the Project will not become a major modification for these pollutants by virtue of those changes to permit terms.

2.2.5 Requested Removal of Requirements for Roads at the Former South Plant at the Granite City Works

Construction Permit No. 95010001 includes requirements for control of fugitive dust emissions from roads at Granite City Works. These requirements extend to certain road segments at the site of what was formerly the South Plant of Granite City Works during the period when the mill was owned and operated by National Steel Corporation. Specifically, Permit Condition 26a requires periodic application of chemical dust suppressant to road segments B and C and Permit Condition 27a requires periodic sweeping and flushing of road segment A.[9] Because the South Plant property, including these road segments, is not under the control of USS Granite City, or any person under common control with USS Granite City, pollutant-emitting activities at these properties are not a part of the Granite City Works stationary source.[10] Accordingly, requirements relating to these road segments should not be included in the revised construction permit issued to USS Granite City. USS Granite City requests that Attachment B of the construction permit be revised to omit the diagram for the South Plant and that Permit Conditions 26a and 27b be revised so that they no longer address road segments A, B, and C.

[9] Attachment B of the permit shows that these road segments are at the site of what was formerly the South Plant.
[10] The South Plant property, which comprises three parcels, was not among the assets acquired by U.S. Steel in 2003 or at any time thereafter. Based on information from the Madison County Chief Assessment Office (https://gis.co.madison.il.us/madco/viewer/index.html, last accessed June 24, 2022), the parcels at issue are currently owned by Cara Metals Illinois LLC and R W T Holdings LLC.

3. Discussion of Permit Conditions Used to Restrict PTE

As noted in Section 2.2 above, USS Granite City is proposing to retain, with no changes, the currently effective limits on hot metal production rate and liquid steel production rate in Construction Permit No. 95010001. As discussed in greater detail in Sections 5 through 7 of this permit application, USS Granite City also is proposing that the revised construction permit continue to include annual emissions caps, with certain revisions to reflect updated emissions information, and that the Illinois EPA include appropriate testing, operational monitoring, and recordkeeping requirements in the revised permit to ensure that the emission caps would be legally and practicable enforceable. Collectively, under the following provisions in the pertinent definitions in the PSD and NNSR rules, these proposed limitations and permit terms will restrict the PTE of the affected emissions units:

> Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable. 35 IAC 203.128.
>
> Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable or legally and practicably enforceable by a state or local air pollution control agency. 35 IAC 204.560.

Under the provisions above, what is required for restricting PTE is that the limits be enforceable as a practical matter.[1] Practical enforceability is a matter of technical judgment of the permitting authority – Illinois EPA – but there is a substantial body of policy and precedent regarding preferred forms for emissions caps that are enforceable as a practical matter. These policies can be summarized as follows:

- If not used to restrict emissions over a period shorter than one year, emissions caps should be expressed in terms of tons per year on a 12-month rolling sum basis or on a more frequent basis.
- If the emissions cap will cover multiple activities or emissions units, the permit should require at least monthly emissions calculation and recordkeeping.

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[1] *See, e.g.*, Administrative Order, *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Petition No.: II-2000-07, C.T. Whitman, U.S. EPA Administrator, May 2, 2001, upholding use of annual emission caps with a rolling cumulative total methodology and rejecting petitioners' "concern that the permit appears to rely on after-the-fact monitoring, rather than engineering practices, test data, or vendor guarantees" to establish restrictions on PTE. U.S. EPA based its findings on the fact that "[i]f the source has no room to operate under the PTE limiting emissions cap, it must cease operation or face a violation" and that "all PTE limits rely on after the fact monitoring of some kind."

- The permit should prescribe methods of calculating actual emissions for each unit and each pollutant and should prescribe how monitoring and recordkeeping of relevant parameters will be used in those calculations.
- Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance, the permitting authority should describe the basis for its determination that the emission factor is representative.
- Where the permit requires development and use of a site-specific emission factor to be used in conjunction with operational data in demonstrating compliance, the permit should prescribe the method by which the emission factor will be developed, such as through performance testing with a specified frequency.

Two recent and significant examples of these policies are U.S. EPA's final agency actions in issuing the permits for construction of a drilling operation in the Beaufort Sea off the North Coast of Alaska in March 2012 and installation of new stationary reciprocating internal combustion engines at an existing power plant in Arizona in December 2018.[12,13] The Alaska permit, issued by U.S. EPA Region 10, includes annual emissions caps for NOx and CO, with compliance determined on a 365-day rolling sum basis, and annual emissions caps for SO_2 and greenhouse gases, with compliance determined on a 12-month rolling sum basis. The Arizona permit, issued by the Pima County Department of Environmental Quality pursuant to a delegation of authority from U.S. EPA, includes an annual NOx emissions cap with compliance determined on a 12-month rolling sum basis. Copies of the Alaska and Arizona documents referred here are provided in Appendix E.

Each of these permits includes some emissions units for which the emission factor used to quantify that unit's contribution to the emissions cap over a particular time period is directly prescribed in the permit and also some emissions units for which the permit prescribes the method by which the emission factor will be developed. In each instance where the emission factor is directly prescribed in the permit, this approach was used because the permitting authority determined the emission factor to be sufficiently representative of actual emissions, provided that required monitoring of operating parameters shows the process and control device to be operating within ranges or conditions established during the permitting process. (For example, in the Alaska permit, the NOx and CO emission factors for periods when the control devices are operating assume control efficiencies of 90 percent and 80 percent, respectively; in the Arizona permit, the NOx emission factor for engine startup events, during which the air pollution control equipment does not operate, is based on the estimate provided by the engine manufacturer.) In each instance where emission factors are developed through site-specific testing subsequent to permit issuance, the permit carefully prescribes the testing conditions that will be followed, the frequency of that testing, and the calculations to be used to derive the emission factor.

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[12] *In re: Shell Offshore, Inc., OCS Permit No. R10 OCS030000*, OCS Appeal Nos. 11-05, 11-06 & 11-07. Mar. 30, 2012. Docket available on the U.S. EPA internet web site at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/77355bee1a56a5aa8525711400542d23/f24b9734e6894b9385257958006dad34!OpenDocument (last accessed May 9, 2022).

[13] *In re: Tucson Electric Power, PSD Permit No. 1052*, PSD Appeal No. 18-02. Dec. 3, 2018. Docket available on the U.S. EPA internet web site at https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/77355bee1a56a5aa8525711400542d23/64a784010e968b9b852583050073ebe5!OpenDocument (last accessed May 9, 2022).

The approach proposed by USS Granite City with respect to the PM, PM_{10}, NO_X, and VOM emissions caps to be used in any revised Construction Permit No. 95010001, including the proposed revisions to certain emissions limitations, compliance demonstration requirements, and other permit conditions as discussed in detail in Sections 5 through 7 of this permit application, is consistent with this policy and precedent and will improve the enforceability of the PTE limitations in Construction Permit No. 95010001. In particular, USS Granite City emphasizes that removal or revision of certain permit conditions addressing individual emissions units or points, including both limits on annual emissions and provisions addressing emission factors, will not result in impairment of the enforceability of the PTE limitations.

4. Changes to Provisions for CO Emissions

This section of the permit application describes the changes to Construction Permit No. 95010001 requested by USS Granite City pertaining to CO emissions from fuel burning emissions units and from the blast furnace casthouse. These requested changes are not based upon any post-1996 Project changes but are based on updated information regarding CO emissions.

Construction Permit No. 95010001 also set a CO emissions limitation for the BOF electrostatic precipitator ("ESP") Stack. No changes are being proposed to this CO emission limitation in Table 2 of the permit.

The Project was permitted in 1996 as a major modification for CO and was subjected to PSD review by Illinois EPA; with the proposed changes, the project continues to be subject to PSD review with respect to CO emissions.

4.1 Process Background and Project

4.1.1 Blast Furnace Casthouse

The blast furnaces produce molten iron from iron ore pellets through a reduction reaction with metallurgical coke. In this reaction, carbon monoxide (CO) is formed along with hydrogen and other gases as a byproduct. The tapping of the blast furnaces, which takes place within a structure known as the casthouse, results in emissions of CO. These emissions are a consequence of the relatively small amount of BFG that leaves the furnaces with the molten metal and slag during the tapping process.

The Project involved increases in the production rate for the blast furnaces as outlined in subsection 2.1. The Project is also presumed by USS Granite City to have resulted in increases in CO emissions from the casthouse.

4.1.2 Fuel Combustion

Most of the gas that is formed in the blast furnace rises to the top of the furnace. At the top of the blast furnace, the BFG generated in the furnace is collected and routed to a BFG pretreatment system. BFG has a relatively low heating value (80-110 Btu/scf) and is preferentially used as fuel in the stoves that heat the blast air for the blast furnace. Each blast furnace at the Granite City Works has a set of three stoves. BFG is also used as a fuel in the boilers used to produce steam for use at the Granite City Works, including steam to power the turboblowers that supply blast air to the blast furnaces. Any excess BFG is flared.

The configuration of the Granite City Works in 1996, at the time of the Project, as it relates to fuel combustion in the Project-affected units differed considerably from the current configuration. In 1996, the mill had twelve boilers, all of which used BFG as fuel. Only two of these boilers – Boiler 11 and Boiler 12 – remain in existence. One flare, now known as BFG

flare #1, was used for flaring of excess BFG.[14] In 1996, the boilers used BFG, COG, natural gas, and fuel oil; currently, Boiler 11 and Boiler 12 use only BFG and natural gas. In 1996, the stoves used COG as supplemental fuel; currently, they use natural gas as supplemental fuel.

The 1996 Project involved increases in BFG generation and usage as outlined in subsection 2.1. The CO net emissions increase from the 1996 Project was significant and the project was subject to PSD review for CO emissions. The BACT-affected fuel burning emissions units identified and addressed in the 1995 Application were the blast furnace stoves, the ladle drying preheaters, and miscellaneous ancillary natural gas burning units in the BOF shop and at the continuous casters. In the 1995 Application, on page 1-3, National Steel Corporation stated that the boilers were not undergoing any changes as part of the project. Pursuant to 40 CFR § 52.21(j)(3) and 35 IAC 204.1100(c), because these emissions units were not changed as part of the project, they are not subject to BACT requirements.

4.2 Provisions of the Construction Permit Relating to CO Emissions from Fuel Combustion

Table 4 of Construction Permit No. 95010001 contains CO emission factors and emission limitations for the fuel burning emissions units affected by the Project. Table 4-1 below presents information from Table 4 of the permit pertaining to the CO emissions limitations from 'certain fuel burning emissions units,' *i.e.*, Boilers #1 through #12, Blast Furnace Flare 1, Blast Furnace Stoves, ladle drying preheaters, and continuous casters.[15] Copies of the original and current versions of the construction permit are provided in Appendices D1 and D2 of this permit application.

Table 4-1. Table 4 of Construction Permit – CO Emissions

Fuel Used for Boilers, Stoves, Flare, Ladle Drying Preheaters, and Ancillary Natural Gas Burning Units[16]	CO Emission Factor	Maximum CO Emissions (tons/year)	
		Original (1996) Permit	Current (2012) Permit
Natural Gas	40 lb/MMcf	22.90	26.92
Blast Furnace Gas	13.7 lb/MMcf	1,267.46	1,267.46
Fuel Oil[17]	5.0 lb/10^3 gal	0.91	0.91

[14] Granite City Works currently includes a second BFG flare, known as BFG flare #2, and a cogeneration boiler used to produce electricity and process steam. Construction of the boiler and flare was authorized under Construction Permit No. 06070023 issued in January 2008.

[15] The Construction Permit omits the ancillary fuel burning units at the continuous caster under Table 4. However, emissions from fuel combustion at these units are appropriately accounted for in the natural gas combustion rates.

[16] As discussed in Section 2.2.3 of this permit application, although the boilers and stoves burned COG, Construction Permit No. 95010001 did not include any terms relating to combustion of this byproduct fuel. As it pertains to CO emissions, this omission is now moot because the shutdown of the by-product coke oven batteries in 2015 eliminated the ability to use COG as a fuel. The current and future CO emissions from burning of COG in Project-affected combustion units are zero and are not addressed further in this permit application.

[17] As indicated in footnote 6, fuel oil is no longer used as fuel at Granite City Works.

4.3 Updated CO Emissions Information for Fuel Combustion

For natural gas combustion, the CO emission factor included in Construction Permit No. 95010001 was from Chapter 1.4 AP-42 as updated in August 1982. The U.S. EPA revised Chapter 1.4 of AP-42 in July 1998 and updated the CO emission factor for natural gas combustion to 84 lb per million cubic feet. For natural gas combustion in Boiler 11, Boiler 12, blast furnace stoves, ladle drying preheaters, and ancillary fuel burning units at the continuous casters, the updated CO emission factor has been used to calculate the CO emission rates in this permit application, including in the dispersion modeling analysis provided in Appendix C of this permit application.[18]

As previously explained, BFG is combusted as fuel in the boilers and blast furnace stoves at the site and excess BFG is flared. The CO emission factor for BFG burning in the 1995 Application and in Construction Permit No. 95010001 was from the U.S. EPA's AIRS 1990 database (WebFIRE). However, based on recent performance tests for boilers burning BFG, engineering evaluations of BFG burning in blast furnace stoves, and updates to AP-42 Section 13.5, this factor is not representative. Updated CO emission factors for BFG burning in the blast furnace stoves, Boiler 11, Boiler 12, and BFG flares are being proposed for purposes of this revision to the CO emission rates. The proposed CO emission rates are as follows:

- Based on the information regarding CO emission rates from another blast furnace stove, and engineering evaluations of BFG burning in the blast furnace stoves at Granite City Works, the CO emission factor for burning of BFG in the blast furnace stoves is 322 pounds per million cubic feet.[19]
- Based on CO stack testing performed at Boiler 11 and Boiler 12, the emission factor for burning of blast furnace gas in these boilers is 32.2 pounds per million cubic feet.[20]
- The CO emission factor for BFG flaring is calculated using a CO concentration of 24 percent in BFG and a destruction efficiency of 96 percent.[21, 22] This results in a CO emission factor of 698 pounds per million cubic feet.

Table 4-2 presents the updated maximum annual CO emissions from burning of fuel in the blast furnace stoves, Boiler 11, Boiler 12, Blast Furnace Flare 1, ladle drying preheaters, and ancillary

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[18] Boilers #1 through #10, which were Project-affected emissions units, have been permanently shut down. The current and future CO emissions from these boilers are zero and are not addressed further in this permit application.
[19] CO emission factor for AK Steel Dearborn / Severstal Dearborn Michigan permit for C Blast Furnace Stoves in the PTI 182-05C was specified as 328.9 lb/MMcf of BFG. See https://www.deq.state.mi.us/aps/downloads/permits/finpticon/2005/182-05C.pdf (accessed on August 17, 2022). In addition, USS Granite City evaluated CO emissions from the blast furnace stove stacks using non-reference method to compare against data from other furnaces. The Granite City Works blast furnace stoves stack configuration did not allow for application of a reference method for measuring CO emissions. Therefore, as part of an engineering evaluation, USS used a non-reference method to collect CO concentration in the stove stack exhaust.
[20] Boiler 11 tests were conducted in July 2011. Boiler 12 tests were conducted in May 2011.
[21] Data from the quarterly BFG component analyses for 2019 for USS Granite City shows CO concentration in BFG ranging from 20% to 22%.
[22] U.S. EPA's *Compilation of Air Pollutant Emission Factors, AP-42, Volume 1, Stationary Point and Area Sources*, Section 13.5, April 2015 ("Properly operated flares achieve at least 98 percent destruction efficiency in the flare plume").

fuel burning units at the continuous casters. Emissions calculations for CO from fuel combustion are provided in Appendix B of this permit application.

Table 4-2. Updated CO Emissions from Burning of Gaseous Fuels

Unit/Fuel	Future Throughput		Emission Factor		Emissions (TPY)
BFG in stoves	68,755	MMcf/year	321.83	lb/MMcf	11,064
BFG in boilers	76,327	MMcf/year	32.19	lb/MMcf	1,228
Natural gas in boilers	1,640	MMcf/year	84.0	lb/MMcf	69
BFG in BFG flare	39,947	MMcf/year	697.6	lb/MMcf	13,934
Natural gas in ladle preheaters	340	MMcf/year	84.0	lb/MMcf	14

4.4 Updated CO Emissions Information for Blast Furnace Casthouse

National Steel Corporation did not identify the blast furnace casthouse as a source of CO emissions in the 1995 Application, and Illinois EPA did not address those emissions in Construction Permit No. 95010001. Subsequent testing at Granite City Works and other integrated iron and steel mills indicates there are CO emissions from blast furnace casthouse operations. CO emissions measured during testing performed at the casthouse baghouse and the iron spout baghouse at Granite City Works in 2012 were 0.10 lb per ton of hot metal and 0.01 lb per ton of hot metal, respectively. As discussed in Section 8.2.3.7 of this permit application, USS Granite City is proposing a CO BACT emission limit of 70 lb/hr based on total emissions from these two baghouses. Assuming 95% capture efficiency for the capture system associated with the casthouse baghouse, as discussed in Section 5.2.2.3 of this permit application, the fugitive CO emissions from the casthouse roof monitor are 3.1 lb/hr. Total CO emissions from the blast furnace casthouse, including both baghouses and fugitive emissions, are 73.1 lb/hr and 320 tons per year ("TPY").

4.5 CO PSD Review Requirements

As previously explained, the 1996 Project was subject to PSD review for CO because the CO net emissions increase was greater than the significant emission rate of 100 tons per year. Sections 8 through 10 of this permit application address the requested changes to Construction Permit No. 95010001 relating to CO emissions under the PSD review requirements of 35 IAC 204.1100 through 204.1140, as applicable for the blast furnace casthouse and certain fuel burning emissions units.

5. Proposed Changes to Permit Terms for PM and PM_{10} Emissions Increases Analyses

This section describes the proposed changes to Construction Permit No. 95010001 requested by USS Granite City related to PM and PM_{10} emissions. It also provides a demonstration that, even with the requested revisions, the Project would still not be a major modification under the PSD program at 35 IAC Part 204 with respect to emissions of PM and under the NNSR program at 35 IAC Part 203 with respect to emissions of PM_{10}. The net emissions increase calculations for PM and PM_{10} from the 1995 Application submitted by National Steel Corporation are reproduced in Appendix B of this permit application.

5.1 Construction Permit No. 95010001 Applicability and Requirements

Table 5-1 summarizes the provisions from Construction Permit No. 95010001 pertaining to PM and PM_{10} emissions limitations from the project-affected emissions units. Copies of the relevant permits are provided in Appendices D1 and D2 of this application.

Table 5-1. Construction Permit Conditions Addressing PM and PM_{10}

Permit Condition	Requirements
5	Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.
18	Emissions from the BOF Shop operations shall not exceed the limits in attached Tables 2 and 5.
20	Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5
22	Emissions from the listed fuel combustion units shall not exceed the limits in Tables 4 and 5.

The annual PM and PM_{10} emissions caps listed in Table 5 of Construction Permit No. 95010001 are presented in Table 5-2 below. These annual PM and PM_{10} emissions caps cover all emissions units affected by the Project. These emissions units are grouped into four main processes or activities (as listed in Table 5-1). Each emissions cap is calculated as the sum of the unit-specific emissions limitations in Tables 1 through 3 and fuel specific limitations in Table 4 of the permit. Table 5 also includes limitations for PM and PM10 emissions from roadways and material handling activities at the facility.

Table 5-2. PM and PM_{10} Emissions Information from Table 5 of Construction Permit No. 95010001

Processes and Activities	Emissions Caps (tons/year)	
	PM	PM_{10}
Blast Furnace Operations	218	194
BOF Shop Operations	510	451
Continuous Casting Operations	71	71
Certain Fuel Combustion Units	273	273
Roadways	27	27
Material Handling	2	2
Total	1,101	1,018

The PM and PM_{10} emissions caps restricted the PTE of the project affected-emissions units. The project emissions increases for PM and PM_{10} were calculated by subtracting pre-project actual emissions (August 1992 to July 1994, 24-month period) from the PTE as restricted by the limitations in the permit. Table 6 of Construction Permit No. 95010001 summarized the net emissions increases from the project and summarized Illinois EPA's determination that the project was not a major modification with respect to PM or PM_{10} emissions. Because the net emissions increases for PM and PM_{10} were below the applicable significant emission rates, these pollutants were not subject to PSD or NNSR review.

5.2 Pre-Project Actual Emissions for 1996 Project

This section presents the pre-project actual emissions and USS Granite City's updates/revisions to some of the PM and PM_{10} emission factors and emission estimates. Corrections to the emissions factors are the result of updated information available regarding some of the operations affected by the project as discussed in Section 5.2.2 below.

5.2.1 Historical Throughput Rates

The PM and PM_{10} net emissions increase calculations presented in Table 6 of Construction Permit No. 95010001 were based on the calculations provided by National Steel Corporation in Tables 3-4, 3-5, and 3-7 of the 1995 Application. Those tables from the prior permit application are reproduced in Appendix B to this permit application.

The pre-project annual emissions were recalculated in this permit application using the same production and operating rates as the 1995 Application as shown in Table 5-3 below.

Table 5-3. Pre-Project Production and Operating Rates for PM and PM_{10}

Parameters	Units	1995 Application
Blast Furnace Production	Net tons of hot metal/year	2,059,557
Blast Furnace Charging	Charge Material tons/year	2,803,241
BOF Shop	Molten steel tons/year	2,413,406
Combined BFG Combustion	MMcf/year	121,039
Combined NG Combustion	MMcf/year	1,145
Combined Fuel Oil Combustion	Mgal/year	16

5.2.2 PM and PM_{10} Emission Factors Basis and Revisions

USS Granite City has reviewed the PM and PM_{10} emission factors used to calculate pre-project actual emissions from the project-affected emissions units based on stack testing and updated literature-based information. As a result of this review, emission factors for two operations were revised as described below. The updated pre-project actual emissions for PM and PM_{10} for the project are presented in Table 5-5 and Table 5-6 of this permit application, respectively; explanations are provided in the following paragraphs.

5.2.2.1 A&B Blast Furnace Charging Fugitive Emissions (PM_{10} Revised)

The Blast Furnace charging fugitive PM emissions were calculated using the emission factor of 0.0024 lb/ton from the U.S. EPA's AIRS 1990 database (WebFIRE). For PM_{10}, the 1995 Application assumed PM_{10} was the same as PM. However, based on particle size distribution data in AP-42 Table 12.5-2, which indicates 51% of PM is PM_{10}, the PM_{10} emission factor for this operation was lowered. The new PM_{10} emission factor is 0.0012 lb/ton.

5.2.2.2 A&B Blast Furnace Casthouse Stack (Baghouse) Emissions (No Change)

The pre-project actual emissions for the A and B Blast Furnaces Casthouse (baghouse) stack as presented by National Steel Corporation in the 1995 Application were calculated using the design outlet concentration of 0.010 grains per dry standard cubic foot in the baghouse exhaust gas and an exhaust gas flow factor of 49,000 dry standard cubic feet per ton of hot metal. PM_{10} was assumed to be same as PM. No changes are necessary for this emission factor.

5.2.2.3 A&B Blast Furnace Casthouse Roof Monitor Emissions (PM_{10} Revised)

The Blast Furnace Casthouse roof monitor actual emissions were calculated using the AP-42 Section 12.5 Table 12.5-1 PM emission factor of 0.6 lb per ton for the uncontrolled casthouse. A 95% capture efficiency, which has been recognized by U.S. EPA as representative for this source type,[23] was applied for the A&B Blast Furnace Casthouse capture systems. The PM emission factor for this operation was revised from 0.031 lb/ton to 0.030 lb/ton. Based on the particle size distribution in AP-42 Table 12.5-2, 51% of PM was assumed to be PM_{10}. The new PM_{10} emission factor is 0.0153 lb/ton vs 0.0155 lb/ton in the 1995 Application.

5.2.2.4 A&B Blast Furnace Iron Spout Baghouse Emissions (No Change)

The pre-project actual emissions for the A and B Blast Furnaces Iron Spout baghouse stack as presented by National Steel Corporation in the 1995 Application were based on an emission factor of 0.02548 lb per ton of hot metal. All PM was assumed to be PM_{10}. This emission factor appears to have been developed based on the results of stack testing conducted in 1992. No changes are necessary for this emission factor.

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[23] See, for example, "Technology Review for the Integrated Iron and Steel NESHAP," memorandum from D.L. Jones, U.S. EPA, *et al.*, to the Integrated Iron and Steel (I&S) Residual Risk and Technology Review (RTR) Project File, May 1, 2019. Available in the electronic docket at www.regulations.gov/document?D=EPA-HQ-OAR-2002-0083-0964.

5.2.2.5 Blast Furnace Slag Pits Emissions (No Change)

The pre-project actual emissions for the A and B Blast Furnaces slag pits as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.00417 lb per ton of hot metal. This emission factor is the sum of PM and PM_{10} emissions rate of 0.0026 lb per ton for slag quenching (derived from EPA assessment) for slag quenching and 0.00157 for slag transfers (using AP-42 Section 13.2.4 equation for aggregate handling). For purposes of emissions calculations, PM was assumed to be same as PM_{10}. No changes are necessary for this emission factor.

5.2.2.6 BOF ESP Stack (BOF 2 Vessels) Emissions (No Change)

The pre-project actual emissions for the BOF ESP stack as presented by National Steel Corporation in the 1995 Application were calculated using data from the stack tests conducted during 1989 to 1993 timeframe on the BOF ESP exhaust. PM and PM_{10} was assumed to be identical for this operation. No changes are necessary for this emission factor.

5.2.2.7 BOF Roof Monitor Emissions (No Change)

The BOF roof monitor actual emissions were calculated using the information from AP-42 Chapter 12.5 and AIRS database. For pre-change actual PM and PM_{10} emissions, National Steel used 90% capture efficiency during the charging and tapping steps and 99% capture efficiency during the refining step for the BOF operations. A detailed description of the baseline roof monitor PM and PM_{10} emission factors is provided in Appendix C of the 1995 Application. For the BOF operations, per particle size distribution in AP-42 Table 12.5-2, 67% of PM is PM_{10}. No changes are necessary for this emission factor.

5.2.2.8 Desulfurization Station & Transfer Pit Baghouse Stack Emissions (No Change)

The pre-project actual emissions for the Desulfurization Station and Transfer Pit Baghouse stack as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.03721 lb per ton of hot metal. No new information is available that would require any revisions to this emission factor.

5.2.2.9 Hot Metal Charging and Ladle Skimming Stack Emissions (No Change)

The pre-project actual emissions for the Hot Metal Charging and Ladle Skimming Baghouse stack as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.005 lb per ton of hot metal. No new information is available that would require any revisions to this emission factor.

5.2.2.10 Baghouse 2 for Argon Stirring and Ladle Metallurgy Emissions (No Change)

The pre-project actual emissions for Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility (previously known as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)") as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.00715 lb per ton of steel. No new information is available that would require any revisions to this emission factor. It is now included with the BOF shop .

5.2.2.11 Caster Mold Process Emissions (No Change)

The pre-project actual emissions for the Caster Mold as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from the Illinois EPA 1991 EIS PM/PM_{10} report. No changes are necessary for this emission factor.

5.2.2.12 Continuous Caster Spray Chamber Emissions (No Change)

The pre-project actual emissions for the Continuous Caster Spray Chamber as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from a stack test in the 1980s. PM and PM_{10} emissions are assumed to be identical. No changes are necessary for this emission factor.

5.2.2.13 Slab Cut Off Casters Emissions (No Change)

The pre-project actual emissions for the Slab Cut Off Casters as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from the Illinois EPA 1991 EIS PM/PM_{10} report. No changes are necessary for this emission factor.

5.2.2.14 Slab Ripping Casters Emissions (No Change)

The pre-project actual emissions for the Slab Ripping Casters as presented by National Steel Corporation in the 1995 Application were calculated using the emission factor from the Illinois EPA 1991 EIS PM/PM_{10} report. No changes are necessary for this emission factor.

5.2.2.15 Fuel Burning Emissions Units Emissions (Revised)

The pre-project actual emission for various fuels used in certain fuel burning emissions units affected by the project were calculated using the emission factors presented in Table 5-4.

Table 5-4. PM and PM_{10} Emission Factors for Fuel Burning

Fuel	Emission Factor and Units	Basis
Blast Furnace Gas	2.9 lb/MMcf	AIRS 1990
Natural Gas	1.9 lb/MMcf *(revised)*	AP-42 Table 1.4-2 (Based on updated AP-42 information)
Coke Oven Gas (added)	16.56 lb/MMcf in stoves and 43.13 lb/MMcf in boilers *(both added)*	Stoves – Stack test (date unknown) Boilers – "A" battery stack test 1989
Fuel Oil (*Shown for historical purposes. USS Granite City no longer uses fuel oil.*)	9.72 lb/1000 gallon	AP-42 Page 1.3-2

In addition to the emission factors changes noted here, the emission calculations for each pollutant have been updated to reflect all emissions from boilers #1 through #12and from the blast furnace stoves, both pre-project and post-project. (The emission calculations performed by National Steel Corporation and included in the 1995 Application had improperly excluded the emissions from the boilers and stoves resulting from COG use; as a result, as noted in Section 2.1 of this permit application, Construction Permit No. 95010001 did not address the use of coke oven gas or the emissions resulting from burning that gas in the project-affected units.) For the pre-project emissions, the updated calculations include emissions from combustion of 2,584 MMcf of COG in these units during the baseline period; for the post-project emissions, the updated calculations reflect zero COG use.

5.2.2.16 Iron Pellet Screen Emissions (Revised)

The pre-project actual emissions for the Iron Pellet Screen were revised to be based on AP-42 Chapter 11.19.2 for crushed stone screening under Table 11.19.2-2. A control efficiency of 85% was applied for this operation.[24]

5.2.2.17 BOF Hopper Baghouse Emissions (No Change)

The pre-project actual emissions for the BOF Hopper baghouse stack were based on transfer point calculations using AP-42 Chapter 13.2.4 for aggregate handling. A control efficiency of 99.9% was applied for the baghouse used in this operation. No changes are necessary for this emission factor.[25]

5.2.2.18 Flux Conv and Transfer Points Baghouse Emissions (No Change)

The pre-project actual emissions for the Flux Conv and Transfer Points baghouse stack were based on transfer point calculations using AP-42 Chapter 13.2.4 for aggregate handling. A control efficiency of 99.3% was applied for the baghouse used in this operation. No changes are necessary for this emission factor.[26]

5.2.2.19 Baghouse 1 for Material Handling Emissions (No Change)

The pre-project actual emissions for the Baghouse 1 for Material Handling (previously known as "Deslagging Station and Material HS") as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor of 0.00355 lb/ton of hot metal. No new information is available that would require any revisions to this emission factor.[27]

5.2.2.20 Material Handling Emissions Changes (Revised)

The 1995 Application included emissions changes associated with the material handling and transfers for coke, pellets (other than screen), and limestone from the project under Table F-3. These emissions changes were accounted for in the contemporaneous emissions changes table for PM and PM_{10} along with the haul roads emissions changes. Construction Permit No. 95010001 accounted for the material handling emissions changes as "creditable contemporaneous actual emission decreases" in Table 6. With this application, the material handling and transfer operations for coke, pellets, and limestone are included in the project emissions calculations.

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[24] CAAPP Permit moved this operation to Material Handling and Processing.
[25] Same as above.
[26] Same as above.
[27] This unit is addressed twice in the CAAPP Permit. However, it is a single operation now included in Material Handling and Processing.

Table 5-5. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM Emission Factors for Affected Emissions Units

Emission Point[a]	Emission Factors[b]		Units	Basis	Baseline Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Fugitives	0.031	0.030	lb/ton of hot metal	No change	31.92	30.9
A & B Blast Furnace Charging	0.0024	0.0024	lb/ton of material	No change	3.36	3.4
A & B Blast Furnace Casthouse Baghouse	0.07026	0.07026	lb/ton of hot metal	No change	72.35	72.4
Blast Furnace Slag Pits	0.00417	0.00417	lb/ton of hot metal	No change	4.29	4.3
Iron Spout Baghouse	0.02548	0.02548	lb/ton of hot metal	No change	26.24	26.2
Blast Furnace Operations					***138.17***	***137.1***
BOF 2 Vessels	0.16	0.16	lb/ton of steel	No change	193.07	193.1
BOF Roof Monitor	0.428	0.428	lb/ton of steel	No change	516.72	516.7
Desulfurization Station [inside BOF shop] & Transfer Pit	0.03721	0.03721	lb/ton of hot metal	No change	38.32	38.3
Hot Metal Charging Ladle Slag Skimmer	0.00502	0.00502	lb/ton of hot metal	No change	5.17	5.2
Baghouse 2 for Argon Stirring and Ladle Metallurgy	0.00715	0.00715	lb/ton of steel	No change	8.63	8.6
BOF Shop Operations					***761.9***	***761.9***
Caster Mold – Casters #1 & #2	0.006	0.006	lb/ton of steel	No change	7.24	7.2
Continuous Casters #1 & #2 – Spray Chamber	0.00852	0.00852	lb/ton of steel	No change	10.28	10.3
Slab Cutoff Casters #1 & #2	0.0071	0.0071	lb/ton of steel	No change	8.57	8.6
Slab Ripping Casters #1 & #2	0.00722	0.00722	lb/ton of steel	No change	8.71	8.7
Continuous Casting Operations					***34.8***	***34.8***
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	2.90	2.90	lb/MMcf	No change	175.51	175.5
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	5.10	1.90	lb/MMcf	Note [c]	2.92	1.1
Combined COG in stoves, B11 & B12		16.56 & 43.13	lb/MMcf	Added		50.8
Combined FO in stoves, boilers, ladle drying preheaters, and BFG flares	9.72	9.72	lb/Mgal	No change	0.08	0.1
Certain Fuel Burning Units					***178.51***	***227.4***
Material handling for Coke, Pellets, Limestone	Table F-3 of 1995 Application					17.2
Iron Pellet Screen[a]	0.00279	0.00375	lb/ton of material	Note [d]	3.91	5.3
BOF Hopper Baghouse[a]	0.00032	0.00032	lb/ton of steel	No change	0.39	0.4
Flux Conv. & Transfer Points Bin Flo-r - BOF[a]	0.0016	0.0016	lb/ton of steel	No change	1.93	1.9
Baghouse 1 for Material Handling	0.00355	0.00355	lb/ton of steel	No change	4.28	4.3
Material Handling Operations					***10.51***	***29.0***
Total					***1,123.90***	***1,190.3***

(a) Emission unit groupings have been revised slightly: The identified line items associated with material handling operations were grouped with the blast furnace operations or BOF shop in Construction Permit No. 95010001. Material handling for coke, pellets, limestone are now included in the project emissions. Baghouse 1 for Material Handling is also now grouped with material handling operations. In addition, the Baghouse 2 for Argon Stirring and Ladle Metallurgy is now grouped with BOF Shop operations.

(b) Except as noted in subsequent sections of this permit application, the same emission factors used to calculate pre-project actual emissions are also used to calculate post-project actual emissions. The BOF Roof Monitor is a notable exception, as the 1996 Project included measures to improve PM control efficiency.

(c) Updated AP-42 emission factor for natural gas combustion.

(d) Calculated using AP-42 emission factor for crushed stone, assuming 85% control efficiency.

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Table 5-6. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM_{10} Emission Factors for Affected Emissions Units

Emission Point[a]	Emission Factors[b]		Units	Basis	Baseline Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Fugitives	0.0155	0.0153	lb/ton of hot metal	Correction to calculation	15.96	15.8
A & B Blast Furnace Charging	0.0024	0.0012	lb/ton of materiallte [c]	3.36	1.7	
A & B Blast Furnace Casthouse Baghouse	0.07026	0.07026	lb/ton of hot metal	No change	72.35	72.4
Blast Furnace Slag Pits	0.00417	0.00417	lb/ton of hot metal	No change	4.29	4.3
Iron Spout Baghouse	0.02548	0.02548	lb/ton of hot metal	No change	26.24	26.2
Blast Furnace Operations					*122.21*	*120.3*
BOF 2 Vessels	0.16	0.16	lb/ton of steel	No change	193.07	193.1
BOF Roof Monitor	0.287	0.287	lb/ton of steel	No change	346.20	346.2
Desulfurization Station [inside BOF shop] & Transfer Pit	0.03721	0.03721	lb/ton of hot metal	No change	38.32	38.3
Hot Metal Charging Ladle Slag Skimmer	0.00502	0.00502	lb/ton of hot metal	No change	5.17	5.2
Baghouse 2 for Argon Stirring and Ladle Metallurgy	0.00715	0.00715	lb/ton of steel	No change	8.63	8.6
BOF Shop Operations					*591.39*	*591.4*
Cas-er Mold - Casters #1 & #2	0.006	0.006	lb/ton of steel	No change	7.24	7.2
Continuous Casters–#1 & #2 - Spray Chamber	0.00852	0.00852	lb/ton of steel	No change	10.28	10.3
Slab Cutoff Casters #1 & #2	0.0071	0.0071	lb/ton of steel	No change	8.57	8.6
Slab Ripping Casters #1 & #2	0.00722	0.00722	lb/ton of steel	No change	8.71	8.7
Continuous Casting Operations					*34.80*	*34.8*
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	2.90	2.90	lb/MMcf	No change	175.51	175.5
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	5.10	1.90	lb/MMcf	Note [d]	2.92	1.1
Combined COG in stoves, B11 & B12		14.21 & 41.48	lb/MMcf	Added		48.5
Combined FO in stoves, boilers, ladle drying preheaters, and BFG flares	9.72	9.72	lb/Mgal	No change	0.08	0.1
Certain Fuel Burning Units					*178.51*	*225.2*
Material handling for Coke, Pellets, Limestone	Table F-3 of 1995 Application					17.2
Iron Pellet Screen [a]	0.00279	0.00131	lb/ton of materl	Note [c]	3.91	1.8
BOF Hopper Baghouse [a]	0.00032	0.00032	lb/ton of steel	No change	0.39	0.4
Flux Conv. & Transfer Point– Bin Floor - BOF [a]	0.0016	0.0016	lb/ton of steel	No change	1.93	1.9
Baghouse 1 for Material Handling	0.00355	0.00355	lb/ton of steel	No change	4.28	4.3
Material Handling Operations					*10.51*	*25.6*
Total					*937.42*	*997.3*

(a) Emission unit groupings have been revised slightly: The identified line items associated with material handling operations were grouped with the blast furnace operations or BOF shop in Construction Permit No. 95010001. Material handling for coke, pellets, limestone are now included in the project emissions. Baghouse 1 for Material Handling is also now grouped with material handling operations. In addition, the Baghouse 2 for Argon Stirring and Ladle Metallurgy is now grouped with BOF Shop operations.

(b) Except as noted in subsequent sections of this permit application, the same emission factors used to calculate pre-project actual emissions are also used to calculate post-project actual emissions. The BOF Roof Monitor is a notable exception, as the 1996 Project included measures to improve PM_{10} control efficiency.

(c) Applied PM to PM_{10} ratio from AP-42, Chapter 13.2.4.

(d) Updated AP-42 emission factor for natural gas combustion.

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(e) Calculated using AP-42 emission factor for crushed stone, assuming 85% control efficiency

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5.3 Post-Project PM and PM_{10} Emissions Limitations

As noted in Sections 2.2.3 through 2.2.5 herein, and as discussed further below, for each pollutant, the project emissions increase and/or net emissions increase from the 1996 Project was calculated using the difference between the pre-project actual emissions (August 1992 to July 1994, 24-month period) and the post-project emissions cap for each major operational group of affected emissions units. The post-project emissions caps and emissions increases from the 1996 Project, respectively, were listed in Tables 5 and 6 of Construction Permit No. 95010001.

This Section 5.3 presents a discussion of the post-project PM and PM_{10} emissions caps and a summary of the updated emissions increase calculations for the 1996 Project, reflecting the proposed changes to the emissions caps. Section 5.4 of this permit application presents a summary of the updated net emissions increase calculations and Section 5.5 of this permit application presents certain permit terms proposed by USS Granite City for purposes of ensuring the emissions limitations are enforceable as a practical matter. As already discussed, USS Granite City is proposing that the revised permit no longer include limitations for the PM and PM_{10} emissions of individual emission points or emissions units.

The proposed emissions caps for the project-affected emissions units were developed by USS Granite City using the operating rates shown in Table 5-7. Other than the natural gas usage, which is proposed to increase, and the oil usage, which is proposed to be deleted entirely, these rates are unchanged from the operating rates in Construction Permit No. 95010001. USS Granite City shut down the by-product coke oven batteries in 2015. The shutdown of the Coke Plant eliminated coke oven gas as process fuel at the facility for use in the various fuel burning units. This resulted in increased use of natural gas for certain Project-affected fuel burning units. The emissions effects of the natural gas usage increase is also being addressed in this permit application.

Table 5-7. Projected Post-Project Operating Rates for PM and PM_{10}

Parameters	Units	Post Project Rates
Blast Furnace Production	Net tons of hot metal/year	3,165,000
BOF Shop	Molten steel tons/year	3,580,000
Combined BFG Combustion	MMcf/year	185,030
Combined NG Combustion	MMcf/year	1,980
Combined COG Combustion	n/a	0
Combined Oil Combustion	n/a	0

A comparison of the PM and PM_{10} emissions caps from Table 5 of Construction Permit No. 95010001 and the proposed revisions to these emissions caps is provided in Table 5-8. USS Granite City is proposing only minor changes to the emissions limitations as part of this permit application. (The changes are primarily attributable to the redistribution of the emission caps, including establishment of a separate emissions cap for certain material handling operations.)

The proposed revisions to the post-project PM and PM_{10} emissions caps reflect three categories of changes: corrections of certain emission factors used to calculate both pre-project and post-

project emissions, as shown in Table 5-5 and Table 5-6 herein; [28] changes to post-project operating rates as shown in Table 5-7; and changes to emissions unit groups for certain material handling and other operations, as discussed in footnote (a) of both Table 5-5 and Table 5-6 herein. A separate group for material handling builds upon the approach taken by Illinois EPA in the CAAPP permit for the USS Granite City facility.

Table 5-8. PM and PM_{10} Emissions Caps

Processes and Activities	Emissions Caps (TPY) from Table 5 of Construction Permit No. 95010001		Proposed Revised Emissions Caps (TPY)	
	PM	PM_{10}	PM	PM_{10}
Blast Furnace Operations	218	194	215	190
BOF Shop	510	451	525	462
Continuous Casting Operations	71	71	52	52
Certain Fuel Burning Units*	273	273	273	273
Roadways	27	27	27	27
Material Handling (coke, pellets (other than screen), limestone)	2	2	n/a	n/a
Material Handling Operations (New group accounts for emissions from material handling operations previously grouped under the BF and BOF Shop operations and material handling line shown above)	n/a	n/a	30	19
Total	1,101	1,018	30	19
* Emission rates for "certain fuel burning units" represent the potential to emit for these operations. No emissions caps are proposed for this category of affected units.				

Updated project emissions increase analyses for PM and PM_{10}, reflecting proposed revisions to the emissions increase calculations in Table 6 of Construction Permit No. 9501001, are provided in Table 5-9. This table incorporates the effects of the corrected pre-project emission factors and annual emissions as shown in Table 5-5 and Table 5-6 and the requested updates to the emissions caps as shown in Table 5-8. In addition, adjustments to the emissions caps reflect reorganization of material handling operations affected by the project under a separate operational group for Material Handling Operations (similar to the approach in the CAAPP Permit) and regrouping of some of the operations under the BOF Shop.

[28] In the 1995 Application, for post-project PM and PM_{10} emissions from the BOF roof monitor, National Steel proposed lower emission factors reflecting the implementation of measures to improve capture and control efficiency in the BOF. Illinois EPA agreed with this proposal, incorporated the lower emission factors into the 1996 Construction Permit, and recognized the PM and PM_{10} emission reductions in the netting analyses for these pollutants. No changes are proposed by USS Granite City to the post-project PM and PM_{10} emission factors for the BOF Shop roof monitor.

Table 5-9. PM and PM_{10} Project Emissions Increase Analyses

Processes and Activities	Pre-Project Actual Emissions (TPY)		Proposed Revised Emissions Caps (TPY)		Change (TPY)	
	PM	PM10	PM	PM10	PM	PM10
Blast Furnace Operations	137	120	215	190	78	70
BOF Shop	762	591	525	462	-237	-129
Continuous Casting Operations	35	35	52	52	17	17
Certain Fuel Burning Units	227	225	273	273	46	48
Material Handling Operations	29	26	30	19	1	-7
Total*					-95	-1

*Roadways were addressed as contemporaneous decreases in the 1995 Application. Table 5 of Construction Permit No. 95010001 includes the requisite emission limit for PM and PM10 emissions for the roadways. No changes are proposed to those emission limitations.

5.4 Changes to Net Emissions Increases for PM and PM_{10}

As part of the requested revisions to Construction Permit No. 95010001, USS Granite City is also proposing updates to the analyses for net emissions increases in emissions of PM and PM_{10} for the 1996 Project. Table 5-10 shows the updated net emissions increases calculations for PM and PM_{10} based on the updated project emissions increase calculations shown in Table 5-9.

In the 1995 Application, the calculations relating to contemporaneous decreases in actual emissions associated with fugitive dust controls for roadways and material handling were presented together. For increased clarity, those calculations are presented separately in this permit application and emissions changes for the material handling operations are now shown in the project emissions increase calculations in Table 5-9 herein. Further, in the 1995 Application and in Construction Permit No. 95010001, the calculations supporting those creditable and contemporaneous decreases in emissions of were performed using PM_{10} emissions data (see Attachment C of the permit). The estimated decreases in emissions of PM from fugitive dust controls for roadways were based on the highly conservative assumption that pre-project PM emissions from roadways were equal to pre-project PM_{10} emissions. (See Appendices E and F of the 1995 Application and see Tables 5 and 6 of the permit.) Information available now is not sufficient to develop revised calculations of fugitive pre-project PM emissions from roadways or to calculate what the PM emissions decrease would have been due to the implementation of fugitive dust controls, but it is known that both the pre-project actual PM emissions and the decrease in PM emissions would have been greater than the corresponding PM_{10} values shown in the 1995 Application and in the permit.[29] Because the Project clearly does not result in a significant net increase in PM emissions even with this conservative assumption, USS Granite City is conservatively retaining the estimated PM emissions decrease of 17.1 TPY (same as PM_{10}).

[29] Based on the most recent emission inventory for the Granite City Works, actual PM emissions from paved and unpaved roadways are approximately 3.6 times the PM_{10} emissions. This is generally consistent with U.S. EPA's AP-42 emission factor compilation: PM emissions from paved roads are 5.2 times PM_{10} emissions (see AP-42 Table 13.2.1-1) and PM emissions from unpaved industrial roads are 3.3 times PM_{10} emissions (see AP-42 Table 13.2.2-2).

Table 5-10. Updated Net Emissions Increases for PM and PM_{10} for the Project

		PM	PM10
Start of Contemporaneous Period		Jan 1991	Jan 1990
End of Contemporaneous Period		Jan 1996	Jan 1996
		Emissions (TPY)	
Project Emissions Increases (not including project decreases)		141.6	134.7
Significant Emission Rates		25	15
Whether Significant?		Yes	Yes
Project Emissions Changes (includes decreases at BOF shop operations)		-95	-1
Contemporaneous Emissions Increases	Date		
Remove Blast Furnace Slag Spout Hood	Jan-1990	n/a	4.9
#2 Caster Production	Dec-1990	n/a	11.7
Installation of #8 Galvanizing Line	Mar-1996	n/a	n/a
Contemporaneous Emissions Decreases			
Ingot Teeming Shutdown	Apr-1991	-22.4	-22.4
Blooming Mill Shutdown	Apr-1991	-3.4	-3.4
NESHAP Controls Coke By-product	Jul-1991	-	-
Batch Annealing Shutdown	Dec-1991	-0.2	-0.2
Roadways Fugitive Dust Controls	Nov-1991	-17.1	-17.1
Net Emissions Increases		**-138.4**	**-27.8**
Whether Significant?		No	No

The net emissions increases calculations also incorporate changes due to corrections to the contemporaneous period:

- The contemporaneous period for PM emissions from the project was established using the definition in 40 CFR § 52.21(b)(3)(ii). The start of the contemporaneous period was January 25, 1991, five years prior to the date on which construction of the project commenced. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered changes involving the removal of the blast furnace slag spout hood, startup of #2 caster, and the #8 Galvanizing Line to be contemporaneous. However, the removal of the blast furnace slag spout hood and the startup of the #2 caster occurred prior to the beginning of the contemporaneous period and the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period. Therefore, these changes were not contemporaneous for PM for the 1996 Project. USS Granite City has updated the netting analysis to reflect the fact that the PM emissions increase from installation of the #8 Galvanizing Line did not occur within the contemporaneous period.
- The contemporaneous period for PM_{10} emissions from the project was established using the definition in 35 IAC 203.208.[30] The start of the contemporaneous period was January 4, 1990, five years prior to the date of submittal of a timely and complete application on

[30] The USS Granite City facility was located in area that was designated as nonattainment for PM_{10} at the time of 1996 Construction Permit issuance.

January 3, 1995. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered the #8 Galvanizing Line to be contemporaneous. However, the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period and this project was not contemporaneous for PM_{10} for the 1996 Project. USS Granite City has updated the netting analysis to reflect the fact that the PM_{10} emissions increase from installation of the #8 Galvanizing Line did not occur within the contemporaneous period.

Net emissions increases for PM and PM_{10} remain below the applicable significant emission rates. Therefore, the 1996 Project remains a non-major modification under PSD and NNSR.

5.5 Requested Changes to Permit Terms Relating to PM and PM_{10} Emissions

As part of this application for revision to Construction Permit No. 95010001, USS Granite City is proposing the following revisions to the emission limitations and other permit terms relating to PM and PM_{10} emissions from the processes or activities affected by the 1996 Project.

5.5.1 Blast Furnace Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the blast furnace operations. The permit grouped the Iron Pellet Screen as part of the Blast Furnace Operations under Table 1. With this revision, USS Granite City is proposing to move the Iron Pellet Screen, previously listed under the Blast Furnace Operations, under a new Material Handling Operations Group discussed later in this Section.

5.5.1.1 Proposed PM and PM_{10} Emission Limitations for Blast Furnace Operations

USS Granite City proposes the following to replace Condition 5 in Construction Permit No. 95010001.

> *5.a Particulate matter emissions from the Blast Furnace Operations (A & B Blast Furnaces Casthouse Roof Monitor and Casthouse Baghouse stack, A & B Blast Furnace Charging, Iron Spout Baghouse, and Blast Furnace Slag Pits) shall not exceed 215 tons per year for PM and 190 tons per year for filterable PM10, each on a monthly rolling 12-month total.*

As the emission limitations would be in Condition 5.a itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations for specific emissions points and emissions units from Table 1 of Construction Permit No. 95010001 as they would be redundant.

5.5.1.2 Prescribed Emission Factors for Certain Blast Furnaces Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing the following prescribed emission factors for the

emissions points for which emissions testing is not feasible.[31] Each of these emission factors is the same as the corresponding emission factor used to calculate pre-project actual emissions as shown in Table 5-5 and Table 5-6.

(a) For Blast Furnace Casthouse Roof Monitor, use PM emission factor of 0.030 lb/ton and PM_{10} emission factor of 0.0153 lb/ton.
(b) For Blast Furnace charging, use PM emission factor of 0.0024 lb/ton and PM_{10} emission factor of 0.0012 lb/ton.
(c) For slag pits, use PM and PM_{10} emission factor of 0.00417 lb/ton.

USS Granite City recognizes that the annual emission limitations in the revised permit must now address a running total of 12-consecutive months of emissions, so that compliance with the annual limitations can be assessed 12 times per calendar year. Monthly emissions would be determined as the product of monthly throughout rate and applicable emission factor except if there are process upsets or malfunctions, that are accompanied by higher emissions. For such events, the additional emissions would be determined in accordance with the principles of credible evidence.

5.5.2 Basic Oxygen Furnace Shop Operations

This section of the permit application addresses the proposed changes to the requirements under Construction Permit No. 95010001 for the BOF Shop operations. The permit grouped the BOF Additive with BOF Hopper Baghouse and Flux Conveyor & Transfer Pits Bin Floor as part of the BOF Shop Operations under Table 2. With this revision, USS Granite City is proposing to address these units in a new group for Material Handling Operations. That group is discussed in Section 5.5.4 of this permit application. In addition, with this revision, USS Granite City is proposing to move the permit terms relating to the Baghouse 2 for Argon Stirring and Ladle Metallurgy (previously Argon Stirring and Material Handling Tripper (Ladle Metallurgy)) which was previously listed under the Continuous Casting Operations, in the BOF Shop Operations Group.

5.5.2.1 Proposed PM and PM_{10} Emission Limitations for BOF Shop Operations

USS Granite City proposes the following to replace Condition 18 in Construction Permit No. 95010001.

> *18.a Particulate matter emissions from the BOF Shop Operations (BOF ESP, BOF Baghouse, BOF Shop Roof Monitor, Desulf/ Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy shall not exceed 525 tons per year for PM and 462 tons per year for filterable PM_{10}, each on a monthly rolling 12-month total.*[32]

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[31] PM and PM_{10} emissions factors are appropriately determined from the results of emissions testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the Blast Furnace Casthouse baghouse and the Iron Spout baghouse.

[32] USS installed a capture system for the BOF vessels in the BOF Shop operations. This system captures emissions from charging and tapping of the BOF vessels and routes it to a baghouse. For compliance with the BOF Shop emission caps, emissions from the BOF ESP and baghouse exhausts are included here.

As the emission limitations would be in Condition 18.a itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations for specific emissions points and emissions units from Table 2 and Table 3 of Construction Permit No. 95010001 as it would be redundant.

5.5.2.2 Prescribed Emission Factors for Certain BOF Shop Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing prescribed emission factors for the BOF Shop Roof Monitor for which emissions testing is not feasible.[33] For BOF Shop Roof Monitor, use PM emission factor of 0.0296 lb/ton and filterable PM_{10} emission factor of 0.0198 lb/ton.

5.5.3 Continuous Casting Operations

This section addresses the proposed changes to the requirements of Construction Permit No. 95010001 for the Continuous Casting operations.

5.5.3.1 Proposed PM and PM_{10} Emission Limitations for Continuous Casting Operations

USS Granite City proposes the following to replace Condition 20 in Construction Permit No. 95010001.

> *20.a Particulate matter emissions from the Continuous Casting Operations Caster Mold, Continuous Caster Spray Chamber, Slab Cutoff, and Slab Ripping shall not exceed 52 tons per year for PM and 52 tons per year for filterable PM_{10}, each on a monthly rolling 12-month total.*

As the emission limitations would be in Condition 20.a itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations for specific emissions points and emissions units from Table 3 of Construction Permit No. 95010001 as they would be redundant.

5.5.3.2 Prescribed Emission Factors for Continuous Casting Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing the following prescribed emission factors for the emissions points for which emissions testing is not feasible.

(a) For Caster Mold, use PM/PM_{10} emission factor of 0.006 lb/ton.
(b) For Slab Cutoff, use PM/PM_{10} emission factor of 0.0071 lb/ton.
(c) For Slab Ripping, use PM/PM_{10} emission factor of 0.00722 lb/ton.

5.5.4 Material Handling Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the material handling operations associated with the Blast Furnace and BOF Shop operations. As previously noted, material handling equipment in the Blast Furnace Operations and the BOF

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[33] PM and PM_{10} emissions factors are appropriately determined from the results of emissions testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the BOF ESP and baghouse, Desulf/ Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy.

Shop Operations are now proposed to be included in this new section. This also includes emissions associated with material handling and transport of coke, pellets, and limestone. In addition, emissions from Baghouse 1 for Material Handling operation are also included in this section. In addition, USS identified a small silo used to store Mag-Lime at the BOF that used an integrated filter that exhausts inside the building. This emissions from this silo are also included in this group.[34]

5.5.4.1 Proposed PM and PM_{10} Emission Limitations for Material Handling Operations

USS Granite City proposes the following new Condition 42 in Construction Permit No. 95010001.

> *42. Particulate matter emissions from the Material Handling Operations shall not exceed 30 tons per year of PM and 19 tons per year of filterable PM_{10}, each on a monthly rolling 12-month total.*

As the emission limitations would be in Condition 42 itself, USS Granite City also requests the deletion of the PM and PM_{10} emission limitations from Table 1, Table 2, and Table 3 of Construction Permit No. 95010001 as they would be redundant.

5.5.4.2 Prescribed Emission Factors for Material Handling Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing the following prescribed emission factors for the emissions points for which emissions testing is not feasible.

(a) For Iron Pellet Screen fugitives, use PM/PM_{10} emission factor of 0.00131 lb/ton.
(b) For material handling and transfer operations for coke, pellets, and limestone, use AP-42 Chapter 13.2.4 to calculate applicable emission factors.
(c) For Mag-Lime silo with filter, use PM/PM10 emission rate of 0.009 lb/hour.

[34] PTE of the Mag-Lime silo is less than 0.1 TPY. Therefore, USS did not quantify any baseline for this operation and conservatively included this operation in the emission cap for the Maerial Handling Operations.

6. Proposed Changes to Permit Terms for NO_X Emission Increase Analysis

This section describes the proposed changes to Construction Permit No. 95010001 being requested by USS Granite City related to NOx emissions. It also provides a demonstration that, even with the requested revisions, the Project would still not be a major modification under the PSD program at 35 IAC 204 with respect to emissions of NO_2 and under the NNSR program at 35 IAC Part 203 with respect to emissions of NOx. The emissions calculations for NOx from the 1995 Application submitted by National Steel Corporation are reproduced in Appendix B.

6.1 Construction Permit No. 95010001 Applicability and Requirements

Table 6-1 below summarizes the provisions from Construction Permit No. 95010001 pertaining to NOx emissions limitations from the project affected emissions units. Copies of the relevant permits are provided in Appendix D1 and D2 of this application.

Table 6-1. Construction Permit Conditions Addressing NOx

Permit Condition	Requirements
5	Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.
18	Emissions from the BOF Shop operations shall not exceed the limits in attached Tables 2 and 5.
20	Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5
22	Emissions from the listed fuel combustion units shall not exceed the limits in Tables 4 and 5.

The annual NOx emissions caps listed in Table 5 of Construction Permit No. 95010001 are presented in Table 6-2 below. These annual NOx emissions caps cover all emissions units affected by the Project. The emissions units are grouped in the four main processes or activities at the USS Granite City facility, each calculated as the sum of the unit-specific NOx emissions limitations in Tables 1 through 3 and fuel specific in Table 4 of the permit.

Table 6-2. NOx Emissions Information from Table 5 of Construction Permit No. 95010001

Processes and Activities	NOx Emissions Caps (tons/year)
Blast Furnace Operations	24
BOF Shop Operations	70
Continuous Casting Operations	90
Certain Fuel Combustion Units	674
Total	858

The NOx emissions caps restricted the PTE of the project-affected emissions units. The project emissions increase for NOx was calculated by subtracting pre-project actual emissions (August 1992 to July 1994, 24-month period) from the PTE as restricted by the limitations in the permit. Table 6 of Construction Permit No. 95010001 included the emissions increase from the project

and major modification applicability determinations for NOx. The NOx net emissions increase was below the applicable significant emission rates and as a result, NOx emissions were not subject to PSD or NNSR review.

6.2 Pre-Project Actual Emissions for 1996 Project

This section presents the updated pre-project actual emissions with proposed corrections to some of the NOx emission factors. Corrections to the NOx emissions factors are the result of more recent performance tests and updated information as discussed in 6.2.2.

6.2.1 Historical Throughput Rates

The NOx net emissions increase calculations presented in Table 6 of Construction Permit No. 95010001 were based on the calculations provided by National Steel Corporation in Table 3-2 of the 1995 Application. That table from the prior construction permit application is reproduced in Appendix B of this permit application.

The pre-project actual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 6-3.

Table 6-3. Pre-Project Production and Operating Rates for NOx

Parameters	Units	Pre-Project Rates
Blast Furnace Production	Net tons of hot metal/year	2,059,557
BOF Shop	Molten steel tons/year	2,413,406
Combined BFG Combustion	MMcf/year	121,039
Combined NG Combustion	MMcf/year	1,145
Combined Fuel Oil Combustion	Mgal/year	16

6.2.2 NOx Emission Factors Basis and Revisions

USS Granite City has corrected some of the NOx emission factors used to calculate pre-project actual emissions from the project-affected emissions units based on stack testing and updated literature-based information. USS Granite City has also validated the remaining emissions factors. The results are presented in Table 6-5; explanations are provided in the following paragraphs.

6.2.2.1 Fuel Burning Emissions Units Emissions (Revised)

The pre-project actual emissions for various fuels used in fuel burning emissions units affected by the project are calculated using the emission factors presented in Table 6-4.

Table 6-4. NOx Emission Factors for Fuel Burning

Fuel	Emission Factor and Units	Basis
Blast Furnace Gas[35]	5.28 lb/MMcf	February 1993 stack test
Natural Gas	306 lb/MMcf	November 1992 stack test
Coke Oven Gas (added)	80 lb/MMcf in stoves and 403.69 lb/MMcf in boilers *(both added)*	Stoves – Stack test (date unknown) Boilers – "A" battery stack test 1989
Fuel Oil (*Shown for historical purposes. USS Granite City no longer plans to use fuel oil.*)	55 lb/1000 gallon	AP-42 Page 1.3-2

Section 5.2.2.15 includes discussion of inclusion of emissions from the COG combustion for applicability calculations here including the fuel usage information for the affected units.

6.2.2.2 A&B Blast Furnace Casthouse Stack (Baghouse) Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnace Casthouse stack (baghouse), as presented by National Steel Corporation in the 1995 Application, were calculated using data from a stack test conducted in July 1993. Other than the test results, USS Granite City has no information regarding this stack test, which was conducted by National Steel. In March 2012, USS Granite City performed NOx stack tests at the Blast Furnace Casthouse stack. This test indicated a lower NOx emission factor for this operation than previously used (0.0144 lb/ton in the original analysis vs 0.0027 lb/ton based on the March 2012 stack test). In Table 6-5, both the original and updated NOx emission factors are shown for the Blast Furnace Casthouse stack.

6.2.2.3 A&B Blast Furnace Casthouse Roof Monitor Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnace Casthouse roof monitor, as presented by National Steel Corporation in the 1995 Application, were calculated using the emission factor as 0.00072 lb/ton. This value was developed using the July 1993 stack test result of 0.0144 lb/ton for the casthouse baghouse stack and an assumption of 95% capture efficiency as described in Section 5.2.2.3 herein. As discussed in Section 6.2.2.2 above, subsequent testing indicated a lower NOx emission factor for the stack emissions of 0.0027 lb/ton. Assuming a 95% capture efficiency for the casthouse baghouse collection system, the uncaptured portion (5% of NOx generated) is emitted through the roof monitors at the rate of 0.00014 lb/ton. In Table 6-5, both the original and updated NOx emission factors are shown for the Blast Furnace Casthouse roof monitor emissions.

6.2.2.4 A&B Blast Furnace Iron Spout Baghouse Emissions (Revised)

The 1995 Application and Construction Permit No. 95010001 did not identify any NOx emissions from the Blast Furnace Iron Spout Baghouse. However, a stack test conducted in March 2012 indicated a NOx emission factor of 0.0016 pound per ton of hot metal for this emission point. In Table 6-5, the revised analysis includes pre-project actual NOx emissions from the Blast Furnace Iron Spout Baghouse stack.

[35] BFG is a low Btu fuel that results in a cool flame during combustion. This results in relatively low NOx emission rate for this fuel for all types of applications.

6.2.2.5 BOF ESP Stack (BOF 2 Vessels) Emissions (Revised)

The pre-project actual emissions for the BOF ESP stack, as presented by National Steel Corporation in the 1995 Application, were calculated using data from the average of three runs from one stack test conducted in August 1993. As discussed below, the results of this 1993 stack test have been shown by subsequent data not to be representative of emissions from the BOF ESP stack. The 1996 Project involved increases in the production limits for the Granite City blast furnaces and BOF Shop operations. The project did not involve any physical changes or changes in the method of operation for the BOF Shop. The BOF Shop operations do not use any add-on NOx control devices. Thus, variability in NOx emissions for the BOF process are inherent to the process operation. Beginning in 2012, USS Granite City performed several NOx stack tests at the BOF ESP stack. This testing provided an updated NOx emission factor for the BOF ESP stack (0.0389 lb/ton in the original analysis vs 0.14 lb/ton based on the average of April 2012, July 2012, and November 2014 stack test results). In Table 6-5, both the original and updated NOx emission factors are shown for the BOF ESP stack.

6.2.2.6 BOF Baghouse - Secondary Emissions (New)

At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF Shop roof monitor. No information was available at the time about the NOx emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. NOx emission testing for the BOF Shop baghouse, completed in 2019-2020 timeframe, shows an average NOx rate of 0.0075 lb/ton for the BOF Shop Baghouse stack. USS Granite City added the BOF Shop secondary NOx emissions baseline based on the result of the stack test for the BOF Shop Baghouse stack.

6.2.2.7 Continuous Caster Mold Process Emissions (Revised)

The pre-project actual emissions for the Continuous Caster Mold – Caster #1 and Caster #2 process, as presented by National Steel Corporation in the 1995 Application listed NOx emissions from this operation. USS Granite City evaluated this analysis and determined that there is no NOx formation in this operation. Any NOx emissions from this operation are due to combustion of natural gas and are already accounted for under the gaseous fuel burning activities listed above. Therefore, in the revised analysis, NOx emissions are not included from this operation.

Table 6-5. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project NOx Emission Factors for Affected Emissions Units

Emission Point	Emission Factors[a]		Units	Reason for Change	Pre-project Actual Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Stack (Baghouse)	0.0144	0.0027	lb/ton of hot metal	Revised based on 3/2012 stack test	14.83	2.78
A & B Blast Furnace Casthouse Roof Monitor	0.0007	0.0001	lb/ton of hot metal	3/2012 test assuming no NOx control and 5% roof monitor fraction	0.74	0.15
Iron Spout Baghouse		0.0016	lb/ton of hot metal	Based on 3/2012 stack test		1.6
Blast Furnace Operations					*15.6*	*4.6*
BOF ESP Stack (2 Vessels)	0.0389	0.14	lb/ton of steel	Revised based on average of 2012-2014 stack tests	46.94	170.8
BOF Secondary Emissions (2 Vessels)		0.0075	lb/ton of steel	Based on 2019-20 stack test		9.1
BOF Shop Operations					*46.94*	*179.8*
Continuous Caster Mold - Casters #1 & #2	0.05	0.00	lb/ton of steel	All NOx formed from natural gas combustion. No additional NOx	60.34	0.00
Continuous Casting Operations					*60.34*	*0.00*
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	5.28	5.28	lb/MMcf	No change	319.54	319.54
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	306.00	306.00	lb/MMcf	No change	175.19	175.19
Combined COG in stoves, B11 & B12		80 and 404	lb/MMcf	Added		461.18
Combined FO in stoves, B11 & B12, ladle drying preheaters, and BFG flares (*shown here for historical purposes*)	9.72	9.72	lb/Mgal	No change	0.44	0.44
Certain Fuel Burning Units					*495.17*	*956.4*
Total					*618.01*	*1,140.8*

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6.3 Post-Project NO_X Emissions Limitations

As described in subsection 5.3, the post-project emissions caps and emissions increases from the 1996 Project were, respectively, listed in Tables 5 and 6 of Construction Permit No. 95010001. Similar to PM and PM_{10}, this subsection 6.3 presents a discussion of the post-project NOx emissions caps and summary of the updated emissions increase calculations for the 1995 Project, reflecting the proposed changes in the emissions caps.

The post-project emissions caps for the project affected emissions units are developed by USS Granite City using the operating rates shown in Table 6-6. Other than the natural gas usage, which is proposed to increase, and the oil usage, which is proposed to be eliminated, these rates are unchanged from the operating rates in the permit. As previously noted in Section 5.3, due to 2015 shutdown of the Coke Plant this application addresses increase in natural gas usage for the fuel burning units affected by the project and also addresses elimination of COG at the affected units.

Table 6-6. Projected Post-Project Operating Rates for NOx

Parameters	Units	Post Project Rates
Blast Furnace Production	Net tons of hot metal/year	3,165,000
BOF Shop	Molten steel tons/year	3,580,000
Combined BFG Combustion	MMcf/year	185,030
Combined NG Combustion	MMcf/year	1,980
Combined COG Combustion	n/a	0
Combined Oil Combustion	n/a	0

A comparison of the NOx emissions caps from Table 5 of Construction Permit No. 95010001 and the proposed revisions to these emissions caps is provided in Table 6-7. Detailed emissions calculations are provided in Appendix B. The proposed revisions to the post-project NOx emissions caps reflect changes to some of the emission factors presented in Table 6-5 and changes in post-project operating rates as shown in Table 6-6. USS Granite City also revised NOx emission factors for boilers to reflect the currently applicable emission limitations for boilers under 35 IAC 217.164(b).

Table 6-7. NOx Emissions Caps

	NOx Emission Caps (TPY) from Table 5 of Construction Permit No. 95010001	Proposed Revised NOx Emissions Caps (TPY)
Blast Furnace Operations	24	24.0
BOF Shop	70	400
Continuous Casting Operations	90	0.0
Certain Fuel Burning Units*	674	706
Total	858	1130
* Emission rates for "certain fuel burning units" represent the potential to emit for these operations. No emissions caps are proposed for this category of units.		

Updated project emissions increase analysis for NOx reflecting proposed revisions to the emissions increase calculations in Table 6 of Construction Permit No. 95010001, is provided in Table 6-8. This table incorporates the effects of the corrected pre-project emission factors as shown in Table 6-5 and the requested updates to the emission caps as shown in Table 6-7.

Table 6-8. NOx Project Emissions Increase Analysis

	NOx Pre-Project Actual Emissions (TPY)	Proposed Revised NOx Emissions Caps (TPY)	NOx Change (TPY)
Blast Furnace Operations	4.6	24.0	19.4
BOF Shop	179.8	400.0	220.2
Continuous Casting Operations	0.0	0.0	0.0
Certain Fuel Burning Units	956.3	706.0	-250.3
Total	1140.7	1130	-10.7

6.4 Changes to Net Emissions Increase Calculation for NOx

In conjunction with the requested revisions to Construction Permit No. 95010001, USS Granite City is also updating the analysis for net increases in emissions of NOx for the 1996 Project.

Table 6-9 shows the updated net emissions increases calculations for NOx based on the updated project emissions increase calculations shown in Table 6-8. This table includes a correction to the contemporaneous period for NOx emissions from the project as established using the definition in 35 IAC 203.208.[36] The start of the contemporaneous period was January 4, 1990, five years prior to the date of submittal of a timely and complete application on January 3, 1995. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered the #8 Galvanizing Line to be contemporaneous. However, the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period and this project was not contemporaneous for the 1996 Project.

Net emissions increase for NOx remains below the applicable significant emission rate. Therefore, the 1996 Project remains a non-major modification under PSD and NNSR.

[36] Granite City Works is located in area that was designated as nonattainment for ozone at the time Construction Permit No. 95010001 was originally issued. Accordingly, the applicability provisions of the Illinois NNSR rule under 35 IAC 203 were addressed for the Project at that time.

Table 6-9. Updated Net Emissions Increases for NOx for the 1996 Project

		NO_X
Start of Contemporaneous Period		Jan 1990
End of Contemporaneous Period		Jan 1996
Project Emissions Increases		239.6
Significant Emission Rates		40
Whether Significant?		Yes
Project Emissions Changes (includes decreases at the fuel combustion units)		-10.7
Contemporaneous Emissions Increases	Date	
Installation of #8 Galvanizing Line	Mar-1996	n/a
Contemporaneous Emissions Decreases		
Blooming Mill Shutdown	Apr-1991	-217.8
Batch Annealing Shutdown	Dec-1991	-8.7
Net Emissions Increase		**-237.3**
Whether Significant?		No

6.5 Requested Changes to Permit Terms Relating to NO_X Emissions

As part of this application for revision to Construction Permit No. 95010001, USS Granite City is proposing the following revisions to the emission limitations and other permit terms relating to NOx emissions from the processes or activities affected by the 1996 Project.

6.5.1 Blast Furnace Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the blast furnace operations under Table 1.

6.5.1.1 Proposed NO_X Emission Limitations for Blast Furnace Operations

USS Granite City proposes the following as Condition 5.b in Construction Permit No. 95010001.

> *5.b NOx emissions from the Blast Furnace Operations (A & B Blast Furnaces Casthouse Roof Monitor, Casthouse Baghouse stack, Iron Spout Baghouse stack) shall not exceed 24.0 tons per year on a monthly rolling 12-month total.*

As the NOx emission limitations are to be incorporated in Condition 5.b itself, USS Granite City also proposes the deletion of the NOx emission limitations for specific emissions points and emissions units from Table 1 of Construction Permit No. 95010001 as they would be redundant.

6.5.1.2 Prescribed Emission Factors for Blast Furnaces Operations

Prescribed emission factors consistent with the approach described in Section 3 are provided herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the blast furnace casthouse roof monitor based on application of 95% capture efficiency to the NOx stack test result for the blast furnace casthouse baghouse.

6.5.2 Basic Oxygen Furnace Shop Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the BOF Shop operations under Table 2.

6.5.2.1 Proposed NO_X Emission Limitations for BOF Shop Operations

USS Granite City proposes the following as Condition 18.b in Construction Permit No. 95010001.

> *18.b NOx emissions from the BOF ESP and BOF Baghouse stacks shall not exceed 400 tons per year on a monthly rolling 12-month total.*

As the NOx emission limitations are to be incorporated in Condition 18.b itself, USS Granite City also proposes the deletion of the NOx emission limitations for specific emissions points and emissions units in Table 2 of Construction Permit No. 95010001 as they would be redundant.

7. Proposed Changes to Permit Terms for VOM Emission Increase Analysis

This section describes the proposed changes to Construction Permit No. 95010001 requested by USS Granite City related to VOM emissions. It also provides a demonstration that, even with the requested revisions, the Project would still not be a major modification under the NNSR program at 35 IAC Part 203 with respect to emissions of VOM. The emissions calculations for VOM from the 1995 Application submitted by National Steel Corporation are reproduced in Appendix B.

7.1 Construction Permit No. 95010001 Applicability and Requirements

Table 7-1 below summarizes the provisions from Construction Permit No. 95010001 pertaining to VOM emissions limitations from the project-affected emissions units. Copies of the relevant permits are provided in Appendix D1 and D2 of this application.

Table 7-1. Construction Permit Conditions Addressing VOM

Permit Condition	Requirements
5	Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.
18	Emissions from the BOF Shop operations shall not exceed the limits in attached Tables 2 and 5.
22	Emissions from the listed fuel combustion units shall not exceed the limits in Tables 4 and 5.

The annual VOM emissions caps listed in Table 5 of Construction Permit No. 95010001 are presented in Table 7-2 below. These annual VOM emissions caps cover all emissions units affected by the Project. The emission units are grouped in the three main processes or activities at the USS Granite City facility, each calculated as the sum of the unit specific VOM emissions limitations in Tables 1 through 3 and the fuel specific limitations in Table 4 of the permit.

Table 7-2. VOM Emissions Information from Table 5 of Construction Permit No. 95010001

Processes and Activities	VOM Emissions Caps (tons/year)
Blast Furnace Operations	157
BOF Shop Operations	12
Certain Fuel Combustion Units	2
Total	171

The VOM emissions caps restricted the PTE of the project affected emissions units. The VOM project emissions increase was calculated by subtracting pre-project actual emissions (August 1992 to July 1994 24-month period) from the PTE as restricted by the 1996 Construction Permit limitations. Table 6 of Construction Permit No. 95010001 included the emissions increase from the project and major modification applicability determinations for VOM. VOM net emissions increases were below the applicable significant emission rates and as a result, VOM emissions were not subject to NNSR review.

7.2 Pre-Project Actual Emissions for 1996 Project

This section presents the updated pre-project actual emissions with proposed corrections to some of the VOM emission factors. Revisions to the emissions factors are the result of more recent performance tests and updated information as discussed in 7.2.2.

7.2.1 Historical Throughput Rates

The VOM net emissions increase calculations presented in Table 6 of Construction Permit No. 95010001 were based on the calculations provided by National Steel Corporation in Table 3-6 of the 1995 Application. That table from the prior construction permit application is reproduced in Appendix B to this permit application.

The pre-project annual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 7-3.

Table 7-3. Pre-Project Production and Operating Rates for VOM

Parameters	Units	Pre-Project Rates
Blast Furnace Production	Net tons of hot metal/year	2,059,557
BOF Shop	Molten steel tons/year	2,413,406
Combined BFG Combustion	MMcf/year	121,039
Combined NG Combustion	MMcf/year	1,145
Combined Fuel Oil Combustion	Mgal/year	16

7.2.2 VOM Emission Factors Basis and Revisions

USS Granite City has corrected some of the VOM emission factors used to calculate pre-project actual emissions from the project affected emissions units based on stack testing and updated literature-based information and has validated the remaining emissions factors. The results are presented in Table 7-5; explanations are provided in the following paragraphs.

7.2.2.1 Fuel Burning Emissions Units Emissions (Revised)

The pre-project actual emissions for various fuels used in fuel burning emissions units affected by the project are calculated using the emission factors presented in Table 7-4.

Table 7-4. VOM Emission Factors for Fuel Burning

Fuel	Emission Factors and Units	Basis
Blast Furnace Gas	0.24 lb/MMcf *(revised)*	Updated based on the CoGen Boiler Permit No. 06070023
Natural Gas	5.5 lb/MMcf *(revised)*	Based on AP-42 Chapter 1.4
Coke Oven Gas (added)	0.18 lb/MMcf in stoves 1.22 lb/MMcf in boilers (both added)	Stoves – literature based factor Boilers – AIRS 1990
Fuel Oil	0.28 lb/1000 gallon	AP-42 Page 1.3-2

Section 5.2.2.15 includes discussion of inclusion of emissions from the COG combustion for applicability calculations here including the fuel usage information for the affected units.

7.2.2.2 A&B Blast Furnace Casthouse Baghouse Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnaces Casthouse stack (baghouse) as presented by National Steel Corporation in the 1995 Application were calculated using data from a stack test conducted in July 1993. Other than the test results, USS Granite City has no information regarding this stack test, which was conducted by National Steel. In March 2012, USS Granite City performed VOM stack tests at the Blast Furnace Casthouse stack. This test indicated a lower VOM emission factor for this operation than previously used (0.09458 lb/ton in the original analysis vs 0.014 lb/ton based on the March 2012 stack test). In Table 7-5, both the original and updated VOM emission factors are shown for the Blast Furnace Casthouse stack.

7.2.2.3 A&B Blast Furnace Casthouse Roof Monitor Emissions (Revised)

The pre-project actual emissions for the A and B Blast Furnace Casthouse roof monitor, as presented by National Steel Corporation in the 1995 Application, were calculated using an emission factor of 0.0047 lb/ton. This value was developed using the July 1993 stack test result of 0.09548 lb/ton for the casthouse baghouse stack and an assumption of 95% capture efficiency described in Section 5.2.2.3 herein. As discussed in 7.2.2.2 above, subsequent testing indicated a lower VOM emission factor for the stack emissions of 0.014 lb/ton. Assuming a 95% capture efficiency for the casthouse baghouse collection system, the uncaptured portion (5% of VOM generated) is emitted through the roof monitors at the rate of 0.00073 lb/ton. In Table 7-5, both the original and updated VOM emission factors are shown for the Blast Furnace Casthouse roof monitor emissions.

7.2.2.4 A&B Blast Furnace Iron Spout Baghouse Emissions (Revised)

The 1995 Application Construction Permit No. 95010001 did not identify any VOM emissions from the Blast Furnace Iron Spout Baghouse. However, a stack test conducted in March 2012 indicated a VOM emission factor of 0.0037 pounds per ton of hot metal for this emission point. In Table 7-5, the revised analysis includes pre-project actual VOM emissions from the Blast Furnace Iron Spout Baghouse stack.

7.2.2.5 BOF ESP Stack (BOF 2 Vessels) Emission (Revised)

The pre-project actual emissions for the BOF ESP stack, as presented by National Steel Corporation in the 1995 Application, were calculated using data from the average of three runs from one stack test conducted in August 1993. As discussed below, the results of this 1993 stack test have been shown by subsequent data to be non-representative of the emissions from the BOF ESP stack. The 1996 Project involved increases in the production limits for the Granite City blast furnaces and BOF Shop operations. The project did not involve any physical changes or changes in the method of operation for the BOF Shop. The BOF Shop operation does not use any add-on VOM control devices. Thus, variability in VOM emissions for the BOF process is inherent to the process operation. Beginning in 2012, USS Granite City performed several VOM stack tests at the BOF ESP stack. This testing provided an updated VOM emission factor for the BOF ESP stack (0.006 lb/ton in the original analysis vs 0.019 lb/ton based on the average of April 2012, July 2012, and November 2014 stack test results). In Table 7-5, both the original and updated VOM emission factors are shown for the BOF ESP stack.

7.2.2.1 BOF Baghouse - Secondary Emissions (New)

At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF

Shop roof monitor. No information was available at the time about the VOM emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. VOM emission testing for the BOF Shop baghouse, completed in 2019-2020 timeframe, shows an average NOx rate of 0.0035 lb/ton for the BOF Shop Baghouse stack. USS Granite City added the BOF Shop secondary VOM emissions baseline based on the result of the stack test for the BOF Shop Baghouse stack.

7.2.2.2 Desulfurization Station & Transfer Pit Baghouse Emission Factor (Revised)

The pre-project VOM baseline emissions for the Desulfurization Station & Transfer Pit Baghouse stack as presented by National Steel Corporation in the 1995 Application were calculated using an emission factor from the U.S. EPA's AIRS 1990 database (WebFIRE). In May 2012, USS Granite City performed VOM stack tests at the Desulfurization Station & Transfer Pit Baghouse stack. This testing has provided an updated VOM emission factor for this emission point (0.0010 lb/ton in the original analysis vs 0.00019 lb/ton based on a May 2012 stack test). In Table 7-5, both the original and updated VOM emission factors are shown for the Desulfurization Station & Transfer Pit Baghouse stack.

7.2.2.3 Hot Metal Charging and Ladle Skimming Stack Emissions (New)

The 1995 Application and Construction Permit No. 95010001 did not quantify any VOM emissions from the Hot Metal Charging and Ladle Skimming baghouse exhaust. USS Granite City conducted a stack test in May 2012 and based on this stack test, included a VOM emission rate of 0.00015 lb/ton for this stack.

Table 7-5. Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project VOM Emission Factors for Affected Emissions Units

Emission Point	Emission Factors		Units	Basis	Baseline Emissions (TPY)	
	Original	Corrected			Original	Corrected
A & B Blast Furnace Casthouse Stack (Baghouse)	0.09458	0.014	lb/ton of hot metal	Revised based on 3/2012 stack test	97.40	14.3
A & B Blast Furnace Casthouse Roof Monitor	0.00469	0.00073	lb/ton of hot metal	3/2012 test assuming no VOM control and 5% roof monitor fraction	4.83	0.8
Iron Spout Baghouse	0.0000	0.0037	lb/ton of hot metal	Revised based on 3/2012 stack test	0.00	3.8
Blast Furnace Operations					*102.23*	*18.8*
BOF Stack (2 Vessels)	0.0060	0.0190	lb/ton of steel	Revised based on average of 2012-2014 stack tests	7.24	22.40
BOF Secondary Emissions (2 Vessels)		0.0035	lb/ton of steel	Based on 2019-20 stack test		4.2
Desulfurization Station [inside BOF shop] & Transfer Pit	0.00100	0.00019	lb/ton of hot metal	Revised based on 5/2012 stack test	1.03	0.2
Hot Metal Charging and Ladle Skimming		0.00015	lb/ton of hot metal	Based on 5/2012 stack test		0.2
BOF Shop Operations					*8.27*	*27.0*
Combined BFG in stoves, boilers, ladle drying preheaters, and BFG flares	0.0	0.24	lb/MMcf	Updated from Cogen Boiler permit	0	14.52
Combined NG in stoves, boilers, ladle drying preheaters, and BFG flares	2.8	5.5	lb/MMcf	1998 update to AP-42 Section 1.4	1.60	3.15
Combined COG in stoves, B11 & B12		0.18 and 1.22	lb/MMcf	Added		1.38
Combined FO in stoves, B11 & B12, ladle drying preheaters, and BFG flares	0.28	0.28	lb/Mgal	No change	0.00	0.00
Certain Fuel Burning Units					*1.61*	*19.1*
Total					*112.10*	*64.9*

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7.3 Post-Project VOM Emissions Limitations

As described in subsection 5.3, the post-project emissions caps and emissions increases from the 1996 Project were, respectively, listed in Tables 5 and 6 of Construction Permit No. 95010001. Similar to PM and PM_{10}, this subsection 6.3 presents a discussion of the post-project VOM emissions caps and summary of the updated emissions increase calculations for the 1995 Project, reflecting the proposed changes in the emissions caps.

The post-project emissions caps for the project affected emissions units are developed by USS Granite City using the operating rates parameters shown in Table 7-6. Other than the natural gas usage, which is proposed to increase, and the oil usage, which is proposed to be deleted entirely, these rates are unchanged from the operating rates in Construction Permit No. 95010001. As previously noted in Section 5.3, due to 2015 shutdown of the Coke Plant this application addresses increase in natural gas usage for the fuel burning units affected by the project and also addresses elimination of COG at the affected units.

Table 7-6. Projected Post-Project Operating Rates for VOM

Parameters	Units	Post Project Rates
Blast Furnace Production	Net tons of hot metal/year	3,165,000
BOF Shop	Molten steel tons/year	3,580,000
Combined BFG Combustion	MMcf/year	183,030
Combined NG Combustion	MMcf/year	1,980
Combined COG Combustion	n/a	0
Combined Oil Combustion	n/a	0

A comparison of the VOM emissions caps from Table 5 of Construction Permit No. 95010001 and the proposed revisions to these emissions caps is provided in Table 7-7. Detailed emissions calculations are provided in Appendix B. The proposed revisions to the post-project VOM emissions caps reflect changes to some of the emission factors presented in Table 7-5 and changes in post-project operating rates as shown in Table 7-6.

Table 7-7. VOM Emissions Caps

	VOM Emission Caps (TPY) from Table 5 of Construction Permit No. 95010001	Proposed Revised VOM Emissions Caps (TPY)
Blast Furnace Operations	157	45.0
BOF Shop	12	45.20
Certain Fuel Burning Units*	2	40
Total	171	130
* Emission rates for "certain fuel combustion units" represent the potential to emit for these operations. No emissions caps are proposed for this category of units.		

Updated project emissions increase analysis for VOM reflecting proposed revisions to the emissions increase calculations in Table of Construction Permit No. 95010001, is provided in

Table 7-8. This table incorporates the effects of the corrected pre-project emission factors as shown in Table 7-5 and the requested updates to the emission limitations as shown in Table 7-7.

Table 7-8. Revised VOM Project Emissions Increase Analyses

	VOM Pre-Project Emissions (TPY)	VOM Revised Emission Limitations (TPY)	VOM Change (TPY)
Blast Furnace Operations	18.8	45.0	26.2
BOF Shop	27.0	45.0	18.0
Certain Fuel Burning Units	19.1	40.0	20.9
Total	64.9	130	65.1

7.4 Changes to Net Emissions Increase Calculation for VOM

In conjunction with the requested revisions to Construction Permit No. 95010001, USS Granite City is also updating the analysis for net increases in emissions of VOM for the 1996 Project. Table 7-9 shows the updated net emissions increases calculations for VOM based on the updated project emissions increase calculations shown in Table 7-8. This table includes a correction to the contemporaneous period for VOM emissions from the project as established using the definition in 35 IAC 203.208.[37] The start of the contemporaneous period was January 4, 1990, five years prior to the date of submittal of a timely and complete application on January 3, 1995. The end of the contemporaneous period was January 25, 1996, the date on which the emissions increase from the project occurred. The original analysis considered the #8 Galvanizing Line to be contemporaneous. However, the startup of the #8 Galvanizing Line occurred after the end of the contemporaneous period and this project was not contemporaneous for the 1996 Project.

Table 7-9. Updated Net Emissions Increases for VOM for the 1996 Project

		VOM
Start of Contemporaneous Period		Jan 1990
End of Contemporaneous Period		Jan 1996
Project Emissions Increases		65.1
Significant Emission Rates		40
Whether Significant?		Yes
Contemporaneous Emissions Increases	Date	
Installation of #8 Galvanizing Line	Mar-1996	n/a
Contemporaneous Emissions Decreases		
Blooming Mill Shutdown	Apr-1991	-0.9
NESHAP Controls for Coke By-Product Operations	Jul-1991	-31.6
Batch Annealing Shutdown	Dec-1991	-0.3
Net Emissions Increase		**32.3**
Whether Significant?		No

[37] The USS Granite City facility was located in area that was designated as nonattainment for ozone at the time of 1996 Construction Permit issuance. Therefore, NNSR provisions under 35 IAC 203 applied for the project at the time.

Net emissions increase for VOM remains below the applicable significant emission rate. Therefore, the 1996 Project remains a non-major modification under NNSR.

7.5 Requested Changes to Permit Terms Relating to VOM Emissions

As part of this application for revision to Construction Permit No. 95010001, USS Granite City is proposing the following revisions to the emission limitations and other permit terms relating to VOM emissions from the processes or activities affected by the 1996 Project.

7.5.1 Blast Furnace Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the blast furnace operations under Table 1.

7.5.1.1 Proposed VOM Emission Limitations for Blast Furnace Operations

USS Granite City proposes to add the following as Condition 5.c in Construction Permit No. 95010001.

> *5.c VOM emissions from the Blast Furnace Operations (A & B Blast Furnaces Casthouse Roof Monitor, Casthouse Baghouse stack, Iron Spout Baghouse stack) shall not exceed 45.0 tons per year on a monthly rolling 12-month total.*

As the VOM emission limitations are to be incorporated in Condition 5.c itself, USS Granite City also proposes the deletion of the VOM emission limitations from for specific emissions points and emissions units Table 1 of Construction Permit No. 95010001 as they would be redundant.

7.5.1.2 Prescribed Emission Factors for Blast Furnaces Operations

Prescribed emission factors consistent with the approach described in Section 3 herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the casthouse roof monitor based on application of 95% capture efficiency to the NOx stack test result for the blast furnace casthouse baghouse.

7.5.2 Basic Oxygen Furnace Shop Operations

This section addresses the proposed changes to the terms of Construction Permit No. 95010001 for the BOF Shop operations under Table 2.

7.5.2.1 Proposed VOM Emission Limitations for BOF Shop Operations

USS Granite City proposes to add the following as Condition 18.c in Construction Permit No. 95010001.

> *18.c VOM emissions from the BOF Shop Operation (BOF ESP and BOF Baghouse, Desulf/Soda Ash and Hot Metal Charging Baghouse, and Hot Metal Charging and Ladle Skimming baghouse) shall not exceed 45.0 tons per year based on a monthly rolling 12-month total.*

As the VOM emission limitations are to be incorporated in Condition 18.c itself, USS Granite City also proposes the deletion of the VOM emission limitations for specific emission points and emissions units in Table 2 of Construction Permit No. 95010001 as they would be redundant.

8. Best Available Control Technology for CO

In accordance with 35 IAC 204.1100(c), the BACT requirement under the PSD program generally applies for each regulated NSR pollutant for which the major modification resulted in a significant net emission increase at the source. This requirement specifically applies to each emission unit that, as part of the Project, will have a net emissions increase as a result of a physical change or change in the method of operation in the unit. As previously noted, the boilers at Granite City Works, including the existing Boiler 11 and Boiler 12, were not subject to BACT as the Project does not involve physical changes or changes in the method of operation of these units.

8.1 Historical BACT Evaluation

In the 1995 Application, National Steel Corporation provided a CO BACT analysis for the blast furnace stoves, the ladle drying preheaters, and the continuous casters. Use of CO add-on control technology (*i.e.*, direct combustion in a flare, thermal oxidation, and catalytic oxidation) were proposed to be rejected on the basis of a lack of technical feasibility. National Steel proposed that good combustion practices be determined to be BACT for CO emissions from these emissions units. The ladle drying preheaters and continuous casters use NG fuel, which is inherently lower emitting practice. No add-on controls were demonstrated for these operations. Therefore, the use of NG was determined to be BACT.

Illinois EPA released a "Project Summary for Proposed Issuance of a Construction Permit" in November 1995 along with a draft construction permit. This document included a section "Additional Requirements for Major Projects" that addressed BACT requirements for the 1996 Project. BACT for CO was determined to be use of 'work practice' standards. Specifically, Illinois EPA stated the following with respect to CO BACT.

> *The requirements of PSD include a demonstration that best available control technology (BACT) will be used for SO_2 and CO emissions at affected units, an analysis of air quality impacts, and an analysis of the impacts of the project on visibility, vegetations [sic], and soils. The Agency has determined that these requirements have been met.*
>
> *GCD [Granite City Division of National Steel] has shown that* ***work practices*** *used for SO_2 and CO constitute BACT as used by other steel mills for these pollutants. [emphasis added]*

During the original PSD permitting process for the Project in 1996, neither National Steel Corporation nor Illinois EPA evaluated BACT for CO emissions from the blast furnace casthouse. As discussed in Section 4.4 of this permit application, available information at the time did not recognize that such emissions occurred, but subsequent emissions testing indicates that the blast furnace casthouse is a source of CO emissions.

8.2 Updated BACT Evaluations

USS Granite City is providing updated CO BACT evaluations for the subject fuel burning emissions units (*i.e.*, blast furnace stoves, ladle drying preheaters, blast furnace flare No. 1, and miscellaneous ancillary natural gas burning units in the BOF shop and at the continuous casters) and for the blast furnace casthouse operations.

8.2.1 BACT General Approach

This section presents a proposed BACT analysis for the subject units for CO.

8.2.1.1 Best Available Control Technology Definition

The definition of BACT in the Clean Air Act [at 42 U.S.C. § 7479(3)] is as follows:

> *The term "best available control technology" means an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of "best available control technology" result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to section 7411 or 7412 of this title. Emissions from any source utilizing clean fuels, or any other means, to comply with this paragraph shall not be allowed to increase above levels that would have been required under this paragraph as it existed prior to November 15, 1990.*

The meaning of the term "emission limitation" used in the BACT definition is broad, as Congress expressed no preference for numeric limits rather than non-numeric requirements in the definition of this term in the Clean Air Act [at 42 U.S.C. § 7602(k)]:

> *The terms "emission limitation" and "emission standard" mean a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operational standard promulgated under this chapter.*

The regulatory definition of BACT in the PSD rules is similar, although it allows for non-numeric requirements only in limited circumstances. In particular, 35 IAC 204.280 provides:

> *"Best Available Control Technology" means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each regulated NSR pollutant that would be emitted from any proposed major stationary source or major modification that the Agency, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel*

combustion techniques for control of such pollutant. In no event shall application of BACT result in emissions of any pollutant that would exceed the emissions allowed by any applicable standard under 40 CFR 60, 61, 62 and 63 (incorporated by reference in Section 204.100). If the Agency determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means that achieve equivalent results.

8.2.1.2 Methodology for the BACT Analysis

In a memorandum dated December 1, 1987, the U.S. EPA stated its preference for a "top-down" analysis.[38] U.S. EPA outlined the BACT determination methodology following the top-down approach.[39] Accordingly, the BACT analyses presented in this application utilize the top-down approach. Under the "top-down" approach, progressively less stringent control technologies are analyzed until a level of control considered BACT is determined, based on the most effective control option that is determined to result in acceptable environmental, energy, and economic impacts. More specifically, the top-down BACT analysis methodology consists of five steps as follows:

1. Identify all "available" control options that might be utilized to reduce emissions of the subject pollutant for the type of unit subject to BACT.
2. Eliminate those available options that are technically infeasible to apply to the specific unit under consideration.
3. Rank the remaining feasible control options by control effectiveness.
4. Evaluate economic, energy and/or environmental impacts of each control option as applied to the subject units, rejecting those options for which the adverse impacts are inappropriate.
5. Based on the most effective control option not rejected in Step 4, select an emission limit or work practice standard as BACT, reflecting the level of control continuously achievable with the selected control option.

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[38] Memorandum from J.C. Potter to the Regional Administrators; U.S. EPA, Office of Air and Radiation; Washington, D.C.; December 1, 1987.

[39] See: *1990 New Source Review Workshop Manual, DRAFT,* at page B.2. (Environmental Appeals Board in *Prairie State Generating Station,* PSD Appeal No. 05-05, August 24, 2006, in footnote 2, noted that "[t]he NSR Manual has been used as a guidance document in conjunction with new source review workshops and training, and as a guide for state and federal permitting officials with respect to PSD requirements and policy. Although it is not a binding Agency regulation, the NSR Manual has been looked to by this Board as a statement of the Agency's thinking on certain PSD issues.")

8.2.1.3 Baseline Emission Rate

As used in the BACT analyses presented herein, the term "baseline emission rate" refers to the legal floor established in the definition of BACT, *i.e.*, applicable standards under 40 CFR parts 60, 61, 62 and 63.

8.2.1.4 Available Control Options

In the first step of the BACT analysis, all potentially "available" control strategies are identified for further consideration. In the context of the first step of a top-down BACT analysis, U.S. EPA's guidance describes "available" control strategies as:

> *Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation.*[40]

In the BACT analyses herein, the term "available" is used, consistent with the U.S. EPA guidance, to refer to any control strategy that is potentially applicable to the source type in question (*i.e.*, a technology or control option that has a practical potential for application to the source category in general). These may include fuel cleaning or treatment, inherently lower polluting processes, and end of pipe control devices. All identified control strategies that are not inconsistent with the fundamental purpose and basic design of the proposed facility are listed in this step.

The second step of the BACT analysis addresses source-specific or unit-specific factors that would prevent an otherwise available technology from being applied in the particular case. The criteria for "technical feasibility" are separate and distinct from the criteria used to determine whether a control option is considered to be "available" for purposes of BACT.

8.2.1.5 BACT Technical Feasibility Criteria

In the second step of a top-down BACT analysis, potentially available control strategies are evaluated for technical feasibility. A technically feasible control strategy is one that has been demonstrated to function efficiently on an emissions unit that is identical or similar to the emissions unit under review.[41] For the purposes of assessing technical feasibility of an add-on control technology, the determination of whether an emissions unit should be considered to be identical or similar is usually based on the physical and chemical characteristics of the gas stream to be controlled. An add-on control technology applicable to one emissions unit may not be technically feasible for application to an apparently similar unit depending on differences in physical and chemical gas stream characteristics, and rejection of a control option based on technical infeasibility for BACT purposes is appropriate if "it is uncertain the control device will work in the situation currently undergoing review."[42]

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[40] See: *1990 New Source Review Workshop Manual, DRAFT*, at page B.5.

[41] See, *Prevention of Significant Deterioration Workshop Manual*, EPA-450/2-80-081, October 1980, at pp. I-B-6 through I-B-7.

[42] See, *PSD and Title V Permitting Guidance for Greenhouse Gases*, EPA-457/B-11-001, March 2011, at p. 34.

For control strategies that are not demonstrated, the analysis of technical feasibility is somewhat more involved. Two key concepts are important in determining whether an undemonstrated technology is feasible: "availability[43]" and "applicability." A technology is considered "available" if it can be obtained by the applicant through commercial channels or is otherwise available within the common sense meaning of the term. An available technology is "applicable" if it can reasonably be installed and operated on the source type under consideration. A technology that is both available and applicable is technically feasible.

8.2.2 CO BACT Evaluation for Fuel Burning Units

This section presents the CO BACT analyses for the subject fuel burning emissions units. CO emissions from these units result primarily from incomplete combustion during the firing of BFG and natural gas. Therefore, the most direct approach for reducing these emissions is efficient combustion in the fuel burning emissions units, *i.e.*, appropriate combustion temperatures, adequate excess air, and good air/fuel mixing during combustion. Measures taken to reduce the formation of NOx during combustion can increase CO emissions. In particular lowering combustion temperatures through staged combustion to reduce NOx emissions can be counterproductive with regard to CO emissions. The existing boilers (Boiler 11 and Boiler 12) did not undergo any physical change or change in the method of operation as a result of the 1996 Project. Therefore, pursuant to 40 CFR § 52.21(j)(3Ind 35 IAC 204.1100(c), the boilers were not and are not subject to the BACT requirement for CO emissions.

8.2.2.1 Purpose and Design of Subject Fuel Burning Emissions Units

The fundamental purpose of the blast furnace stoves is to provide heat needs for the ironmaking process preferentially using the BFG fuel, as this fuel is produced as a byproduct at the facility. Any excess BFG unable to be used in the stoves and boilers at Granite City Works is flared through the BFG flares. Use of natural gas or other higher-Btu fuel in the blast furnace stoves as supplemental fuel, for purposes of flame stabilization, also is a necessary and inherent part of the design.

The fundamental purpose of the ladle drying preheaters and ancillary fuel burning units is to provide heat needs for the mill's processes using readily available gaseous fuels.

Alternative production processes that would be inconsistent with these fundamental objectives would impermissibly redefine the source and are not a part of the BACT analyses presented herein.

8.2.2.2 CO BACT Baseline

There are no federal emissions standards applicable to CO emissions from the fuel burning emission units.

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[43] In Step 2 of a top-down BACT analysis, the term "availability" has a different meaning than the term "available" in Step 1. Control strategies that are not "available" in Step 1 are not considered in Step 2.

8.2.2.3 Step 1– Identify Available CO Control Options

Based on a review of recent BACT determinations in U.S. EPA's RBLC database and other literature, the control options (individually and in certain combinations) that are being used to limit CO emissions from emissions units burning gaseous fuels include:

- CO Oxidation Catalysts;
- Thermal Incineration;
- Work Practice Standards, including good combustion practices.

CO oxidation catalysts have previously been applied to natural gas fired boilers located in CO and/or ozone nonattainment areas but are primarily used on large combustion turbines. The oxidation catalyst is typically a precious metal catalyst (e.g., platinum) that has been applied over a metal or ceramic substrate. The catalyst lowers the activation energy for the oxidation of CO so that it is oxidized at lower flue gas temperature (range of 650 - 1,100 °F). The CO removal efficiency in natural gas-fired systems at which CO oxidation catalysts are used is typically greater than 90 percent.

Other technology used for the control of CO for other sources include thermal incineration. Incineration requires the exhaust gas containing CO to be heated up to a temperature sufficiently high enough (> 1,300 °F) to thermally destroy CO. Typical methods used include regenerative thermal oxidizers, recuperative incinerators, and direct flame incinerators. These devices are typically employed to control sources with high levels of CO and VOM requiring less supplemental fuel for reheating the exhaust gas. Additionally, the exhaust gas CO concentrations from these devices would be similar to that expected from a gaseous fuel combustion device with good combustion design and operation.

Good combustion practices, as the name implies, are based upon maintaining good fuel/air mixing, a proper fuel/air ratio, and adequate time at an appropriate combustion temperature. These practices are an inherent part of the routine operation of the units, as maintaining good combustion is essential for efficient use of fuel.

8.2.2.4 Step 2– Eliminate Technically Infeasible CO Control Options

Technical feasibility of the CO emissions controls identified in Step 1 for the subject gaseous fuel burning emissions units is addressed in this section.

Blast Furnace Stoves
There are no known applications of add-on CO controls to blast furnace stoves. These control options are not feasible for this application for several reasons as discussed below.

First, the temperature of the exhaust gases from the blast furnace stoves averages around 500 °F, which is below the operating range for CO oxidation catalyst. Second, the CO concentration in the stove exhaust is relatively low at less than 0.3%. As the lower explosive limit for CO is 12.5%, the exhaust from the blast furnace stoves will not have enough CO to combust in thermal incineration.[44] Third, there is significant variation, both in exhaust flow and temperature, due to

[44] See, *e.g.*, www.cdc.gov/niosh/idlh/630080.html (last accessed Sept. 23, 2022).

cycling of the individual stoves between blow and heat steps. Fourth, oxidation catalyst would create unacceptable back-pressure on the stoves. These factors make add-on CO emissions controls infeasible.

Use of good combustion practices for the stoves is a technically feasible control option.

Other Fuel Burning Emissions Units
The No. 1 Flare, ladle drying preheaters, and fuel burning units at the continuous casters do not have specific stacks but exhaust through building ventilation or an open flame. It is not feasible to enclose the ladle drying preheaters or the ancillary fuel burning units in the BOF shop and at the continuous casters as the vessels containing molten steel need to be moved using overhead cranes in the building. Therefore, use of post-combustion control devices, such as CO oxidation catalyst, are not technically feasible for these operations.

Use of good combustion practices for the listed fuel-burning units is a technically feasible control option.

8.2.2.5 Steps 3 & 4– Rank and Evaluate CO Control Options

No add-on control devices options are technically feasible for CO emissions from the fuel burning emissions units. The only remaining control option is to follow good combustion practices. No further evaluation of control options is necessary.

Emissions from the fuel burning emissions units using good combustion practices are as described in Section 4.3 of this permit application.

8.2.2.6 Step 5 – Establish CO BACT

USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions—*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel burning emissions units subject to the BACT requirement for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves, there is no sampling port satisfying the location criteria in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.

For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves. USS Granite City is proposing that Illinois EPA define and impose work practice requirements, *i.e.*, good combustion practices, as BACT for the subject fuel burning emissions units. For the blast furnace stoves, USS Granite City proposes the following specific practices.

- Conduct annual adjustment and tune-up to include, at a minimum, inspecting, adjusting, cleaning, or replacing instrumentation and operational control system components and

[45] For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.
[46] Appendix A-1 to 40 CFR part 60.

inspecting the air-to-fuel ratio control system and adjusting as appropriate for proper operation.

- Inspect burners at least once per calendar quarter and make repairs as appropriate.

- Continuously monitor dome temperature and flue gas oxygen level for each stove during periods of fuel burning and adjust air-to-fuel ratio as necessary to maintain instantaneous temperature in the dome—the area at the top of the stove where hot gases from the combustion chamber are distributed into the regenerative checkers—of 2,300 °F ± 100 °F.

8.2.3 BACT Evaluation for Blast Furnace Casthouse

This section presents the CO BACT analysis for the blast furnace casthouse.

8.2.3.1 Purpose and Design of Subject Blast Furnace Casthouse

The fundamental purpose of the subject blast furnace casthouse is to facilitate transfer of molten iron produced in the process to the torpedo cars and separate slag produced in the process. This operation is inherent to production of molten iron in blast furnaces, and use of coke as reductant and fuel is inherent in the design and operation of the blast furnaces at Granite City Works. Any alternative production process that would be inconsistent with these fundamental objectives would impermissibly redefine the emissions unit and is not a part of the BACT analyses presented herein.

8.2.3.2 CO BACT Baseline

There are no federal emissions standards applicable to CO emissions from the blast furnace casthouse.

8.2.3.3 Step 1– Identify Available CO Control Options

Based on a review of BACT determinations in U.S. EPA's RBLC database and other literature, the control options that are potentially available to control CO emissions from the blast furnace casthouse are:

- Capture system and thermal Incineration and
- Capture system and catalytic Incineration

These control technologies have not been applied to a blast furnace casthouse; they are technologies developed and used to control CO emissions in exhaust streams that are substantially higher than those from blast furnace casthouses. As such, it is uncertain whether they are properly considered as available control options, but they are conservatively assumed to be available for purposes of this analysis.

8.2.3.4 Step 2– Eliminate Technically Infeasible CO Control Options

For purposes of this BACT analysis for CO emissions, both of the control options identified in Step 1—use of a capture system with either thermal incineration or catalytic incineration—are

conservatively assumed to be technically feasible for the blast furnace casthouse and will be carried on to Step 4 of the BACT analysis.

8.2.3.5 Step 3 – Rank CO Control Options

For purposes of this BACT analysis for CO emissions, both of the control options identified in Step 1—use of a capture system with either thermal incineration or catalytic incineration—are conservatively assumed to be capable of achieving 90 percent control of non-fugitive CO emissions from the blast furnace casthouse at Granite City Works.

8.2.3.6 Step 4 – Evaluate Impacts of CO Control Options

The casthouse is equipped with capture systems that were installed in the 1980's in conjunction with baghouses for control of PM emissions. The capture system associated with the casthouse baghouse is estimated to achieve 95% capture efficiency, as discussed in Section 5.2.2.3 of this permit application. It is therefore assumed for purposes of this analysis that there are no energy, environmental, or economic impacts with the portion of each control option involving use of a 95% efficient capture system.

A portion of the CO that is generated in the casthouse is not captured and routed through the baghouses but rather is emitted to atmosphere as fugitive emissions through the casthouse roof monitor. Neither of the identified and available CO control options will have any effect on these emissions, so they will not be discussed further in this analysis.

The mechanically exhausted gas streams from the blast furnace casthouse are characterized by low CO concentration: The CO concentrations in the exhaust gases from the casthouse baghouse and the iron spout baghouse are approximately 43 parts per million by volume ("ppmv") and 16 ppmv, respectively.

Both thermal incineration and catalytic incineration would require combustion of significant quantities of auxiliary fuel in order to raise the temperature of the blast furnace casthouse exhaust gas streams to the temperatures necessary for oxidation (and therefore requisite to achieve decreases in CO emissions). Based on U.S. EPA air pollution control device cost and design models, the outputs from which are shown in Appendix F to this permit application, the natural gas usage would be 38.1 MMBtu/hr for regenerative thermal oxidizers with 70 percent heat recovery or 191 MMBtu/hr for fixed-bed catalytic oxidizers with 50 percent heat recovery. Assuming 0.08 lb NOx per MMBtu heat input, the additional NOx emissions from this auxiliary fuel combustion would be 13 TPY from regenerative thermal oxidizers with 70 percent heat recovery or 67 TPY for fixed-bed catalytic oxidizers with 50 percent heat recovery. These are unacceptable, adverse energy and environmental impacts.[47]

Both control options also would impose significant economic cost. Regenerative thermal oxidizers with 70 percent heat recovery would require a capital cost of more than $15 million,

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[47] The air quality impacts analysis presented in Appendix C of this permit application shows that the impact of the Project on ambient CO concentration is acceptable even in the absence of any add-on controls on the blast furnace casthouse. The beneficial environmental impacts of using add-on controls to reduce CO emissions would therefore be minimal.

total annualized cost of nearly $6 million, and cost effectiveness of nearly $29,000 per ton of CO emission reduction. Fixed-bed catalytic oxidizers with 50 percent heat recovery would require a capital cost of nearly $8 million, total annualized cost of nearly $16 million, and cost effectiveness of more than $76,000 per ton of CO emission reduction. These are excessive, adverse economic impacts.

Because the adverse impacts of the identified control options greatly outweigh the trivial environmental benefit that would result from installing controls to reduce CO emissions, these control options are not BACT.

8.2.3.7 Step 5 – Establish CO BACT

USS Granite City proposes a CO emission limit of 70 lb/hr, combined for the casthouse baghouse and iron spout baghouse, as BACT for the blast furnace casthouse. This proposed limit is as stringent as any identified limit for a blast furnace casthouse at any similar facility.[48]

[48] The only CO emission limit identified for a blast furnace casthouse is a limit of 56.25 lb/hr for the casthouse baghouse stack at the Dearborn (MI) Works, currently owned and operated by Cleveland Cliffs. This casthouse has a permitted iron production rate of 8,000 tons per calendar day. See https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Permits/AQD/PTI/applications-of-interest/PTI-182-05C-Severstal-Conditions-2014-05-12.pdf (last accessed Sept. 23, 2022).

9. CO Source Impact Analysis (Including Dispersion Modeling)

In accordance with 35 IAC 204.1110 through 204.1130, requirements to conduct ambient air impacts analysis apply to a major modification for pollutants which are subject to PSD review. In issuing Construction Permit 95010001, Illinois EPA addressed PSD requirements for CO as the project was a major modification for CO. The proposed changes to the CO emission factors for gaseous fuels used in fuel burning emissions units at the facility and the recognition of CO emissions from the blast furnace casthouse will result in increases in permitted CO emission rates. The air impacts analysis for the Project with these CO emission increases is provided in Appendix C of this application. This analysis includes all of the CO emitting operations at the USS Granite City facility (including certain units that were constructed since 1996 *e.g.*, Cogeneration Boiler) and offsite sources in the area (*e.g.*, Gateway Energy and Coke Company). Results of this analysis demonstrate that the CO emissions from the Project will not cause or contribute to an exceedance of the applicable NAAQS.

10. Additional Impacts Analyses for CO

An additional impacts analysis was performed consistent with the requirements of 35 IAC 204.1110 to determine potential air emissions impacts on soils, vegetation, visibility, and growth as part of this application. The 1996 Project was a major modification for CO as its increase was in excess of the PSD significant emission rates. This application includes increases in the permitted CO emission rates; therefore, CO emissions are considered in the additional impacts analyses.

10.1 Soils and Vegetation Surveys

The only pollutant included in this analysis of the potential impairment to soils is CO. The results of this analysis show that no material impairment will occur as a result of the proposed revisions.

10.1.1 Soil Survey

Over 66,000 acres surrounding the USS Granite City site were evaluated for the soils analysis using the U.S. Department of Agriculture ("USDA") Natural Resource Conservation Service Web Soil Survey application. The area evaluated encompasses parts of Madison and St. Clair Counties in Illinois and a portion of St. Louis County in Missouri.[49] As presented in Table 10-1, the primary soil type in this area is some variety of silt clay or sandy loam or silty clay loam. These soils account for over 70 percent of the total acreage in the study. The types of soil in significant quantities around the facility include Tice-Fluvents, Landes-Fluvents, Shaffton-Fluvents. The pH of these soils ranged from 5.0 to 7.0.

[49] Source of data: U.S. Department of Agriculture, Natural Resource Conservation Service, Custom Soil Resource Report. February 18, 2020.

Table 10-1. Major Soil Types in Study Area

Map Unit Name	Acres	Percent of Total	pH	Cation Exchange Capacity (CEC) (milliequivalents per 100 grams of soil)
Darwin silty clay, 0 to 2 percent slopes	7,542.3	16.39%	7.1	32
Landes very fine sandy loam, 2 to 5 percent slopes, occasionally flooded	3,870.60	8.41%	6.9	9.4
Beaucoup silty clay loam, 0 to 2 percent slopes	3,473.80	7.55%	7	20
Nameoki silty clay loam, 0 to 2 percent slopes, frequently flooded	2,731.80	5.94%	6.8	19.5
Orthents loamy	2,415.5	5.25%	6.5	10.5
Shaffton clay loam, 0 to 2 percent slopes, occasionally flooded	2,222.60	4.83%	5.8	20
Shaffton-Fluvents-Urban land complex, 0 to 2 percent slopes, occasionally flooded	1,684.30	3.66%	5.6	16.2
Fults silty clay, 0 to 2 percent slopes, occasionally flooded	1,585.80	3.45%	6.7	21.3
Worthen silt loam	1,496.9	3.25%	6.8	16.1
Rocher loam, 2 to 5 percent slopes, frequently flooded	1,460.50	3.17%	7.8	7.8
Landes-Fluvents-Urban land complex, 2 to 5 percent slopes, occasionally flooded	1,323.70	2.88%	6.9	9.4
Dupo silt loam, 0 to 2 percent slopes, occasionally flooded	1,314.1	2.86%	6.6	26.8
Nameoki-Fluvents-Urban land complex, 0 to 2 percent slopes, occasionally flooded	1,215.40	2.64%	6.7	20
Menfro silt loam	1,173.2	2.55%	6	16
Tice silty clay loam, 0 to 2 percent slopes, occasionally flooded	1,164.90	2.53%	6.8	19
Sylvan-Bold silt loams	1,108.3	2.41%	7.1	16
Fishpot-Urban land complex, 0 to 5 percent slopes, rarely flooded	944.1	2.05%	6.5	14.2
Dozaville silt loam, 0 to 2 percent slopes, occasionally flooded	930.6	2.02%	6.6	13.3
Other soil types	8,367.3	18.18%	5.6-8.0	5.8-31.6

The cation exchange capacity ("CEC") is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality or a pH of 7.0. Soils having a low CEC hold fewer cations and may require more frequent applications of fertilizer than soils having a high CEC. The ability to retain cations reduces the hazard of ground water pollution. The CEC of the types of soil in significant quantities in the study range from 8.0 to 31.0 milliequivalents per 100g soil.

The USDA considers a significant part of this land to be prime farmland. Additional land would be considered prime farmland if drained and/or protected from flooding. Further, the USDA soil survey rated all of the soil types listed in Table 10-1 as having somewhat or very limited use for recreational activities such as camping, paths and trails, picnic areas, and playgrounds. None of the total study area is identified as having unlimited recreational value.

10.1.2 Vegetation Survey

The natural vegetation located in these counties is primarily deciduous forest consisting of oaks, hickory, eastern white and red pine, ash, and cottonwood varieties.[50] According to a 2017 U.S. Department of Agriculture Forests of Illinois survey, approximately 21% of Madison County is forest land.[51]

Information provided in the 2012 USDA Census reports for Illinois was used to identify commercial vegetation in the study area.[52] The major crops are presented in Table 10-2. As shown, approximately 60 percent of the land included in the study area is used for harvested crops. Of this total, 26 percent is used for corn for grain and 29 percent is used for soybeans. Other crops, each harvested from less than 3 percent of the harvested area include forage, wheat for grain, and vegetables. Specific locations for the farms for these harvested crops are not provided in the Census reports.

Table 10-2. Land Use for Commercially Significant Crops

Vegetation	Area (Acres)
Corn	121,675
Wheat	16,331
Forage	7,145
Soybeans	137,628
Vegetables	2,331
Total Cropland	285,110
Total Land Area of Study	474,240

10.2 Pollutant Impacts on Soils, Vegetation, and Visibility

As explained in Section 9 and Appendix C of this permit application, ambient CO impacts from the Project and the proposed revisions to the CO limitations are below the primary CO NAAQS. CO, at ambient concentrations, is not known to cause any soils or vegetation impacts.[53] Elevated

[50] Forest Inventory and Analysis. Design and Analysis Toolkit for Inventory and Monitoring web application, Version November 30, 2018 10.0 c9ded9d. St. Paul, MN: U.S. Department of Agriculture, Forest Service, Northern Research Station. Available only on internet: https://www.fs.usda.gov/emc/rig/DATIM/index.shtml (last accessed August 17, 2022).

[51] Forests of Illinois 2017, https://www.fs.usda.gov/treesearch/pubs/55799 (last accessed on August 17, 2022).

[52] 2017 Census of Agriculture, Illinois State and County Data, https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Illinois/cp17119.pdf (last accessed on August 17, 2022).

[53] Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings [https://www.epa.gov/criteria-air-pollutants/naaqs-table (last accessed on August 17, 2022)]. The U.S. EPA revoked the secondary NAAQS for CO in 1985 noting that "[c]arbon monoxide is a normal constituent of the plant environment. Plants can both metabolize and produce CO. This may explain the fact that relatively high levels of CO are necessary before damage occurs to vegetation. The lowest level for which significant effects on vegetation have been reported is 100 ppm for 3 to 35 days. The effect observed in this study was an inhibition of nitrogen fixation in legumes. Since CO concentrations of this magnitude are rarely if

CO may produce some impacts such as epinasty, chlorosis, and abscission. However, plant injury occurs at concentration over 100 ppm which is well over the CO primary NAAQS.[54] As noted in Section 9 and Appendix C, CO impacts from the facility are well below the CO primary NAAQS. Therefore, no adverse soil and vegetation impacts are expected as a result of the requested permit revisions relating to CO emissions.

In addition, CO emissions do not contribute to formation of the particulate that causes visibility impairment.[55]

10.3 Associated Growth

As stated in the 1995 Application, "The infrastructure surrounding the mill is already established due to the existing industrial nature of the area. Therefore, it is not anticipated that there will be secondary air quality impacts due to the increase in production." As part of its decision to issue Construction Permit No. 95010001 in 1996, Illinois EPA accepted this statement as part of its determination that National Steel Corporation had satisfied all requirements for impact analyses under the PSD program.

Because no physical changes are proposed, there will be no further industrial, commercial, or residential growth in the area in conjunction with the requested revisions to Construction Permit No. 95010001.

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ever observed in the ambient air, it is very unlikely that any damage to vegetation will occur from CO air pollution. No other effects on welfare have been associated with CO exposures at or near ambient levels. Because no standards appear to be requisite to protect the public welfare from any known or anticipated adverse effects from ambient CO exposures, EPA is rescinding the existing secondary standards." 50 Fed. Reg. 37484, September 13, 1985.

[54] "The Effects of Air Pollutants on Vegetation and the Role of Vegetation in Reducing Atmospheric Pollution," Iuliana Florentina Gheorghe and Barbu Ion, September 26, 2011, https://www.intechopen.com/books/the-impact-of-air-pollution-on-health-economy-environment-and-agricultural-sources/the-effects-of-air-pollutants-on-vegetation-and-the-role-of-vegetation-in-reducing-atmospheric-pollu (last accessed on Sept. 23, 2022).

[55] https://www.epa.gov/visibility/basic-information-about-visibility (last accessed on Sept. 23, 2022).

11. Regulatory Applicability Review

USS Granite City reviewed the federal and Illinois air quality regulations to determine their applicability to the proposed revisions to Construction Permit No. 95010001. Federal regulations delegated to the Illinois EPA include New Source Performance Standards ("NSPS"), and National Emission Standards for Hazardous Air Pollutants ("NESHAP"). Illinois air quality regulations are found at Title 35 of the Illinois Administrative Code ("IAC") Subtitle B. Chapters I and II of 35 IAC Subtitle B contain rules administered by the Illinois EPA.

Requirements associated with federal and State air quality regulations found to be applicable to the requested revisions of Construction Permit No. 95010001 are presented in this section.

11.1 Federal Air Quality Regulations

Federal regulations delegated to the Illinois EPA were reviewed to determine their applicability to the requested revisions. USS Granite City's conclusions regarding applicability of these rules and the supporting rationale are presented below.

11.1.1 New Source Performance Standards (NSPS, 40 CFR Part 60)

The federal NSPS regulations are codified at 40 CFR Part 60. Illinois has been delegated the authority to administer the federal NSPS.

NSPS apply to new or modified "affected facilities" as defined in specific subparts of 40 CFR Part 60. None of the emissions units covered by Construction Permit No. 95010001 are affected facilities under any NSPS. The proposed changes to the permit do not trigger applicability of NSPS requirements.

11.1.2 National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Parts 61 and 63)

The federal NESHAP regulations are codified at 40 CFR Part 61 and 40 CFR Part 63 (NESHAP for source categories also known as MACT standards). Illinois EPA has been delegated authority to administer the federal NESHAP programs.

The Part 61 NESHAPs apply to certain pollutants and/or area source types. None of the emissions units covered by Construction Permit No. 95010001 are affected facilities under any Part 61 NESHAPs. The proposed changes to the permit do not trigger applicability of Part 61 NESHAPs requirements.

The Part 63 NESHAPs apply to existing, new, or reconstructed affected sources at major sources of HAP emissions in accordance with applicability criteria specified in individual subparts. The following NESHAPs now apply to the extant units that were affected under the Project.

a) Boilers 11 and 12 at USS Granite City are parts of an existing affected source subject to 40 CFR Part 63 Subpart DDDDD.[56]
b) Blast furnaces A and B are each an existing affected source subject to 40 CFR Part 63 Subpart FFFFF.
c) The BOF shop is an existing affected source subject to 40 CFR Part 63 Subpart FFFFF. (The terminology used in Subpart FFFFF is "basic oxygen process furnace shop" or "BOPF shop.")

There will be no changes to the applicability of the Part 63 NESHAPs to the boilers or the blast furnaces in conjunction with the requested permit action. However, with this application, USS Granite City requests that Illinois EPA change the organization of Construction Permit No. 95010001 to be consistent with the affected source definition under Subpart FFFFF. Specifically, the emissions unit historically identified as "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" and grouped with the Continuous Casting Operations in the permit is part of the "BOPF shop ancillary operations" as that term is used in Subpart FFFFF; emissions from these BOPF shop ancillary operations are subject to the emission standards and compliance demonstration requirements for BOPF shops in Subpart FFFFF. Accordingly, for clarity and consistency with these federal rule provisions, USS Granite City requests that this operation be renamed as the "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility" and grouped with the BOF Shop operations. In addition, several material handling operations historically grouped with the Blast Furnace Operations and the BOF Shop in Construction Permit No. 95010001 are not parts of those affected sources under Subpart FFFFF. For similar reasons regarding clarity and consistency with federal rule provisions, USS Granite City is requesting that those emissions units be covered under a separate group for Material Handling Operations, as detailed in Sections 5.5.1, 5.5.2, and 5.5.4 of this permit application.

11.2 Illinois Air Quality Regulations

USS Granite City performed a review of 35 IAC Subtitle B regulations to determine the applicability of specific standards to the proposed revisions to Construction Permit No. 95010001. A summary of this review and associated regulatory applicability conclusions are documented below. Only those rules deemed potentially relevant to the proposed revisions request are addressed.

11.2.1 35 IAC Part 201.142 Construction Permit Required

The proposed revisions to Construction Permit No. 95010001 involve changes to an existing construction permit for the modifications of existing emissions sources. Therefore, a revised permit in accordance with 35 IAC 201.142 is required. This permit application, including the permit application forms contained in Appendix A, is intended to fulfill the requirements of 35 IAC 201.142.

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[56] Boilers 11 and 12 are in the "units designed to burn gas 1 fuels" subcategory under Subpart DDDDD because the only regulated fuel burned in these boilers is natural gas, which falls within the definition of this term in 40 CFR § 63.7575. Blast furnace gas is expressly excluded from the definition of the term "gaseous fuel" and does not fall within any other fuel categories. These boilers previously burned COG and fuel oil but no longer do, so those fuels do not affect applicability of Subpart DDDDD to the boilers.

11.2.2 Prevention of Significant Deterioration (35 IAC Part 204) and Major Stationary Sources Construction and Modification [in Nonattainment Areas] (35 IAC Part 203)

The Illinois PSD regulations are codified at 35 IAC Part 204 and are applicable in attainment and unclassifiable areas within the State. The PSD regulations apply to new major stationary sources and to major modifications at an existing major stationary source. Emissions increases of PM, NOx, SO_2, and CO were evaluated under this program.

In nonattainment areas, Illinois EPA implements the requirements under 35 IAC Part 203 (NNSR program), with respect to major stationary sources and major modifications at major stationary sources for criteria pollutants for which the area is designated nonattainment. The area where Granite City Works is located was nonattainment for ozone and PM_{10} at the time of the 1996 Project. Therefore, emissions of NOx, VOM, and PM_{10} were evaluated under the requirements of this program.

As explained in Section 2.2 of this permit application, the revisions currently being requested to Construction Permit No. 95010001 addressed two sets of changes:

(a) Changes to the emission limits for PM, PM_{10}, NOx, and VOM, regulated NSR pollutants for which the 1996 Project was not subject to PSD or NNSR permitting requirements. (No changes are proposed to lead emissions.)
(b) Changes to the emissions rates for CO for some of the emissions units that were subject to PSD review. (The 1996 Project also was subject to PSD review for SO_2 emissions, but USS Granite City is not requesting changes to any emissions rates or permit terms relating to SO_2.)

As demonstrated in sections 5, 6, and 7, the net emissions increases for PM, PM_{10}, NOx, and VOM remain below the applicable significant emissions rates for these pollutants after the proposed revisions to the emissions limitations. Therefore, USS Granite City is not proposing any change to the applicability of PSD or NNSR requirements in regard to PM, PM_{10}, NOx, and VOM.

For CO, the 1996 Project was subject to the PSD requirements. Therefore, the proposed changes to the emissions limitations for CO have been evaluated per the PSD requirements. Sections 8, 9 and 10 herein address the PSD review requirements for CO.

11.2.3 35 IAC Part 270 CAAPP Permits

The CAAPP requirements are contained in Section 39.5 of the Illinois Environmental Protection Act and in 35 IAC Part 270. The Granite City Works is a major source subject to CAAPP requirements. As noted in Section 1 herein, this application package addresses the 'integrated processing' procedures for the proposed revisions to Construction Permit No. 95010001 for incorporation in the CAAPP permit via an administrative amendment.

11.2.4 Other State Regulations

There will be no change to the applicability of the limitations and requirements of other emissions standards under the Illinois Administrative Code that have already been addressed in the CAAPP permit for the USS Granite City facility.

Appendix A – Application Forms (Copies of Previously Submitted Versions)

RECEIV
STATE OF
R011245
OCT 07 2022
Environmental Protection Agency
BUREAU OF AIR

Illinois Environmental Protection Agency

Bureau of Air • 1021 North Grand Avenue East • P.O. Box 19506 • Springfield • Illinois • 62794-9506

FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION

FOR AGENCY USE ONLY

ID Number: _____ Permit #: _____

☐ Complete ☐ Incomplete Date Complete: _____

Check Number: _____ Account Name: _____

This form is to be used to supply fee information that must accompany all construction permit applications. This application must include payment in full to be deemed complete. Make check or money order payable to the Illinois Environmental Protection Agency, Division of Air Pollution Control - Permit Section at the above address. Do NOT send cash. Refer to instructions (197-INST) for assistance.

Source Information

1. Source Name: United States Steel Corporation - Granite City Works
2. Project Name: 1996 Construction Permit Revision
3. Source ID #: (if applicable) 1191813AAI
4. Contact Name: Krista Armentrout
5. Contact Phone #: (618) 451-3013

Fee Determination

6. The boxes below are automatically calculated.

Section 1 Subtotal $0.00 + Section 2, 3 or 4 Subtotal $23,000.00 = $23,000.00 Grand Total

Section 1: Status of Source/Purpose of Submittal

7. Your application will fall under only one of the following five categories described below. Check the box that applies. Proceed to applicable sections. For purposes of this form:

- **Major Source** is a source that is required to obtain a CAAPP permit.
- **Synthetic Minor Source** is a source that has taken limits on potential to emit in a permit to avoid CAAPP permit requirements (e.g.,FESOP).
- **Non-Major Source** is a source that is not a major or synthetic minor source.

☑ Existing source without status change or with status change from synthetic minor to major source or vice versa. Proceed to Section 2.

☐ Existing non-major source that will become synthetic minor to major source. Proceed to Section 4.

☐ New major or synthetic minor source. Proceed to Section 4.

☐ New non-major source. Proceed to Section 3.

☐ AGENCY ERROR. If this is a timely request to correct an issued permit that involves only an agency error and if the request is received within the deadline for a permit appeal to the Pollution Control Board. Skip Sections 2, 3 and 4. Proceed directly to Section 5.

$0.00
Section 1 Subtotal

This agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 ET SEQ. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Section 2: Special Case Filing Fee

8. **Filing Fee.** If the application only addresses one or more of the following, check the appropriate boxes, skip Sections 3 and 4 and proceed directly to Section 5. Otherwise, proceed to Section 3 or 4 as appropriate.

Addition or replacement of control devices on permitted units.

Pilot projects/trial burns by a permitted unit

Land remediation projects

Revisions related to methodology or timing for emission testing

Minor administrative-type change to a permit

Section 3: Fees for Current or Projected Non-Major Sources

9.	This application consists of a single new emission unit or no more than two modified emission units. ($500 fee)	9.
10.	This application consists of more than one new emission unit or more than two modified units. ($1,000 fee)	10.
11.	This application consists of a new source or emission unit subject to Section 39.2 of the Act (i.e., Local Siting Review); a commercial incinerator or a municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or an emission unit designated as a complex source by agency rulemaking. ($15,000 fee)	11.
12.	A public hearing is held (see instructions). ($10,000 fee)	12.
13.	Section 3 subtotal. (lines 9 through 12 - entered on page 1)	13. $0.00

Section 4: Fees for Current or Projected Major or Synthetic Minor Sources

Application contains modified emission units only	14. For the first modified emission unit, enter $2,000.	14. $2,000.00
	15. Number of additional modified emission units = 25 x $1,000.	15. $25,000.00
	16. Line 14 plus line 15, or $5,000, whichever is less.	16. $5,000.00
Application contains new and/or modified emission units	17. For the first new emission unit, enter $4,000.	
	18. Number of additional new and/or modified emission units = x $1,000.	18. $0.00
	19. Line 17 plus line 18, or $10,000, whichever is less.	19. $0.00
Application contains netting exercise	20. Number of individual pollutants that rely on a netting exercise or contemporaneous emissions decrease to avoid application of PSD or nonattainment area NSR = 4 x $3,000.	20. $12,000.00
Additional Supplemental Fees	21. If the new source or emission unit is subject to Section 39.2 of the Act (i.e. siting); a commercial incinerator or other municipal waste, hazardous waste, or waste tire incinerator; a commercial power generator; or one or more other emission units designated as a complex source by Agency rulemaking, enter $25,000.	21.
	22. If the source is a new major source subject to PSD, enter $12,000.	22.
	23. If the project is a major modification subject to PSD, enter $6,000.	23. $6,000.00
	24. If this is a new major source subject to nonattainment area (NAA) NSR, enter $20,000.	24.
	25. If this is a major modification subject to NAA NSR, enter $12,000.	25.
	26. If the application involves a determination of MACT for a pollutant and the project is not subject to BACT or LAER for the related pollutant under PSD or NSR (e.g., VOM for organic HAP), enter $5,000 per unit for which a determination is requested or otherwise required. ____ x $5,000.	26. $0.00
	27. If a public hearing is held (see instructions), enter $10,000.	27.
28. Section 4 subtotal (line 16 and lines 19 through 28) to be entered on page1		28. $23,000.00

Section 5: Certification

NOTE: Applications without a signed certification will be deemed incomplete.

29. I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the information contained in this fee application form is true, accurate and complete.

by: _____ (Signature)

Michael Patton (Typed or Printed Name of Signatory)

General Manager - Granite City Works (Title of Signatory)

2/25/2020 (Date)

RECEIVED
STATE OF ILLINOIS
R011247
OCT 07 2022
Environmental Protection Agency
BUREAU OF AIR

Illinois Environmental Protection Agency
Division Of Air Pollution Control -- Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

Construction Permit Application for a Proposed Project at a CAAPP Source	For Illinois EPA use only
	ID No.:
	Appl. No.:
	Date Rec'd:
	Chk No./Amt:

This form is to be used to supply general information to obtain a construction permit for a proposed project involving a Clean Air Act Permit Program (CAAPP) source, including construction of a new CAAPP source. Detailed information about the project must also be included in a construction permit application, as addressed in the "General Instructions For Permit Applications," Form APC-201.

Proposed Project

1. Working Name of Proposed Project:
1996 Construction Permit Revision

2. Is the project occurring at a source that already has a permit from the Bureau of Air (BOA)?
☐ No ☒ Yes If Yes, provide BOA ID Number: 119813AAI

3. Does this application request a revision to an existing construction permit issued by the BOA?
☐ No ☒ Yes If Yes, provide Permit Number: 95010001

4. Brief Description of Proposed Project:
This application proposes revisions to certain emission limits and other requirements in the 1996 Construction Permit for the U.S. Steel Granite City facility.

Source Information

1. Source name:* United States Steel Corporation - Granite City Works

2. Source street address:* 1951 State Street

3. City: Granite City	4. County: Madison	5. Zip code:* 62040

ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER.

6. Is the source located within city limits? ☐ Yes ☐ No
If no, provide Township Name:

7. Description of source and product(s) produced:	8. Primary Classification Code of source: SIC: _____ or NAICS: _____
9. Latitude (DD:MM:SS.SSSS):	10. Longitude (DD:MM:SS.SSSS):

* Is information different than previous information? ☐ Yes ☐ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Identification of Permit Applicant

1. Who is the applicant? ☒ Owner ☐ Operator	2. All correspondence to: (check one) ☒ Source ☐ Owner ☐ Operator
3. Applicant's FEIN: 25-1897152	4. Attention name and/or title for written correspondence: Krista Armentrout - Environmental Manager

This Agency is authorized to require and you must disclose this information under 415 ILCS 5/39. Failure to do so could result in the application being denied and penalties under 415 ILCS 5 et seq. It is not necessary to use this form in providing this information. This form has been approved by the forms management center.

Owner Information*		
1. Name: United States Steel Corporation		
2. Address: 600 Grant Street		
3. City: Pittsburgh	4. State: PA	5. Zip code: 15219

* Is this information idifferent than previous information? ☐ Yes ☐ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Operator Information (if different from owner)*		
1. Name		
2. Address:		
3. City:	4. State:	5. Zip code:

* Is this information different than previous information? ☐ Yes ☒ No
If yes, then complete Form CAAPP 273 to apply for an Administrative Change to the CAAPP Permit for the source.

Technical Contacts for Application	
1. Preferred technical contact: (check one) ☒ Applicant's contact ☐ Consultant	
2. Applicant's technical contact person for application: Christopher Hardin	
3. Contact person's telephone number(s) (412) 433-5904	4. Contact person's e-mail address: cwhardin@uss.com
5. Consultant for application: RTP Environmental Associates Inc. (Colin Campbell)	
6. Consultant's telephone number(s): (919) 845-1422, 20	7. Consultant's e-mail address: campbell@rtpenv.com

Other Addresses for the Permit Applicant	
ONLY COMPLETE THE FOLLOWING FOR A SOURCE WITHOUT AN ID NUMBER	
1. Address for billing Site Fees for the source: ☐ Source ☐ Other (provide below):	
2. Contact person for Site Fees:	3. Contact person's telephone number:
4. Address for Annual Emission Report for the source: ☐ Source ☐ Other (provide below):	
5. Contact person for Annual Emission Report:	6. Contact person's telephone number:

Review Of Contents of the Application	
NOTE: ANSWERING "NO" TO THESE ITEMS MAY RESULT IN THE APPLICATION BEING DEEMED INCOMPLETE	
1. Does the application include a narrative description of the proposed project?	☒ Yes ☐ No
2. Does the application clearly identify the emission units and air pollution control equipment that are part of the project?	☒ Yes ☐ No
3. Does the application include process flow diagram(s) for the project showing new and modified emission units and control equipment, along with associated existing equipment and their relationships?	☒ Yes ☐ No
4. Does the application include a general description of the source, a plot plan for the source and a site map for its location?	☐ Yes ☐ No ☒ N/A* * Material previously provided
5. Does the application include relevant technical information for the proposed project as requested on CAAPP application forms (or otherwise contain all relevant technical information)?	☒ Yes ☐ No
6. Does the application include relevant supporting data and information for the proposed project as provided on CAAPP forms?	☒ Yes ☐ No
7. Does the application identify and address all applicable emission standards for the proposed project, including: State emission standards (35 IAC Chapter I, Subtitle B); Federal New Source Performance Standards (40 CFR Part 60)?	☒ Yes ☐ No
8. Does the application address whether the project would be a major project for Prevention of Significant Deterioration, 40 CFR 52.21?	☒ Yes ☐ No ☐ N/A
9. Does the application address whether the project would be a major project for "Nonattainment New Source Review," 35 IAC Part 203?	☒ Yes ☐ No ☐ N/A
10. Does the application address whether the proposed project would potentially be subject to federal regulations for Hazardous Air Pollutants (40 CFR Part 63) and address any emissions standards for hazardous air pollutants that would be applicable?	☒ Yes ☐ No ☐ N/A* * Source not major ☐ Project not major ☐
11. Does the application include a summary of annual emission data for different pollutants for the proposed project (tons/year), including: 1) The requested permitted emissions for individual new, modified and affected existing units*, 2) The past actual emissions and change in emissions for individual modified units* and affected existing units*, and 3) Total emissions consequences of the proposed project? (* Or groups of related units)	☒ Yes ☐ No ☐ N/A * The project does not involve an increase in emissions from new or modified emission units.
12. Does the application include a summary of the current and requested potential emissions of the source (tons/year)?	☒ Yes ☐ No ☐ N/A* * Applicability of PSD, NA NSR or 40 CFR 63 to the project is not related to the source's emissions.
13. Does the application address the relationships and implications of the proposed project on the CAAPP Permit for the source?	☒ Yes ☐ No ☐ N/A* * CAAPP Permit not issued
14. If the application contains information that is considered a TRADE SECRET, has it been properly marked and claimed and all requirements to properly support the claim pursuant to 35 IAC Part 130 been met? Note: "Claimed" information will not be legally protected from disclosure to the public if it is not properly claimed or does not qualify as trade secret information.	☐ Yes ☐ No ☒ N/A* * No information in the application is claimed to be a TRADE SECRET
15. Are the correct number of copies of the application provided? (See Instructions for Permit Applications, Form 201)	☒ Yes ☐ No
16. Does the application include a completed "FEE DETERMINATION FOR CONSTRUCTION PERMIT APPLICATION," Form 197-FEE, a check in the amount indicated on this form, and any supporting material needed to explain how the fee was determined?	☒ Yes ☐ No

Signature Block

Authorized Signature:

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete and that I am a responsible official for the source, as defined by Section 39.5(1) of the Environmental Protection Act.

BY: AUTHORIZED SIGNATURE

General Manager - Granite City Works
TITLE OF SIGNATORY

Michael Patton
TYPED OR PRINTED NAME OF SIGNATORY

02 25 2020
DATE

Appendix B – Emissions Calculations

Updated Emissions Calculations for the Construction Permit Revision Application

USS Granite City - 1996 Production Increase Project
Revised PM PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year tons of charge	0.03	lb/ton of hot metal	30.9			Minor correction to calculation (95.0% capture efficiency)
A & B Blast Furnace Charging	2,803,241	material/year	0.0024	lb/ton of material	3.4			No change
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.07026	lb/ton of hot metal	72.4			No change
Blast Furnace Slag Pits	2,059,557	tons of hot metal/year	0.00417	lb/ton of hot metal	4.3			No change
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.02548	lb/ton of hot metal	26.2			No change
Subtotal					137.1	215.0	77.9	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.16	lb/ton of steel	193.1			No change
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.428	lb/ton of steel	516.7			No change
BOF Hot Metal Transfer and Desulfurization Baghouse	2,059,557	tons of hot metal/year	0.03721	lb/ton of hot metal	38.3			No change
BOF Slag Skimming Baghouse	2,059,557	tons of hot metal/year	0.00502	lb/ton of hot metal	5.2			No change
Baghouse 2 for Argon Stirring Ladle Metallurgy	2,413,406	tons of molten steel/year	0.00715	lb/ton of steel	8.6			No change other than regrouping
Subtotal					761.9	525.0	-236.9	
Continuous Casting Operations								
Caster Mold - Casters #1 & #2	2,413,406	tons of molten steel/year	0.006	lb/ton of steel	7.2			No change
Continuous Casters #1 & #2 - Spray Chamber	2,413,406	tons of molten steel/year	0.00852	lb/ton of steel	10.3			No change
Slab Cutoff Casters #1 & #2	2,413,406	tons of molten steel/year	0.0071	lb/ton of steel	8.6			No change
Slab Ripping Casters #1 & #2	2,413,406	tons of molten steel/year	0.00722	lb/ton of steel	8.7			No change
Subtotal					34.8	52.0	17.2	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	2.90	lb/MMcf	65.2			No change
COG in stoves	374	MMcf/year	16.56	lb/MMcf	3.1			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	2.90	lb/MMcf	72.4			No change
COG in boilers	2,211	MMcf/year	43.13	lb/MMcf	47.7			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	9.72	lb/Mgal	0.1			No change
Natural gas in boilers	805	MMcf/year	1.9	lb/MMcf	0.8			Revised to use current AP-42 emission factor
BFG in BFG flare	26,132	MMcf/year	2.9	lb/MMcf	37.9			No change
Natural gas in ladle preheaters	340	MMcf/year	1.9	lb/MMcf	0.3			Revised to use current AP-42 emission factor
Subtotal					227.4	273.0	45.6	
Material Handling Operations at BF and BOF								
Material handling for Coke, Pellets, Limestone	Table F-3 of the 1995 Permit Application	tons of charge			17.2			This activity was previously listed only in the contemporaneous changes.
Iron Pellet Screen	2,803,241	material/year	0.00375	lb/ton of material	5.3			USS representation of 85% control to crushed stone EF
BOF Hopper Baghouse	2,413,406	tons of molten steel/year	0.00032	lb/ton of steel	0.4			No change other than regrouping
BOF Bin Floor Baghouse	2,413,406	tons of molten steel/year	0.0016	lb/ton of steel	1.9			No change other than regrouping
Baghouse 1 for Material Handling	2,413,406	tons of molten steel/year	0.00355	lb/ton of steel	4.3			No change other than regrouping
Subtotal					29.0	30.0	1.0	

R011253

USS Granite City - 1996 Production Increase Project
Revised PM PSD Net Emissions Increase Analysis

Contemporaneous Changes		
Remove Blast Furnace Slag Spout Hood	0.0	Removed from analysis because not contemporaneous
#2 Caster Production	0.0	Removed from analysis because not contemporaneous
Installation of #8 Galvanizing Line	0.0	Removed from analysis because not contemporaneous
Ingot Teeming Shutdown	-22.4	No change
Blooming Mill Shutdown	-3.4	No change
Batch Annealing Shutdown	-0.2	No change
Haul Roads emissions controls	-17.1	Revised to reflect only the haul road emissions changes
Subtotal	-43.1	
Total	-138.4	

R011254

USS Granite City - 1996 Production Increase Project
Revised PM10 PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year tons of charge	0.0153	lb/ton of hot metal	15.8			Minor correction to calculation (95.0% capture efficiency)
A & B Blast Furnace Charging	2,803,241	material/year	0.0012	lb/ton of material	1.7			USS representation includes basis for EF
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.07026	lb/ton of hot metal	72.4			No change
Blast Furnace Slag Pits	2,059,557	tons of hot metal/year	0.00417	lb/ton of hot metal	4.3			No change
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.02548	lb/ton of hot metal	26.2			No change
Subtotal					120.3	190.0	69.7	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.16	lb/ton of steel	193.1			No change
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.287	lb/ton of steel	346.2			No change
BOF Hot Metal Transfer and Desulfurization Baghouse	2,059,557	tons of hot metal/year	0.03721	lb/ton of hot metal	38.3			No change
BOF Slag Skimming Baghouse	2,059,557	tons of hot metal/year	0.00502	lb/ton of hot metal	5.2			No change
Baghouse 2 for Argon Stirring Ladle Metallurgy	2,413,406	tons of molten steel/year	0.00715	lb/ton of steel	8.6			No change other than regrouping
Subtotal					591.4	462.0	-129.4	
Continuous Casting Operations								
Caster Mold - Casters #1 & #2	2,413,406	tons of molten steel/year	0.006	lb/ton of steel	7.2			No change
Continuous Casters #1 & #2 - Spray Chamber	2,413,406	tons of molten steel/year	0.00852	lb/ton of steel	10.3			No change
Slab Cutoff Casters #1 & #2	2,413,406	tons of molten steel/year	0.0071	lb/ton of steel	8.6			No change
Slab Ripping Casters #1 & #2	2,413,406	tons of molten steel/year	0.00722	lb/ton of steel	8.7			No change
Subtotal					34.8	52.0	17.2	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	2.90	lb/MMcf	65.2			No change
COG in stoves	374	MMcf/year	14.21	lb/MMcf	2.7			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	2.90	lb/MMcf	72.4			No change
COG in boilers	2,211	MMcf/year	41.48		45.8			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	9.72	lb/Mgal	0.1			No change
Natural gas in boilers	805	MMcf/year	1.9	lb/MMcf	0.8			Revised to use current AP-42 emission factor
BFG in BFG flare	26,132	MMcf/year	2.9	lb/MMcf	37.9			No change
Natural gas in ladle preheaters	340		1.9		0.3			Revised to use current AP-42 emission factor
Subtotal					225.2	273.0	47.8	
Material Handling Operations at BF and BOF								
Material handling for Coke, Pellets, Limestone	Table F-3 of the 1995 Permit Application	tons of charge			17.2			This activity was previously listed only in the contemporaneous changes.
Iron Pellet Screen	2,803,241	material/year	0.00131	lb/ton of material	1.8			USS representation of 85% control to crushed stone EF
BOF Hopper Baghouse	2,413,406	tons of molten steel/year	0.00032	lb/ton of steel	0.4			No change other than regrouping
BOF Bin Floor Baghouse	2,413,406	tons of molten steel/year	0.0016	lb/ton of steel	1.9			No change other than regrouping
Baghouse 1 for Material Handling	2,413,406	tons of molten steel/year	0.00355	lb/ton of steel	4.3			No change other than regrouping
Subtotal					25.6	19.0	-6.6	

R011255

USS Granite City - 1996 Production Increase Project
Revised PM10 PSD Net Emissions Increase Analysis

Contemporaneous Changes		
Remove Blast Furnace Slag Spout Hood	4.9	No change
#2 Caster Production	11.7	No change
Installation of #8 Galvanizing Line	0.0	Removed from analysis because not contemporaneous
Ingot Teeming Shutdown	-22.4	No change
Blooming Mill Shutdown	-3.4	No change
Batch Annealing Shutdown	-0.2	No change
Haul Roads emissions controls	-17.1	Revised to reflect only the road emissions changes
Subtotal	-26.5	
Total	-27.8	

R011256

USS Granite City - 1996 Production Increase Project
Revised NOx PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year	0.00014	lb/ton of hot metal	0.1			3/2012 test assuming no NOx control and 5% fugitive
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.0027	lb/ton of hot metal	2.8			3/2012 test
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.0016	lb/ton of hot metal	1.6			3/2012 test
Subtotal					4.6	24.0	19.4	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.14	lb/ton of steel	170.8			Average of 4/2012, 7/2012, 11/2014 test results
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.0075	lb/ton of steel	9.1			Average from 2019-20 test result
Subtotal					179.8	400.0	220.2	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	5.28	lb/MMcf	118.74			No change
COG in stoves	374	MMcf/year	80	lb/MMcf	14.95			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	5.28	lb/MMcf	131.82			No change
COG in boilers	2,211	MMcf/year	404	lb/MMcf	446.23			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	55	lb/Mgal	0.44			No change
Natural gas in boilers	805	MMcf/year	306	lb/MMcf	123.17			No change
BFG in BFG flare	26,132	MMcf/year	5.28	lb/MMcf	68.99			No change
Natural gas in ladle preheaters	340		306		52.02			Revised to use current AP-42 emission factor
Subtotal					956.3	706.0	-250.3	
Contemporaneous Changes								
Installation of #8 Galvanizing Line							0.0	Removed from analysis because not contemporaneous
Batch Annealing Shutdown							-8.7	Removed from analysis because not contemporaneous
Blooming Mill Shutdown							-217.8	No change
Subtotal							-226.5	
Total							-237.3	

R011257

USS Granite City - 1996 Production Increase Project
Revised VOM PSD Net Emissions Increase Analysis

Emission Point	Pre-Project Throughput	Units	Pre-Project Emission Factor	Units	Baseline Emissions (TPY)	Future Emissions (TPY)	Emissions Change (TPY)	Change from 1996 analysis?
Blast Furnace Operations								
A & B Blast Furnace Casthouse Fugitives	2,059,557	tons of hot metal/year	0.00073	lb/ton of hot metal	0.8			3/2012 test assuming no VOM control and 5% fugitive
A & B Blast Furnace Casthouse Baghouse	2,059,557	tons of hot metal/year	0.014	lb/ton of hot metal	14.3			3/2012 test
Iron Spout Baghouse	2,059,557	tons of hot metal/year	0.0037	lb/ton of hot metal	3.8			3/2012 test
Subtotal					18.8	45.0	26.2	
BOF Shop								
BOF 2 Vessels Primary Emissions	2,413,406	tons of molten steel/year	0.019	lb/ton of steel	22.4			Average of 4/2012, 7/2012, 11/2014 test results
BOF 2 Vessels Secondary Emissions	2,413,406	tons of molten steel/year	0.0035	lb/ton of steel	4.2			Average from 2019-20 test result
BOF Hot Metal Transfer and Desulfurization Baghouse	2,059,557	tons of hot metal/year	0.00019	lb/ton of hot metal	0.2			5/2012 test
BOF Slag Skimming Baghouse	2,059,557	tons of hot metal/year	0.00015	lb/ton of hot metal	0.2			5/2012 test
Subtotal					27.0	45.0	18.0	
Certain Fuel Burning Emissions Units								
BFG in stoves	44,977	MMcf/year	0.24	lb/MMcf	5.40			Updated from Cogen Permit
COG in stoves	374	MMcf/year	0.18	lb/MMcf	0.03			Added; omitted from 1996 analysis
BFG in boilers	49,930	MMcf/year	0.24	lb/MMcf	5.99			Updated from Cogen Permit
COG in boilers	2,211	MMcf/year	1.22	lb/MMcf	1.34			Added; omitted from 1996 analysis
Fuel oil in boilers	16	Mgal/year	0.28	lb/Mgal	0.00			No change
Natural gas in boilers	805	MMcf/year	5.5	lb/MMcf	2.21			1998 update to AP-42 Section 1.4
BFG in BFG flare	26,132	MMcf/year	0.24	lb/MMcf	3.14			Updated from Cogen Permit
Natural gas in ladle preheaters	340		5.5		0.94			1998 update to AP-42 Section 1.4
Subtotal					19.1	40.0	20.9	
Contemporaneous Changes								
Installation of #8 Galvanizing Line							0.0	Removed from analysis because not contemporaneous
NESHAP Controls Coke By-product							-31.6	No change
Batch Annealing Shutdown							-0.3	No change
Blooming Mill Shutdown							-0.9	No change
Subtotal							-32.8	
Total							32.3	

R011258

Emissions Calculations Included in the 1995 Construction Permit Application

TABLE 3-1
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - CO

Projected Emissions Based On: Blast Furnace @ 8,[illegible]NTPD
BOF @ 9,808 NTPD

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	13.7	lb/MMcf	22,774	MMcf	156.00	Included in line 17	-	-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	13.7	lb/MMcf	22,203	MMcf	152.09	Included in line 17	-	-	-
3	0008	01	Blast Furnace Gas Flare - BFG	13.7	lb/MMcf	26,132	MMcf	179.00	Included in line 17	-	-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	13.7	lb/MMcf	37,501	MMcf	256.88	Included in line 17	-	-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	40	lb/MMcf	361	MMcf	7.22	Included in line 18	-	-	-
6	0044	01	Boiler #11 - BFG	13.7	lb/MMcf	5,323	MMcf	36.46	Included in line 17	-	-	-
7	0044	91	Boiler #11 - NG	40	lb/MMcf	226	MMcf	4.52	Included in line 18	-	-	-
8	0044	92	Boiler #11 - Fuel Oil	5.0	lb/Mgal	15.00	Mgal	0.04	Included in line 18	-	-	-
9	0048	01	Boiler #12 - BFG	13.7	lb/MMcf	7,106	MMcf	48.68	Included in line 17	-	-	-
10	0048	91	Boiler #12 - NG	40	lb/MMcf	218	MMcf	4.36	Included in line 18	-	-	-
11	0048	92	Boiler #12 - Fuel Oil	5.0	lb/Mgal	1.00	Mgal	0.00	Included in line 18	-	-	-
12	0033	01	BOF 2 Vessels	8.993	lb/ton proc.	2,413,406	ton proc.	10,851.88	3,580,000	ton proc.	16,097.47	5,245.59
13	0038	01	BOF Preheaters/Dryers - NG	40	lb/MMcf	283	MMcf	5.66	Included in line 18	-	-	-
14	0071 & 0119	01	Continuous Casters #1 & #2 - NG	40	lb/MMcf	57	MMcf	1.14	Included in line 18	-	-	-
15			Natural Gas	40	lb/MMcf	1,145	MMcf	inc. above	1,145	MMcf	22.90	-
16			Blast Furnace Gas	13.7	lb/MMcf	121,039	MMcf	inc. above	185,030	MMcf	1,267.46	-
17			Fuel Oil	5.0	lb/Mgal	16	Mgal	inc. above	365	Mgal	0.91	-
	TOTALS:							11,703.94			17,388.74	5,684.80
			Contemporaneous Changes									(11.51)
			Net Change									***5,673.29***

R011260

TABLE 3-2
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - NOx

Projected Emissions Based On: Blast Furnace @ [illegible]1NTPD
BOF @ 9,808 NTPD

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy	
1	0004	01	"A" Blast Furnace Stoves - BFG	5.28	lb/MMcf	22,774	MMcf	60.12	Included in Line 20	-	-	-	
2	0009	01	"B" Blast Furnace Stoves - BFG	5.28	lb/MMcf	22,203	MMcf	58.62	Included in Line 20	-	-	-	
3	0008	01	Blast Furnace Gas Flare - BFG	5.28	lb/MMcf	26,132	MMcf	68.99	Included in Line 20	-	-	-	
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	5.28	lb/MMcf	37,501	MMcf	99.00	Included in Line 20	-	-	-	
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	308	lb/MMcf	361	MMcf	55.23	Included in Line 19	-	-	-	
6	0044	01	Boiler #11 - BFG	5.28	lb/MMcf	5,323	MMcf	14.05	Included in Line 20	-	-	-	
7	0044	91	Boiler #11 - NG	306	lb/MMcf	226	MMcf	34.58	Included in Line 19	-	-	-	
8	0044	92	Boiler #11 - Fuel Oil	55	lb/Mgal	15.00	Mgal	0.41	Included in Line 21	-	-	-	
9	0048	01	Boiler #12 - BFG	5.28	lb/MMcf	7,106	MMcf	18.76	Included in Line 20	-	-	-	
10	0048	91	Boiler #12 - NG	306	lb/MMcf	218	MMcf	33.35	Included in Line 19	-	-	-	
11	0048	92	Boiler #12 - Fuel Oil	55	lb/Mgal	1.00	Mgal	0.03	Included in Line 21	-	-	-	
12	0033	01	BOF 2 Vessels	0.0389	lb/ton proc.	2,413,406	tons proc.	46.94	3,580,000	ton proc.	69.63	x -	92.59
13	0038	01	BOF Preheaters/Dryers - NG	306	lb/MMcf	283	MMcf	43.30	Included in Line 19	-	-	-	
14	0007 & 0012	01	"A" & "B" Blast Furnace - Casthouse	0.01440	lb/ton proc.	2,059,557	tons proc.	14.83	3,165,000	tons proc.	22.79	x -	.296
15	0005 & 0010	01	"A" & "B" Blast Furnace - Uncaptured Roof Emiss.	0.00072	lb/ton proc.	2,059,557	tons proc.	0.74	3,165,000	tons proc.	1.14	-	0.4
16	0070 &0120	01	Caster Mold - Casters #1 & #2	0.05	lb/ton prod.	2,413,406	tons prod.	60.34	3,580,000	ton prod.	89.50	x -	29.16
17	0071 & 0119	01	Continuous Casters #1 & #2 - NG	306	lb/MMcf	57	MMcf	8.72	Included in Line 19	-	-	-	60.21
18			Natural Gas	306	lb/MMcf	1,145	MMcf	inc. above	1,145	MMcf	175.19	-	
19			Blast Furnace Gas	5.28	lb/MMcf	121,039	MMcf	inc. above	185,030	MMcf	488.48	+168.54	52.9%
20			Fuel Oil	55	lb/Mgal	16	Mgal	inc. above	365	Mgal	10.04	+ 9.59	
	TOTALS:							618.01			856.76	238.75	227.15
			Contemperaneous Changes									(200.54)	
			Net Change									*38.21*	

+15%

R011261

TABLE 3-3
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - SO2

Projected Emissions Based On: Blast Furnace @ 8,671NTPD
BOF @ 9,808 NTPD

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy	COMMENTS
1	0004	01	"A" Blast Furnace Stoves - BFG	6.65	lb/MMcf	22,774	MMcf	75.72	included in line 19	-	-	-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	6.65	lb/MMcf	22,203	MMcf	73.82	included in line 19	-	-	-	-
3	0008	01	Blast Furnace Gas Flare - BFG	6.65	lb/MMcf	26,132	MMcf	86.89	included in line 19	-	-	-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	6.65	lb/MMcf	37,501	MMcf	124.69	included in line 19	-	-	-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	0.6	lb/MMcf	361	MMcf	0.11	included in line 18	-	-	-	-
6	0044	01	Boiler #11 - BFG	6.65	lb/MMcf	5,323	MMcf	17.70	included in line 19	-	-	-	-
7	0044	91	Boiler #11 - NG	0.6	lb/MMcf	226	MMcf	0.07	included in line 18	-	-	-	-
8	0044	92	Boiler #11 - Fuel Oil	141.3	lb/Mgal	15.00	Mgal	1.06	included in line 20	-	-	-	-
9	0048	01	Boiler #12 - BFG	6.65	lb/MMcf	7,106	MMcf	23.63	included in line 19	-	-	-	-
10	0048	91	Boiler #12 - NG	0.6	lb/MMcf	218	MMcf	0.07	included in line 18	-	-	-	-
11	0048	92	Boiler #12 - Fuel Oil	141.3	lb/Mgal	1.00	Mgal	0.07	included in line 20	-	-	-	-
12	0038	01	BOF Preheaters/Dryers - NG	0.6	lb/MMcf	283	MMcf	0.08	included in line 18	-	-	-	-
13	0007 & 0012	01	"A & B" Blast Furnace - Casthouse	0.2006	lb/ton proc.	2,059,557	tons proc.	206.57	3,165,000	tons proc.	422.00	215.43	Est. Annual Max
14	0005 & 0010	01	"A & B" Blast Furnace - Uncap. roof	0.0104	lb/ton proc.	2,059,557	tons proc.	10.71	3,165,000	tons proc.	21.94	11.23	Est. Annual Max
15	—	–	Iron Spout Baghouse	0.0073	lb/ton proc.	2,059,557	tons proc.	7.52	3,165,000	tons proc.	13.89	6.37	Est. Annual Max
16	113	1	Blast Furnace Slag Pits	0.0100	lb/ton	2,059,557	tons proc.	10.30	3,165,000	tons proc.	15.83	5.53	
17	0071 & 0119	01	Continuous Casters #1 & #2 - NG	0.6	lb/MMcf	57	MMcf	0.02	included in line 18	-	-	-	
18			Natural Gas	0.6	lb/MMcf	1,145	MMcf	-	1,145	MMcf	0.34	0.00	
19			Blast Furnace Gas	6.65	lb/MMcf	121,039	MMcf	-	185,030	MMcf	615.22	212.77	
20			Fuel Oil	141.3	lb/Mgal	16	Mgal	-	365	Mgal	25.79	24.66	
	TOTALS:							639.03			1,115.01	475.98	
			Contemporaneous Changes									(0.13)	
			Net Change									***475.85***	

R011262

Projected Emissions Based On: Blast Furnace @ 3,571NTPD
BOF @ 9,808 NTPD

TABLE 3-4
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - PM-10

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
3	0008	01	Blast Furnace Gas Flare - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
6	0044	01	Boiler #11 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
7	0044	91	Boiler #11 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
8	0044	92	Boiler #11 - Fuel Oil	9.72	lb/Mgal	Included in line 40	Mgal	-	Included in line 40	-			-	-
9	0048	01	Boiler #12 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
10	0048	91	Boiler #12 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
11	0048	92	Boiler #12 - Fuel Oil	9.72	lb/Mgal	Included in line 48	Mgal	-	Included in line 48	-			-	-
12	0033	01	BOF 2 Vessels	0.16	lb/ton proc.	2,413,406	tons proc.	193.07	8,760	hours	60	lbs/hr	262.80	69.73
13	0038	01	BOF Preheaters/Dryers - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
14	0005 & 0010	01	"A" & "B" Blast Furnace - Uncap. Fugitives	0.0155	lb/ton proc.	2,059,557	tons proc.	15.96	3,165,000	tons proc.			24.53	8.57
15	0006 & 0011	01	"A" & "B" Blast Furnace - Charging	0.0024	lb/ton pellets charged	2,803,241	tons proc.	3.36	4,308,581	tons proc.			5.17	1.81
16	0007 & 0012	01	"A" & "B" Blast Furnace - Beghouse Stack	0.0703	lb/ton proc.	2,059,557	tons proc.	72.35	3,165,000	tons proc.			111.19	38.83
17	0034	01	BOF Roof Monitor	0.287	lb/ton proc.	2,413,406	tons proc.	346.20	3,580,000	tons proc.	0.066144		118.40	(227.81)
18	0037	01	Flux Conv. & Xfer Pts., Bin Floor - BOF	0.0016	lb/ton proc.	2,413,406	tons proc.	1.93	3,580,000	tons proc.			2.86	0.93
19	0040	01	Hot Metal Chging Ladle Slag Skimmer	0.0050	lb/ton proc.	2,059,557	tons proc.	5.17	3,165,000	tons proc.			7.94	2.77

R011263

Projected Emissions Based On: Blast Furnace @ 8,071NTPD
BOF @ 9,808 NTPD

TABLE 3-4
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - PM-10

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
20	0070 & 0120	01	Caster Mold - Casters #1 & #2	0.006	lb/ton prod.	2,413,406	tons prod.	7.24	3,580,000	ton prod.			10.74	3.50
21	0071 & 0119	01	Cont. Casters #1 & #2 - Spray Chamber	0.00852	lb/ton proc.	2,413,406	tons prod.	10.28	3,580,000	ton prod.			15.25	4.97
22	0071 & 0119	01	Continuous Casters #1 & #2 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
23	0072 & 0118	01	Slab Cutoff - Casters #1 & #2	0.0071	lb/ton proc.	2,413,406	tons prod.	8.57	3,580,000	ton prod.			12.71	4.14
	73	1	Slab Ripping - Casters #1 & #2	0.00722	lb/ton proc.	2,413,406	tons prod.	8.71	3,580,000	ton prod.			12.92	4.21
25	0103, 0104 & 0121	01	LMF Argon Stirring #1 & #2, Material Handling Tripper	0.00715	lb/ton proc.	2,413,406	tons prod.	8.63	3,580,000	ton prod.			12.80	4.17
26	0105 & 0106	01	Deslagging Station & Material HS	0.00355	lb/ton proc.	2,413,406	tons prod.	4.28	3,580,000	ton prod.			6.35	2.07
27			BOF Hopper Baghouse	0.00032	lb/ton proc.	2,413,406	tons proc.	0.39	3,580,000	tons proc.			0.57	0.18
28	0107 & 0035	01	Desulf. Station (inside BOF shop) & Xfer Pit	0.03721	lb/ton proc.	2,059,557	tons prod.	38.32	3,165,000	ton prod.			58.88	20.57
29	0113	01	Blast Furnace Slag Pits	0.00417	lb/ton proc.	2,059,557	tons slag	4.29	3,165,000	ton prod.			6.60	2.30
30	9003	01	Iron Pellet Screen	0.00279	lb/ton pellets charged	2,803,241	tons proc.	3.91	4,308,581	tons proc.			6.01	2.10
31		01	Iron Spout Baghouse	0.02548	lb/ton proc.	2,059,557	tons proc.	26.24	3,165,000	tons proc.			40.32	14.08
32			Road Fugitive Emissions	Included in Contemporaneous Changes. See Appendix F						-				0.00
33			Material Handling	Included in Contemporaneous Changes. See Appendix F						-				0.00
34			Unpaved Parking Lots					-		-			-	-
35			Paved Parking Lots					-		-			-	-
36			Natural Gas	5.1	lb/MMcf	1,145	MMcf	2.92	1,145	MMcf			2.92	0.00
37			Blast Furnace Gas	2.9	lb/MMcf	121,039	MMcf	175.51	185,030	MMcf			268.29	92.79
38			Fuel Oil	9.72	lb/Mgal	16	Mgal	0.08	365	Mgal			1.77	1.70
	TOTALS:							937.42					989.04	51.62
			Contemporaneous Changes											(37.31)
			Net Change											*14.31*

+14.5

Note: Actual Emissions = Base Year Throughput * Emission Factor / 2000

Projected Actual Emissions = Projected Throughput * Emission Factor / 2000
except -
BOF Vessels Projected Actual Emissions = 60 lb/hr * 8760 hrs
BOF Roof Monitor Projected Actual Emissions = Projected Emission Factor * Projected Throughput

R011264

TABLE 3-5
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - TSP

Projected Emissions Based On: Blast Furnace @ 1,971NTPD
BOF @ 9,808 NTPD

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
3	0008	01	Blast Furnace Gas Flare - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
6	0044	01	Boiler #11 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
7	0044	91	Boiler #11 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
8	0044	92	Boiler #11 - Fuel Oil	9.72	lb/Mgal	Included in line 40	Mgal	-	Included in line 40	-			-	-
9	0048	01	Boiler #12 - BFG	2.9	lb/MMcf	Included in line 39	MMcf	-	Included in line 39	-			-	-
10	0048	91	Boiler #12 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
11	0048	92	Boiler #12 - Fuel Oil	9.72	lb/Mgal	Included in line 48	Mgal	-	Included in line 48	-			-	-
12	0033	01	BOF 2 Vessels	0.16	lb/ton proc.	2,413,406	tons proc.	193.07	8,760	hours	60	lbs/hr	262.80	69.73
13	0038	01	BOF Preheaters/Dryers - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
14	0005 & 0010	01	"A" & "B" Blast Furnace - Uncap. Fugitives	0.031	lb/ton proc.	2,059,557	tons proc.	31.92	3,165,000	tons proc.			49.06	17.13
15	0006 & 0011	01	"A" & "B" Blast Furnace - Charging	0.0024	lb/ton pellets charged	2,803,241	tons proc.	3.36	4,308,581	tons proc.			5.17	1.81
16	0007 & 0012	01	"A" & "B" Blast Furnace - Baghouse Stack	0.0703	lb/ton proc.	2,059,557	tons proc.	72.35	3,165,000	tons proc.			111.19	38.83
17	0034	01	BOF Roof Monitor	0.428	lb/ton proc.	2,413,406	tons proc.	516.72	3,580,000	tons proc.	0.0987		176.71	(340.01)
18	0037	01	Flux Conv. & Xfer Pts., Bin Floor - BOF	0.0016	lb/ton proc.	2,413,406	tons proc.	1.93	3,580,000	tons proc.			2.86	0.93
19	0040	01	Hot Metal Chging Ladle Slag Skimmer	0.0050	lb/ton proc.	2,059,557	tons proc.	5.17	3,165,000	tons proc.			7.94	2.77

R011265

TABLE 3-5
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - TSP

Projected Emissions Based On: Blast Furnace @ [illegible] NTPD
BOF @ 9,808 NTPD

Line #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED EMISSION FACTOR	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
20	0070 & 0120	01	Caster Mold - Casters #1 & #2	0.006	lb/ton prod.	2,413,406	tons prod.	7.24	3,580,000	ton prod.			10.74	3.50
21	0071 & 0119	01	Cont. Casters #1 & #2 - Spray Chamber	0.00852	lb/ton proc.	2,413,406	tons prod.	10.28	3,580,000	ton prod.			15.25	4.97
22	0071 & 0119	01	Continuous Casters #1 & #2 - NG	5.1	lb/MMcf	Included in line 38	MMcf	-	Included in line 38	-			-	-
23	0072 & 0118	01	Slab Cutoff - Casters #1 & #2	0.0071	lb/ton proc.	2,413,406	tons prod.	8.57	3,580,000	ton prod.			12.71	4.14
	73	1	Slab Ripping - Casters #1 & #2	0.00722	lb/ton proc.	2,413,406	tons prod.	8.71	3,580,000	ton prod.			12.92	4.21
25	0103, 0104 & 0121	01	Argon Stirring #1 & #2, Material Handling Tripper	0.00715	lb/ton proc.	2,413,406	tons prod.	8.63	3,580,000	ton prod.			12.80	4.17
26	0105 & 0106	01	Deslagging Station & Material HS	0.00355	lb/ton proc.	2,413,406	tons prod.	4.28	3,580,000	ton prod.			6.35	2.07
27			BOF Hopper Baghouse	0.00032	lb/ton proc.	2,413,406	tons proc.	0.39	3,580,000	tons proc.			0.57	0.18
28	0107 & 0035	01	Desulf. Station (inside BOF shop) & Xfer Pit	0.03721	lb/ton proc.	2,059,557	tons prod.	38.32	3,165,000	ton prod.			58.88	20.57
29	0113	01	Blast Furnace Slag Pits	0.00417	lb/ton proc.	2,059,557	tons slag	4.29	3,165,000	ton prod.			6.60	2.30
30	9003	01	Iron Pellet Screen	0.00279	lb/ton pellets charged	2,803,241	tons proc.	3.91	4,308,581	tons proc.			6.01	2.10
31		01	Iron Spout Baghouse	0.02548	lb/ton proc.	2,059,557	tons proc.	26.24	3,165,000	tons proc.			40.32	14.08
32			Road Fugitive Emissions	Included in Contemporaneous Changes. See Appendix F						-				0.00
33			Material Handling	Included in Contemporaneous Changes. See Appendix F						-				0.00
34			Unpaved Parking Lots					-		-			-	-
35			Paved Parking Lots					-		-			-	-
36			Natural Gas	5.1	lb/MMcf	1,145	MMcf	2.92	1,145	MMcf			2.92	0.00
37			Blast Furnace Gas	2.9	lb/MMcf	121,039	MMcf	175.51	185,030	MMcf			268.29	92.79
38			Fuel Oil	9.72	lb/Mgal	16	Mgal	0.08	365	Mgal			1.77	1.70
	TOTALS:							1,123.90					1,071.89	(52.01)
			Contemporaneous Changes											(37.16)
			Net Change											*(89.17)*

Note: Actual Emissions = Base Year Throughput * Emission Factor / 2000

Projected Actual Emissions = Projected Throughput * Emission Factor / 2000
except -
BOF Vessels Projected Actual Emissions = 60 lb/hr * 8760 hrs
BOF Roof Monitor Projected Actual Emissions = Projected Emission Factor * Projected Throughput

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Projected Emissions Based On: Blast Furnace @8,[illegible]1 NTPD
BOF @ 9,808 NTPD

TABLE 3-6
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - VOM

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION tpy	PROJECTED THRUPUT	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0004	01	"A" Blast Furnace Stoves - BFG	0.0	lb/MMcf	22,774	MMcf	0.00	included in line 18	-	-	-
2	0009	01	"B" Blast Furnace Stoves - BFG	0.0	lb/MMcf	22,203	MMcf	0.00	included in line 18	-	-	-
3	0008	01	Blast Furnace Gas Flare - BFG	0.0	lb/MMcf	26,132	MMcf	0.00	included in line 18	-	-	-
4	0041	01	Boiler House 1 (Blrs 1-10) - BFG	0.0	lb/MMcf	37,601	MMcf	0.00	included in line 18	-	-	-
5	0041	91	Boiler House 1 (Blrs 1-10) - NG	2.8	lb/MMcf	361	MMcf	0.51	included in line 17	-	-	-
6	0044	01	Boiler #11 - BFG	0.0	lb/MMcf	5,323	MMcf	0.00	included in line 18	-	-	-
7	0044	91	Boiler #11 - NG	1.4	lb/MMcf	226	MMcf	0.16	included in line 17	-	-	-
8	0044	92	Boiler #11 - Fuel Oil	0.28	lb/Mgal	15.00	Mgal	0.00	included in line 19	-	-	-
9	0048	01	Boiler #12 - BFG	0.0	lb/MMcf	7,106	MMcf	0.00	included in line 18	-	-	-
10	0048	91	Boiler #12 - NG	1.4	lb/MMcf	218	MMcf	0.15	included in line 17	-	-	-
11	0048	92	Boiler #12 - Fuel Oil	0.28	lb/Mgal	1.00	Mgal	0.00	included in line 19	-	-	-
12	0033	01	BOF Preheaters/Dryers - NG	2.8	lb/MMcf	283	MMcf	0.40	included in line 17	-	-	-
13	0007 & 0012	01	"A & B" Blast Furnace - Casthouse	0.0946	lb/ton proc.	2,059,557	tons proc.	97.40	3,165,000	tons proc.	149.68	-
14	0005 & 0010	01	"A & B" Blast Furnace - Uncap. roof	0.0047	lb/ton proc.	2,059,557	tons proc.	4.83	3,165,000	tons proc.	7.42	-
15	0033	01	2 BOF Vessels	0.0060	lb/ton proc.	2,413,406	tons proc.	7.24	3,580,000	tons proc.	10.74	-
16	0035	01	Transfer Pits	0.0010	lb/ton proc.	2,059,557	tons proc.	1.03	3,165,000	tons proc.	1.58	-
17	0071 & 0119	01	Continuous Casters #1 & #2 - NG	2.8	lb/MMcf	57	MMcf	0.08	included in line 17	-	-	-
18			Natural Gas	2.8	lb/MMcf	-	MMcf	-	1,145	MMcf	1.60	-
19			Blast Furnace Gas	0.0	lb/MMcf	-	MMcf	-	185,030	MMcf	0.00	-
20			Fuel Oil	0.28	lb/Mgal	-	Mgal	-	365	lb/Mgal	0.05	-
	TOTALS:							111.80			171.08	59.28
			Contemporaneous Changes									(31.23)
			Net Change									*28.05*

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TABLE 3-7
GRANITE CITY DIVISION of NATIONAL STEEL
NETTING ANALYSIS SUMMARY - Pb

Projected Emissions Based On: Blast Furnace @ 8,671NTPD
BOF @ 9,808 NTPD

LINE #	POINT	MODE	SOURCE DESCRIPTION	EMISSION FACTOR	UNITS	EMISSION RATE lb/hr	BASE YEAR THRUPUT	UNITS	ACTUAL EMISSION TPY	PROJECTED THRUPUT OR PRODUCTION RATIO	UNITS	PROJECTED ACTUAL EMISSIONS tpy	POTENTIAL EMISSIONS INCREASE tpy
1	0044	03	Boiler #11 - Fuel Oil	0.01600000	lb/Mgal	0.01600000	15.00	Mgal	0.0001	included in line 19	-	-	-
2	0048	03	Boiler #12 - Fuel Oil	0.01600000	lb/Mgal	0.01600000	1.00	Mgal	0.0000	included in line 19	-	-	-
3	0005	01	"A" Blast Furnace - Uncap. Fugitives	0.00039000	lb/hr	0.00039000	8760	hours	0.0017	1.537	tons proc.	0.00262550	-
4	0006	01	"A" Blast Furnace - Charging	0.00055000	lb/hr	0.00055000	8760	hours	0.0024	1.537	tons proc.	0.00370263	-
5	0007	01	"A" Blast Furnace - Baghouse Stack	0.00022000	lb/hr	0.00022000	8760	hours	0.0010	1.537	tons proc.	0.00148105	-
6	0010	01	"B" Blast Furnace - Uncap. Fugitives	0.00036700	lb/hr	0.00036700	8760	hours	0.0016	1.537	tons proc.	0.00247067	-
7	0011	01	"B" Blast Furnace - Charging	0.00053700	lb/hr	0.00053700	8360	hours	0.0024	1.537	tons proc.	0.00361512	-
8	0012	01	"B" Blast Furnace - Baghouse Stack	0.00021400	lb/hr	0.00021400	8360	hours	0.0009	1.537	tons proc.	0.00144066	-
9	0033	01	BOF 2 Vessels Stack	0.19337500	lb/hr	0.19337500	8760	hours	0.8470	1.483	tons prod.	1.25607505	0.2858
10	0034	01	BOF Roof Monitor	0.01290000	lb/hr	0.01290000	8760	hours	0.0565	1.483	tons prod.	0.08379247	-
11	0035	01	Hot Metal Reladling - Xfer Pit	0.00002320	lb/hr	0.00002320	8760	hours	0.0001	1.483	tons prod.	0.00015070	-
12	0037	01	Flux Conv. & Xfer Pts., Bin Floor - BOF	0.00000062	lb/hr	0.00000062	8760	hours	0.0000	1.483	tons prod.	0.00000405	-
13	0040	01	Hot Metal Chging Ladle Slag Skimmer	0.00002250	lb/hr	0.00002250	8760	hours	0.0001	1.483	tons prod.	0.00014615	-
14	0103	01	Argon Stirring #1 & #2	0.00020200	lb/hr	0.00020200	8760	hours	0.0009	1.483	tons prod.	0.00131210	-
15	0105	01	Deslagging Station	0.00240000	lb/hr	0.00240000	8760	hours	0.0105	1.483	tons prod.	0.01558930	-
16	0107	01	Desulf. Station (inside BOF shop)	0.01330000	lb/hr	0.01330000	8760	hours	0.0583	1.483	tons prod.	0.08639068	-
17	0120	01	Caster Mold - Casters	0.00113000	lb/hr	0.00113000	8760	hours	0.0049	1.483	tons prod.	0.00733996	-
18			Boilers -Waste Oil	0.33600000	lb/Mgals		-	-	-	365	Mgals	0.06132000	-
	TOTAL					0.26			0.988			1.527	0.539
			Contemporaneous Changes										0.000
			Net Change										*0.539*

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Contemporaneous Changes from the 1995 Application

APPENDIX E

The following table summarizes emissions changing projects that have been undertaken at Granite City Steel since 1990.

PROJECTS CHANGING EMISSIONS SINCE 1990 (TPY)

Project	Effective Date	TSP/PM_{10}	SO_2	NO_x	CO	VOM
Removal Blast Furnace Slag Sput Hood	January, 1990	+4.90				
# 2 Caster Production	December 1, 1990	+11.70				
Ingot Teeming Shutdown	April 1, 1991	-22.40				
Installation NESHAP Controls Coke By-Product	July, 1991					-31.6
Shutdown Blooming Mill	April 1, 1991	-3.38	-0.34	-217.82	-22.12	-0.92
Shutdown Batch Annealing	December, 1991	-0.18	-0.036	-8.72	-1.19	-0.31
Fugitive Dust Control Program (Roads and Material Handling)	November, 1991 to present	-32.00				
Installation of #8 Galvanizaing Line	Expected 1996	+4.20/+4.05	+.25	+26.0	+11.8	+1.6
Net Change		-37.16/-37.31	-0.126	-200.54	-11.51	-31.23

The following information presents how the emission change was calculated for each project.

REMOVAL OF BLAST FURNACE SLAG SPOUT HOOD - JANUARY, 1990

Based on May 8, 1989 submittal for modification of operating permit for "A" & "B" Blast Furnaces. +4.9 TPY

2 CASTER PRODUCTION - DECEMBER 1, 1990

Summary of Project Emission Changes (tons/yr)[1] (Assuming all steel produced is continuous cast.)

Argon Stirring and Baghouse	4.85
Tundish with Shrouds	--
Powder Addition	7.49
Slab Casting	2.01
Slab Cut-off	9.03
Slab Ripping with Baghouse	2.58
	26.0 tons/yr PM_{10}
Caster #1 Actual	14.3 tons/yr PM_{10}

Caster #2 PM_{10} emissions = 26.0 - 14.3 = 11.7 tons/yr

INGOT TEEMING SHUTDOWN - APRIL 1, 1991

670,000 tons / year X 0.067 lbs / ton = 22.4 tons / year PM_{10} reduction

[1] Reference - March 16, 1988 IEPA "Project Summary for Proposed Issuance of an Air Pollution Control Construction Permit for Continuous Caster".

SHUTDOWN BLOOMING MILL - APRIL 1, 1991

Coke oven gas consumed at Soaking Pits, 1,076,926 MMBtu in 1990.

The coke oven gas which was consumed at the Blooming Mill Soaking Pits (firing rate 408 MMBtu/hr/furnace) is to be used at the Hot Strip Slab Furnaces (1 - 3) (firing rate 321.8 MMBtu/hr/furnace) and #4 slab furnace (firing rate 495 MMBtu/hr).

The emission reductions for the displaced use of natural gas on the slab reheat furnaces is based on the AIRS 1990 emission factor for natural gas sources greater than 100 MMBtu/hr and the "ACT for NO_X Emissions from Iron and Steel Mills".

1990

Coke Oven Gas Soaking Pits - General < 10 MMBtu/hr

44,131 X 0.003 X 1/2000 = 0.066 tpy PM_{10} emission reduction

44,131 X 0.0006 X 1/2000 = 0.013 tpy SO_2 emission reduction

44,131 X 0.10 X 1/2000 = 2.21 tpy NO_X emission reduction

44,131 X 0.0053 X 1/2000 = 0.12 tpy VOC emission reduction

44,131 X 0.02 X 1/2000 = 0.44 tpy CO emission reduction

Natural Gas Blooming Mill < 10 MMBtu/hr

18,083 X 0.003 X 1/2000 = 0.027 tpy PM_{10} emission reduction

18,083 X 0.0006 X 1/2000 = 0.005 tpy SO_2 emission reduction

18,083 X 0.10 X 1/2000 = 0.90 tpy NO_X emission reduction

18,803 X 0.0053 X 1/2000 = 0.05 tpy VOC emission reduction

18,803 X 0.02 X 1/2000 = 0.18 tpy CO emission reduction

Coke Oven Gas Soaking Pits

1,076,926 X 0.005 X 1/2000 = 2.69 tpy PM_{10} emission reduction

1,076,926 X 0.0006 X 1/2000 = 0.32 tpy SO_2 emission reduction

1,076,926 X 0.399 X 1/2000 = 214.71 tpy NO_X emission reduction

1,076,926 X 0.0014 X 1/2000 = 0.75 tpy VOC emission reduction

1,076,926 X 0.04 X 1/2000 = 21.5 tpy CO emission reduction

EMISSION REDUCTION SUMMARY for SHUTDOWN of BLOOMING MILL (tons/year)

	PM_{10}	SO_2	NO_X	CO	VOC
Soaking Pit - General	0.66	0.013	2.21	0.44	0.12
Blooming Mill	0.027	0.005	0.90	0.18	0.05
Soaking Pits	2.69	0.32	214.71	21.5	0.75
Total	3.377	0.338	217.82	22.12	0.92

SHUTDOWN BATCH ANNEALING - DECEMBER, 1991

1990 Natural Gas Usage 118,612 MMBtu (< 10 MMBtu/hr)

118,612 X 0.003 X 1/2000 = 0.18 tpy PM_{10} emission reduction

118,612 X 0.0006 X 1/2000 = 0.036 tpy SO_2 emission reduction

118,612 X 0.147[2] X 1/2000 = 8.72 tpy NO_X emission reduction

118,612 X 0.0053 X 1/2000 = 0.31 tpy VOC emission reduction

118,612 X 0.02 X 1/2000 = 1.19 tpy CO emission reduction

[2] Based on the "ACT for NO_X Emissions from Iron and Steel Mills".

NO. 8 GALVANIZING LINE

Furnace

54.6 MMBtu/hr - natural gas fired

Pollutant	*Emission Factor/Source (lb/MMBtu)*	*Heat Input (MMBtu/hr)*	*Annual Emissions (tpy)*
NO_X	0.0378/Vendor Guarantee	54.6	9.04
TSP	0.003/AP-42	54.6	0.72
PM_{10}	0.003/AP-42	54.6	0.72
VOM	0.0028/AP-42	54.6	0.67
CO	0.035/AP-42	54.6	8.37
SO_2	0.0006/AP-42	54.6	0.14

Fume Scrubber

10,000 cfm

Pollutant	*Emission Factor (lb/hr)/Source*	*Annual Emissions (tpy)*
TSP	0.24/Vendor Guarantee	1.05
PM_{10}	0.24/ Vendor Guarantee	1.05

5 Space Heaters

3,440,000 Btu/hr per heater - natural gas fired
1,019 Btu/ft^3 (1993 emission inventory)
5 * 3,440,000 Btu/hr / (1,019 Btu/ft^3) = 16,879.3 ft^3/hr total natural gas consumption, 5 heaters

Pollutant	*Emission Factor(lb/MMft^3) AIRS-1-05-001-6*	*Heat Input (MMBtu/hr)*	*Annual Emissions (tpy)*
NO_X	100.0	16,879.3	7.39
TSP	3.0	16,879.3	0.22
PM_{10}	3.0	16,879.3	0.22
VOM	5.3	16,879.3	0.39
CO	20.0	16,879.3	1.48
SO_2	0.6	16,879.3	0.04

11 Galvanize Line Related Heaters

Heaters associated with the following galvanizing processes are to be installed as part of the No. 8 Galvanize Line Project:

Equipment	*Maximum Natural Gas Use (CFH)*
Entry Strip Dryer	2,078
Quench Strip Dryer	1,419
Chem. Treat Strip Dryer	1,370
Pre-clean Recirc. Tank	2,944
Electrolytic Recirc. Tank #1	2,748
Electrolytic Recirc. Tank #2	2,500
Hot Water Rinse Tank	883
Hot Water Make-up Tank	6,869
Chimical Treat Recirc. Tank	491
Chemical Treat Mix Tank	491
Roll Rig Preheaters	102
Total	21,895

Pollutant	*Emission Factor(lb/MMft^3) AIRS-1-05-001-6*	*Heat Input (MMBtu/hr)*	*Annual Emissions (tpy)*
NO_X	100.0	21,895	9.60
TSP	3.0	21,895	0.29
PM_{10}	3.0	21,895	0.29
VOM	5.3	21,895	0.51
CO	20.0	21,895	1.92
SO_2	0.6	21,895	0.06

Kettle Melting

32,000 tons product per month
0.1 tons Zn per ton product

32,000 tons product/month * 0.1 tons Zn/ton product * 0.1 lbs TSP/ton Zn * 12 months / 2000 lbs /ton = 1.92 tons TSP
1.92 tons TSP * 0.92 = 1.77 tons PM_{10}

Pollutant	*Emission Factor (lb/ton Zn)/Source*	*Annual Emissions (tpy)*
TSP	0.1/AP-42	1.92
PM_{10}	0.092/AP-42	1.77

TOTAL EMISSIONS ASSOCIATED WITH NO. 8 GALVANIZE LINE PROJECT

Pollutant	*Annual Emissions (tpy)*
NO_X	26.03
TSP	4.20
PM_{10}	4.05
VOM	1.56
CO	11.77
SO_2	0.25

INSTALLATION OF NESHAP CONTROLS AT COKE BY-PRODUCT PLANT

VOC Emissions Reduction at Coke By-Product Plant after Installation of NESHAPS Controls

It was reported, in Attachment 2 of the October 8, 1991 submittal of additional information in application for modification of Operating Permits for the Granite City Division Emission Reduction Plant Production Increase Project, that the installation of benzene emission controls (NESHAPS) at the Coke By-Product Recovery Plant would provide a reduction of 31.6 TPY VOC other than benzene. The following is a demonstration of the derivation of that VOC emission reduction.

All calculations are based on 1990 coke production of 577,473 tons.

Emission factors are taken from the publication EPA-450/3-83-016a, "Benzene Emissions from Coke By-Product Recovery Plants - Background Information for Proposed Standards." The NESHAPS emission factors contained in this publication are for benzene only. The emissions of other light oil (L.O.) constituents were calculated by taking the ratio of the mole fraction of each L.O. constituent (liquid) times the vapor pressure of that constituent to the mole fraction of benzene (liquid) times the vapor pressure of benzene, then multiplying that ration by the calculated benzene emissions. It is assumed that all emissions are vapors and that the vapors are in equilibrium with the liquid light oil.

Sample calculation:

For the direct water cooling tower, benzene emissions are calculated as follows:

$$(577{,}473 \text{ tons coke}) \times \frac{2000 \text{ lb.}}{\text{ton}} \times \frac{454 \text{g}}{\text{lb.}} \times \frac{1 \text{ Mg}}{10^6 \text{g}} = 524{,}346 \text{ Mg coke}$$

$$\frac{524{,}346 \text{ Mg coke}}{\text{yr.}} \times \frac{270 \text{g}}{\text{Mg}} \times \frac{1 \text{ lb.}}{454 \text{g}} = 311{,}836 \text{ lb./year}$$

where 270g/Mg = uncontrolled benzene emission factor from Table 3 - 7, attached.

From the Light Oil Constituents table, attached,

Benzene: $y(P^*) = .71(96) = 68.16$

where .71 = benzene mole fraction
and 96 = benzene vapor pressure

Similarly,

Toluene: $y(P^*) = .159(30) = 4.77$

Exhibit
Page two

Hence, the toluene emissions, with no controls, from the direct water cooling tower are

$$\frac{4.77}{68.16} \text{ (311,836 lb/yr.)} = 21{,}823 \text{ lb. toluene/year}$$

Toluene emissions after installation of NESHAPS controls with 100% efficiency are

21,823 lb. toluene (100 - 100) = 0 lb. toluene/yr.

Emission of benzene, toluene, xylene, ethylbenzene and styrene are calculated, as above, for the various emission sources at the By-Product Plant and presented in the table Emissions of Light Oil Constituents after Installation of NESHAPS Controls at the Coke Oven By-Products Plant, attached.

The non-benzene emissions controlled by the NESHAPS project are then calculated, for each light oil constituent considered, by subtracting the total emissions after controls were applied at all sources from the total emissions prior to application of controls at all sources. These calculations are presented in the table entitled Non-Benzene Emissions Controlled by NESHAPS Project, attached.

Non-Benzene Emissions Controlled by NESHAPS Project

	Total Uncontrolled Emissions	-	Total Uncontrolled Emissions after NESHAPS Controls Installed	=				=	
Toluene	59,584	-	997	=	58,587 lbs.	x	1T / 2000	=	29.3 tons/yr.
Xylene	2,871	-	48	=	2,823 lbs.	x	1T / 2000	=	1.4 tons/yr.
Ethylbenzene	959	-	10	=	949 lbs.	x	1T / 2000	=	0.5 tons/yr.
Styrene	868	-	9	=	859 lbs.	x	1T / 2000	=	0.4 tons/yr.
									31.6 tons/yr.

SEP 13 '94 04:29PM GCS ENVIRONMENTAL

Emissions of Light Oil Constituents after Installation of NESHAPS Controls at the By-Product Plant

By-Product Source	Uncontrolled Benzene Factor (g Mg)	NESHAPS Control	NESHAPS Control Effiency %	Benzene (lb./yr.) A°	Benzene (lb./yr.) B⁻	Toluene (lb./yr.) A	Toluene (lb./yr.) B	Xylene (lb./yr.) A	Xylene (lb./yr.) B	Ethylbenzene (lb./yr.) A	Ethylbenzene (lb./yr.) B	Styrene (lb./yr.) A	Styrene (lb./yr.) B
Direct Water Cooling Tower	270	Tar Spray Final Cooler	100	311,836	0	21,823	0	1,050	0	351	0	317	0
Light Oil Condenser Vent	89	Gas Blanket	98	102,790	2,056	7,193	144	346	7	116	2	105	2
Naphthalene Separator	87	Tar Spray	100	100,480	0	7,032	0	339	0	113	0	102	0
Naphthalene Processing	20	Tar Spray	100	23,099	0	1,617	0	78	0	26	0	23	0
Tar-Intercepting Sump	95	Gas Blanket	98	109,720	2,194	7,678	154	370	7	124	3	112	2
Tar Dewatering	21	Steam Blanket	98	24,254	485	1,697	34	82	2	27	1	25	1
Tar Decanter	77	Steam Blanket	98	88,931	1,779	6,224	125	300	6	100	2	90	2
Tar Storage	12	Steam Blanket	98	13,859	277	970	19	47	1	16	0	14	0
Light Oil Sump	15	Gas Blanket	98	17,324	347	1,212	24	58	1	20	0	18	0
Light Oil Storage	5.8	Gas Blanket	98	6,699	134	469	9	23	1	8	0	7	0
BTX Storage (ILO)	5.8	Gas Blanket	98	6,699	134	469	9	23	1	8	0	7	0
Leaks	14	Manual Detection	88	16,169	1,940	1,132	136	55	7	18	2	16	2
Flushing Liquor Circulation Tank	9	Steam Blanket	98	10,395	208	727	15	35	1	11	0	11	0
Excess Ammonia Liquor Tank	9	Steam Blanket	98	10,395	208	727	15	35	1	11	0	11	0
Wash Oil Decanter	3.8	Uncontrolled	0	4,389	4,389	307	307	15	15	5	0	5	0
Wash Oil Circulating Tank	3.8	Gas Blanket	98	4,389	88	307	6	15	0	5	0	5	0
				851,428	14,239	59,584	997	2,871	48	959	10	868	0

A° Uncontrolled emissions

B⁻ Emissions after NESHAPS controls installed

SEP 13 '94 04:29PM GCS ENVIRONMENTAL

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LIGHT OIL CONSTITUENTS

Chemical	Weight fraction (X)	MW	$\frac{X}{MW}$	Mole fraction (y)	P° at 25°C
enzene	.5925	78.11	.0076	.710	96 mm Hg
oluene	.1598	92.13	.0017	.159	30
ylene (mixed)	.0336	106.16	.0003	.028	8.2
ylbenzene	.0100	106.16	.00009	.008	9.6
rene	.0136	104.14	.0001	.009	7.7
hthalene	.005	128.16	.00004	.004	<1
bon disulfide	.003	76.14	.00004	.004	366
marin	.0367	118.13	.00031	.029	100
lohexane	.0009	84.16	.00001	.001	98
lohexene	.0276	82.14	.00034	.032	100
lopentadiene	.0064	66.10	.00009	.008	600
lene	.0029	70.13	.00004	.004	654
tane	.0014	72.15	.00002	.002	533
ophene	.0024	84.13	.00003	.003	79
,5-trimethylbenzene	.0028	120.20	.00002	.002	7.0
,3-trimethylbenzene	.0130	120.20	.0001	.002	6.8

$\Sigma \frac{X}{MW} = .01071$

* Benzene, toluene, and xylene weight fractions were the average of two analysis OM of light oil samples: Environmetrics on March 1, 1991, and by Doug Stracke of Granite City Steel on March 24, 1985.

Average molecules weight of light oil = ΣyM = 84.47
Average vapor pressure of light oil = ΣyP = 89.67

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Benzene Emissions from Coke By-Product Recovery Plants - Background Information for Proposed Standards

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TABLE 3-7. UNCONTROLLED BENZENE EMISSION FACTORS FOR COKE BY-PRODUCT PLANTS

Source	Emission factor (g benzene/Mg coke)	Industry emissions (Mg/yr)[36]
Cooling tower		
Direct-water	270	6,340
Tar-bottom	70	1,090
Light-oil condenser vent	89	4,080
Naphthalene separation	87	2,040
Naphthalene processing	20	470
Tar-intercepting sump	95	5,360
Tar dewatering	21	1,090
Tar decanter	77	4,350
Tar storage	12	680
Light-oil sump	15	780
Light-oil storage	5.8	300
BTX storage	5.8	80
Benzene storage	5.8	80
Flushing-liquor circulation tank	9	510
Excess-ammonia liquor tank	9	510
Wash-oil decanter	3.8	180
Wash-oil circulation tank	3.8	180
Pump seals	a	600
Valves	a	400
Pressure-relief devices	a	270
Exhausters	a	30
Sample connections	a	50
Open-ended lines	a	20
Total (rounded)		29,000

[a] Emissions were estimated on the basis of number of potentially leaking units. Emission factors are listed in Table 3-6.

APPENDIX F

FUGITIVE PARTICULATE EMISSIONS

EMISSION CALCULATIONS

Fugitive particulate emissions from paved and unpaved roads were calculated based on information provided in "Granite City Area PM-10 Emission Inventory", MRI Final Report, 1988, and the 1991 PM_{10} SIP developed by the Illinois Environmental Protection Agency.

Based on information in these sources, fugitive particulate inventories were developed for three scenarios:

- Initial Uncontrolled Emissions - These are uncontrolled emission estimates taken from the 1988 MRI report.
- Projected Initial Uncontrolled Emissions - These emission estimates reflect uncontrolled emissions reported in the 1988 MRI document scaled up by a factor related to the requested production increase. That factor is derived by dividing the requested production level by the base period production level. The factor applied is dependent on the potential increase in activity on each specific road segment. A factor of one was used for those areas where activity is not a function of production level. A factor of 1.1 was used in those areas where some increase in activity may occur, but that increase is expected to be minor.
- Projected Controlled Emissions - These estimates start with the Projected Initial Uncontrolled Emissions and are then reduced to reflect the fugitive emission control program that will be in effect with the production increase.

EMISSION CONTROL PROGRAM

Table F-1 presents intitial uncontrolled, projected uncontrolled, and projected controlled emissions.

Projected controlled emissions reflect an extensive fugitive dust control program. As a part of this application, Granite City Steel is committing to a fugitive emission control program that adds to the commitments that were implemented earlier. The resulting control program is outlined below in **Table F-2.**

MATERIALS HANDLING

Uncontrolled and controlled emissions from materials handling activities that will be affected by the production increase were estimated using the same sources previously cited. These estimates are presented in **Table F-3**.

SUMMARY

Fugitive emissions ard credits are summarized on **Table F-4**.

TABLE F-1

Granite City Division of National Steel Company
Projected PM-10 Emissions - Roads

Area	Segment ***	Initial Uncontrolled Emissions * (TPY)	Production Increase Factor	Projected Initial Uncontrolled Emissions **	Control Efficiency for Projected Emissions (%) *	Projected Controlled Emissions ***
South Plant	A ****	26.09	1.00	26.09	95.00%	1.30
	B	9.91	1.00	9.91	98.00%	0.20
	C	7.46	1.00	7.46	98.00%	0.15
Steelworks	D****	45.72	1.48	67.80	98.00%	1.36
	K ****	6.23	1.48	9.24	98.00%	0.18
	M ****	7.39	1.48	10.96	98.00%	0.22
	E	8.79	1.00	8.79	98.00%	0.18
	F ****	148.15	1.48	219.71	98.84%	2.55
	G ****	3.96	1.48	5.87	96.24%	0.22
	H [2]	11.24	1.00	11.24	97.80%	0.24
	J	8.10	1.00	8.10	98.00%	0.16
	L	161.37	1.48	239.31	98.00%	4.79
	R ****	2.57	1.48	3.81	98.00%	0.08
BOF	O ****	37.61	1.48	55.78	98.00%	1.12
	N	27.75	1.48	41.15	98.00%	0.82
	P [2]	28.44	1.48	42.18	99.30%	0.30
Furnace	V [2]	65.65	1.10	72.22	99.50%	0.36
	W ****	6.59	1.10	7.25	96.54%	0.25
	X ****	238.15	1.54	366.04	97.52%	9.08
	Y	11.08	1.00	11.06	98.00%	0.22
	Z [1]	43.70	1.54	67.17	99.67%	0.22
North Plant	S ****	17.84	1.00	17.84	95.00%	0.89
	T ****	21.09	1.00	21.09	95.00%	1.05
Area	D-D [2]	41.87	1.54	64.35	98.98%	0.66
	E-E [2]	1.69	1.54	2.60	97.87%	0.06
	F-F	1.53	1.54	2.35	98.00%	0.05
	CS(1) ****	13.57	1.00	13.57	98.00%	0.27
	CS(2)	8.49	1.00	8.49	98.00%	0.17
	G-G	5.81	1.00	5.81	95.00%	0.29
	Total:	1,017.82		1,427.23		27.42

* Based on IEPA PM10 SIP
** Base case emissions times production increase factor
*** Unpaved roads paved as per proposed schedule.
**** Paved Road.
[1] Road 72% paved. The remaining 28% will be paved prior to the production increase.
[2] Road to be paved prior to production increase.

TABLE F-2
GRANITE CITY DIVISION of NATIONAL STEEL
FUGITIVE PARTICULATE EMISSION CONTROL PROGRAM for REQUESTED PRODUCTION INCREASE

AREA	SEGMENT	SURFACE	CONTROL
South Plant	A	Paved	Sweep or Flush once per month
	B	Unpaved	Spray three times per month
	C	Unpaved	Spray three times per month
Steelworks	D	Paved	Sweep or flush daily
	K	Paved	Sweep or flush daily
	M	Paved	Sweep or flush daily
	E	Unpaved	Spray three times per month
	F	Paved	Sweep or flush daily
	G	Paved	Sweep or flush daily
	H *	Paved	Sweep or flush once per month
	J	Paved	Sweep or flush daily
	L	Unpaved	Spray four times per month
	R	Paved	Sweep or flush daily
BOF	O	Paved	Sweep or flush daily
	N	Unpaved	Spray three times per month
	P *	Paved	Sweep or flush five days per week
Blast Furnace	V *	Paved	Sweep or flush five days per week
	W	Paved	Sweep or flush five days per week
	X	Paved	Sweep or flush five days per week
	Y	Unpaved	Spray three times per month
	Z *	Paved	Sweep or flush five days per week
North Plant	S	Paved	Sweep or flush every other day
	T	Paved	Sweep or flush every other day
Area	D-D *	Paved	Sweep or flush five days per week
	E-E *	Paved	Sweep or flush five days per week
	F-F	Unpaved	Spray three times per month
	CS(1)	Paved	Sweep or flush five days per week
	CS(2)	Unpaved	Spray three times per month
	G-G	Unpaved	Spray quarterly

* Sprayed four times per month as of production increase; paved by July 31, 1996.

TABLE F-3

Granite City Division of Nation Steel

Base Case PM10 Emissions and Contemporaneous Emissions Reductions - Materials Handling

Material			Control * Efficiency		Production Increase			Production Increase Related
	TPY (1)	TPY		TPY		TPY	TPY	TPY
Coke	7.45	7.45	90%	0.64	1.54	0.98	(6.47)	0.34
Coke Breeze	0.01	0.01	90%	0.00	1.54	0.00	(0.01)	0.00
Pellets	7.84	7.84	90%	0.67	1.54	1.03	(6.81)	0.36
Limestone	1.88	1.88	90%	0.16	1.54	0.25	(1.63)	0.09
	17.18	**17.18**		**1.47**		**2.26**	**(14.92)**	0.79

*** Based on IEPA PM10 SIP**

**** Reductions based Contemporaneous Controls**

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TABLE F-4
FUGITIVE EMISSION SUMMARY
Granite City Division of National Steel

IEPA Fugitive PM10 SIP Control Requirement for GCS			61.68	tons / year
PM10 Emissions from Roads	27.42	tons / year		
PM10 Emissions from Materials Handling	2.26	tons / year		
Total Fugitive PM10 Emissions After Production Increase			29.68	tons / year
Excess Fugitive PM10 Reduction (Credit)			32.00	tons / year

R011289

Appendix C – Air Quality Modeling Report

CARBON MONOXIDE AIR DISPERSION MODELING FOR A PREVENTION OF SIGNIFICANT DETERIORATION AND CONSTRUCTION PERMIT REVISION FOR UNITED STATES STEEL GRANITE CITY WORKS

Prepared for:
United States Steel Corporation
Granite City Works
20th and State Streets
Granite City, IL 62040

Prepared by:
RTP Environmental Associates, Inc.
304A West Millbrook Road
Raleigh, North Carolina 27609

October 2022

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1.0 INTRODUCTION

This document presents the results of the air quality dispersion modeling analysis conducted for the United States Steel Corporation, Granite City Works ("US Steel") iron and steel making facility in Granite City, Illinois. The analysis has been conducted by RTP Environmental Associates, Inc. ("RTP Environmental") on behalf of US Steel.

The analysis evaluated the emissions of the criteria pollutant carbon monoxide ("CO") as regulated under the applicable provisions of the Prevention of Significant Deterioration ("PSD") regulations of 40 CFR § 52.21, incorporated by reference in the federally approved Illinois State Implementation Plan at 40 CFR § 52.738(b).[1] The criteria pollutant analysis was conducted to ensure that the proposed revisions to the CO emission limitations in the Prevention of Significant Deterioration ("PSD") and Construction Permit (Permit Number 95010001) ("1996 Construction Permit") do not cause or contribute to violation of a National Ambient Air Quality Standard (NAAQS).

As required by 40 CFR § 52.21(l), the analysis conforms with the modeling procedures outlined in the Guideline on Air Quality Models[1] promulgated by United States Environmental Protection Agency ("USEPA") (the "Guideline" or "Appendix W"). It also conforms to the Illinois Environmental Protection Agency's (IEPA) Prevention of Significant Deterioration Modeling Guidance[2], the modeling protocol submitted to the IEPA on February 3, 2020, and associated USEPA modeling policy and guidance.

[1] All citations to the PSD regulations herein are to the currently applicable provisions of 40 CFR § 52.21. The analysis also is designed to satisfy the parallel requirements of the currently pending Illinois PSD rule, 35 Ill. Adm. Code Part 204.

2.0 PROJECT DESCRIPTION

The 1996 Construction Permit authorized National Steel to increase iron and steel production limitations for the blast furnaces and basic oxygen furnace ("BOF") shop at the existing integrated iron and steel manufacturing facility in Granite City, in Madison County, Illinois. US Steel purchased the assets of National Steel in 2003, including Granite City Works. US Steel is proposing revisions to the 1996 Construction Permit that involve increases in the CO emission limitations that were established per the PSD requirements. Therefore, the proposed increases in the CO rates were evaluated for PSD requirements including compliance with the NAAQS for CO. No physical changes are proposed in conjunction with the requested revisions to the 1996 Construction Permit.

3.0 FACILITY AND SITE DESCRIPTION

The US Steel Granite City Works produces high-quality hot-rolled, cold-rolled and coated sheet steel products to customers in the construction, container, piping and tubing, service center, and automotive industries. Granite City Works has an annual raw steelmaking capability of 3.58 million net tons.

The facility occupies approximately 400 acres and is located approximately 12 miles east of Lambert, St. Louis International Airport. The approximate Universal Transverse Mercator (UTM) coordinates of the facility are 749,000m East and 4,287,000m North (NAD83, Zone 15). Figure 1 shows the general location of the facility. Figure 2 shows the specific facility location on a 7.5-minute U.S. Geological Survey ("USGS") topographic map.

The US Steel facility is classified under the regulations governing PSD and Title V as a major source. The area of Madison County where US Steel facility is located is classified as attainment or unclassifiable for all regulated pollutants except ozone. St. Louis is classified as marginal nonattainment for the 2015 8-hour ozone standard.

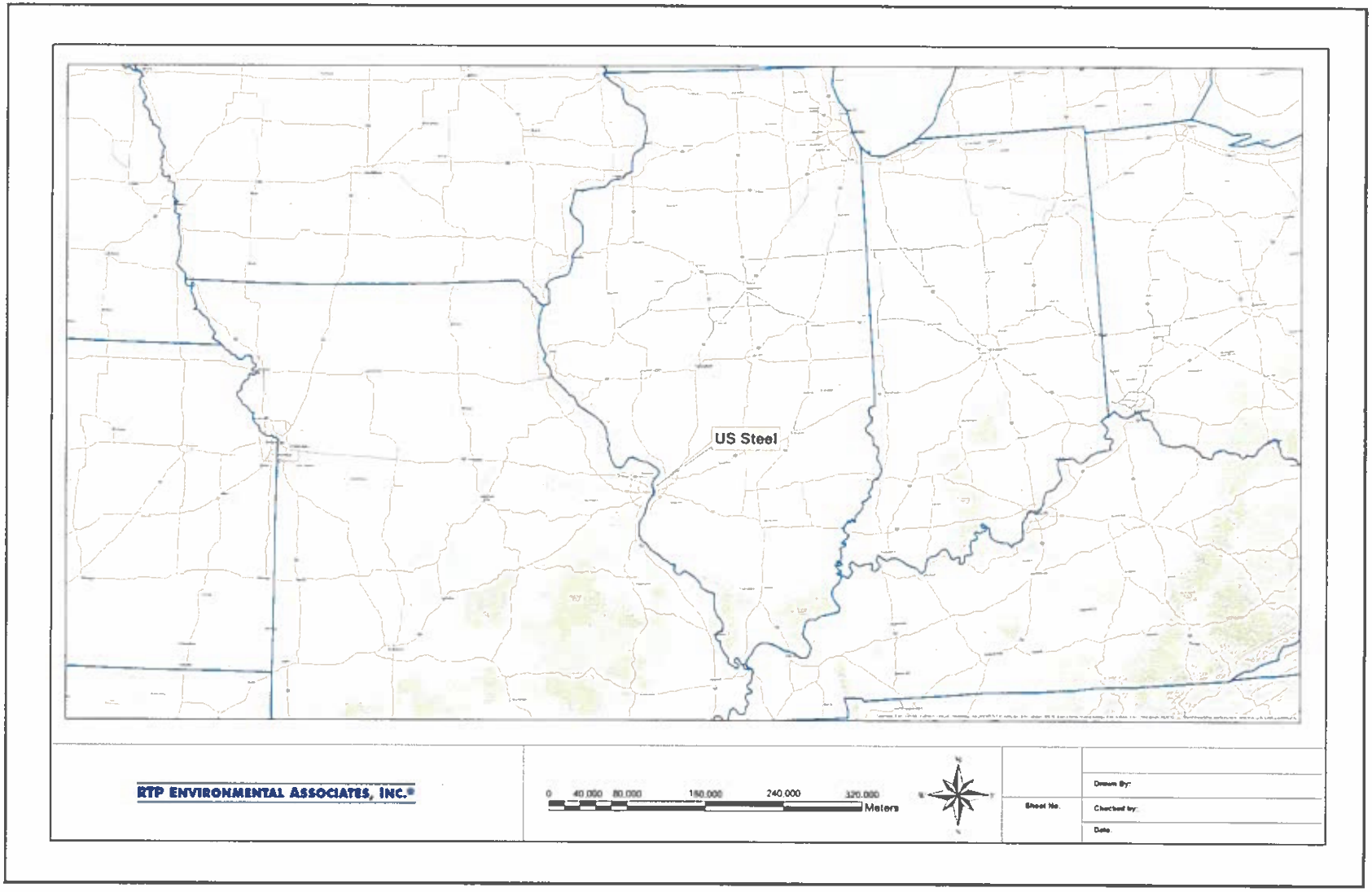

Figure 1. General Location of the US Steel Granite City Works

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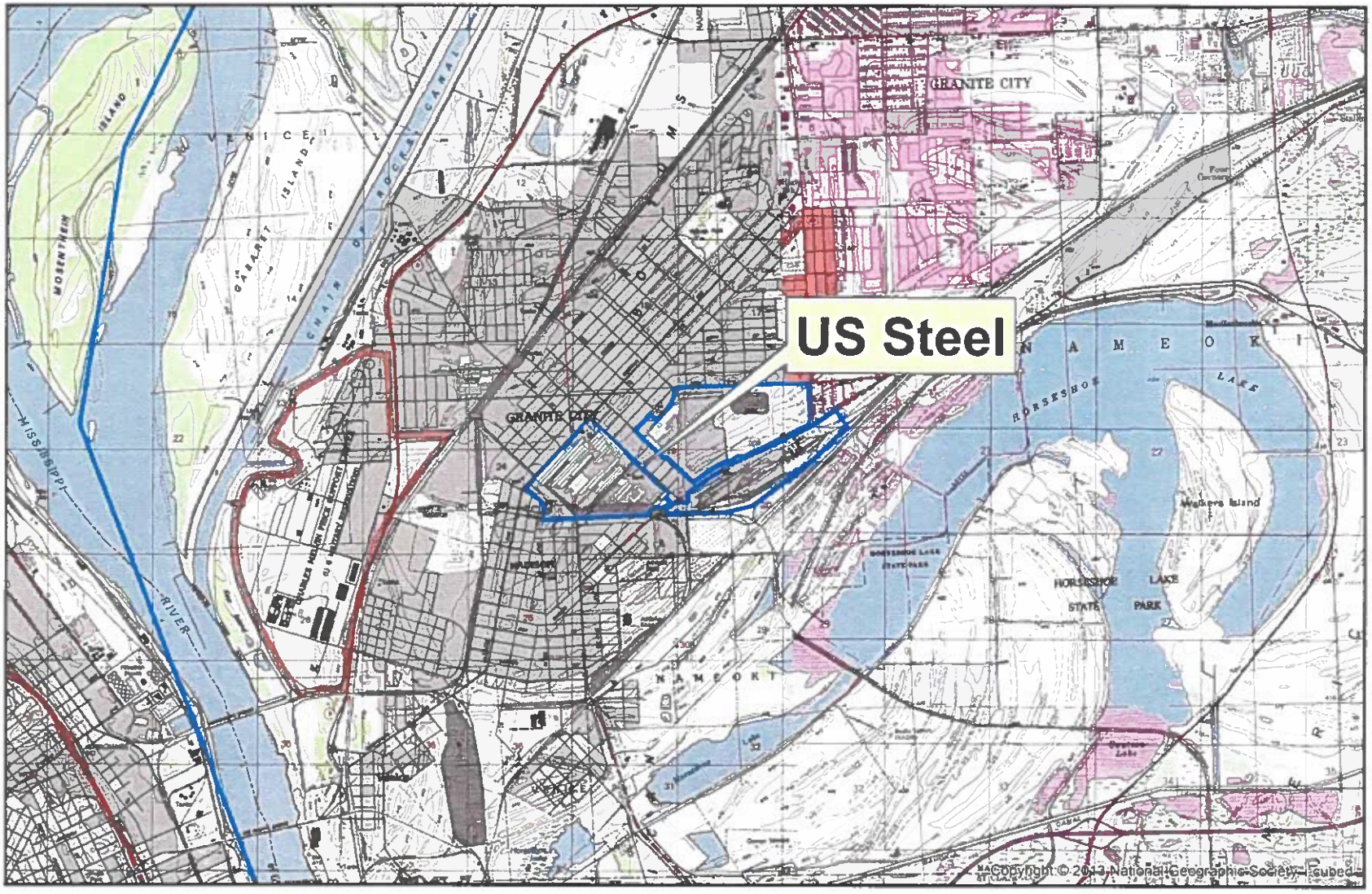

Figure 2. Specific Location of US Steel Granite City Works

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4.0 MODEL SELECTION AND MODEL INPUT

4.1 Model Selection

The latest version of the AMS/EPA Regulatory Model (AERMOD, Version 22112) was used to conduct the dispersion modeling analysis. AERMOD is a Gaussian plume dispersion model that is based on planetary boundary layer principals for characterizing atmospheric stability. The model evaluates the non-Gaussian vertical behavior of plumes during convective conditions with the probability density function and the superposition of several Gaussian plumes. AERMOD is a modeling system with three components: AERMAP is the terrain preprocessor program, AERMET is the meteorological data preprocessor and AERMOD includes the dispersion modeling algorithms.

AERMOD is the required default model for calculating ambient concentrations near the US Steel facility based on the model's ability to incorporate multiple sources and source types. The model can also account for convective updrafts and downdrafts and meteorological data throughout the plume depth. The model also provides parameters required for use with up to date planetary boundary layer parameterization. The model also has the ability to incorporate building wake effects and to calculate concentrations within the cavity recirculation zone. All model options were selected as recommended in the USEPA Guideline on Air Quality Models.

Oris Solution's BEEST Graphical User Interface ("GUI") was used to run AERMOD. The GUI uses an altered version of the AERMOD code to allow for flexibility in the file naming convention. The dispersion algorithms of AERMOD are not altered. Therefore, a model equivalency evaluation pursuant to Section 3.2 of 40 CFR 51, Appendix W was not warranted.

4.2 Model Control Options and Land Use

AERMOD was run in the regulatory default mode for all pollutants with the default rural dispersion coefficients. These coefficients were used by the Illinois Environmental

Protection Agency ("IEPA") in its evaluation of the facility as part of the 1-hr sulfur dioxide ("SO2") Data Requirements Rule ("DRR").

4.3 Source Data

The modeling input data and modeled CO emission rates can be found in Appendix A of this report.

Source Characterization

The majority of modeled source input parameters were obtained from the IEPA's model conducted for the Data Requirements Rule ("DRR").

Point Sources

Most emission sources at the site vent to stacks with a well defined opening. These sources were modeled as point sources in AERMOD. Several other types of sources such as fugitive emissions also required evaluation.

Fugitive Emissions

Fugitive emissions are those that are not emitted from a well defined opening. These sources were modeled as volume sources. The initial dispersion coefficients (sigma y and sigma z) were provided by the IEPA and were calculated based upon the dimensions of the area of release and the equations contained in Table 3-1 of the AERMOD User's Guide.

Flares

The facility uses blast furnace gas flares to combust excess process gas. Emissions that occur only during periods of malfunction are not required to be modeled per 40 CFR Part 51 Appendix W. Non-malfunction emissions were modeled using the procedures outlined in the AERSCREEN Manual[3]. The effective stack height (H, in meters) was computed by the IEPA as a function of heat release rate according to the following equation, where Q is the heat release rate of the flare stack in caloriesper second:

$$H_{equivalent} = H_{actual} + 4.56x10^{-3} \times Q^{0.478}$$

The effective flare stack diameter (d, in meters) was computed as a function of heat release rate according to the following equation, where Q is the heat release rate of the flare in calories per second:

$$d_{equivalent} = 9.88x10^{-4} \times (Q \times 0.45)^{0.5}$$

An exit temperature of 1273K and velocity of 20 m/sec is assumed.

All source locations were based upon a NAD83, UTM Zone 15 projection.

Good Engineering Practice Stack Height Analysis

A Good Engineering Practice ("GEP") stack height evaluation was conducted to determine appropriate building dimensions to include in the model and to calculate the GEP formula stack height used to justify stack height credit for any stacks n excess of 65m. Procedures used are in accordance with those described in the USEPA Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations-Revised)[4]. GEP formula stack height, as defined in 40 CFR 51, is expressed as GEP = H_b + 1.5L, where H_b is the building height and L is the lesser of the building height or maximum projected width. Building/structure locations were determined from a facility plot plan. The structure locations and heights were obtained from the IEPA and were input to the USEPA's Building Profile Input Program (BPIP-PRIME) computer program to calculate the direction-specific building dimensions needed for AERMOD. The structures included in the GEP analysis are shown as the green blocks in Figure 3. All stacks and structures that are located near a stack were included in the BPIP runs.

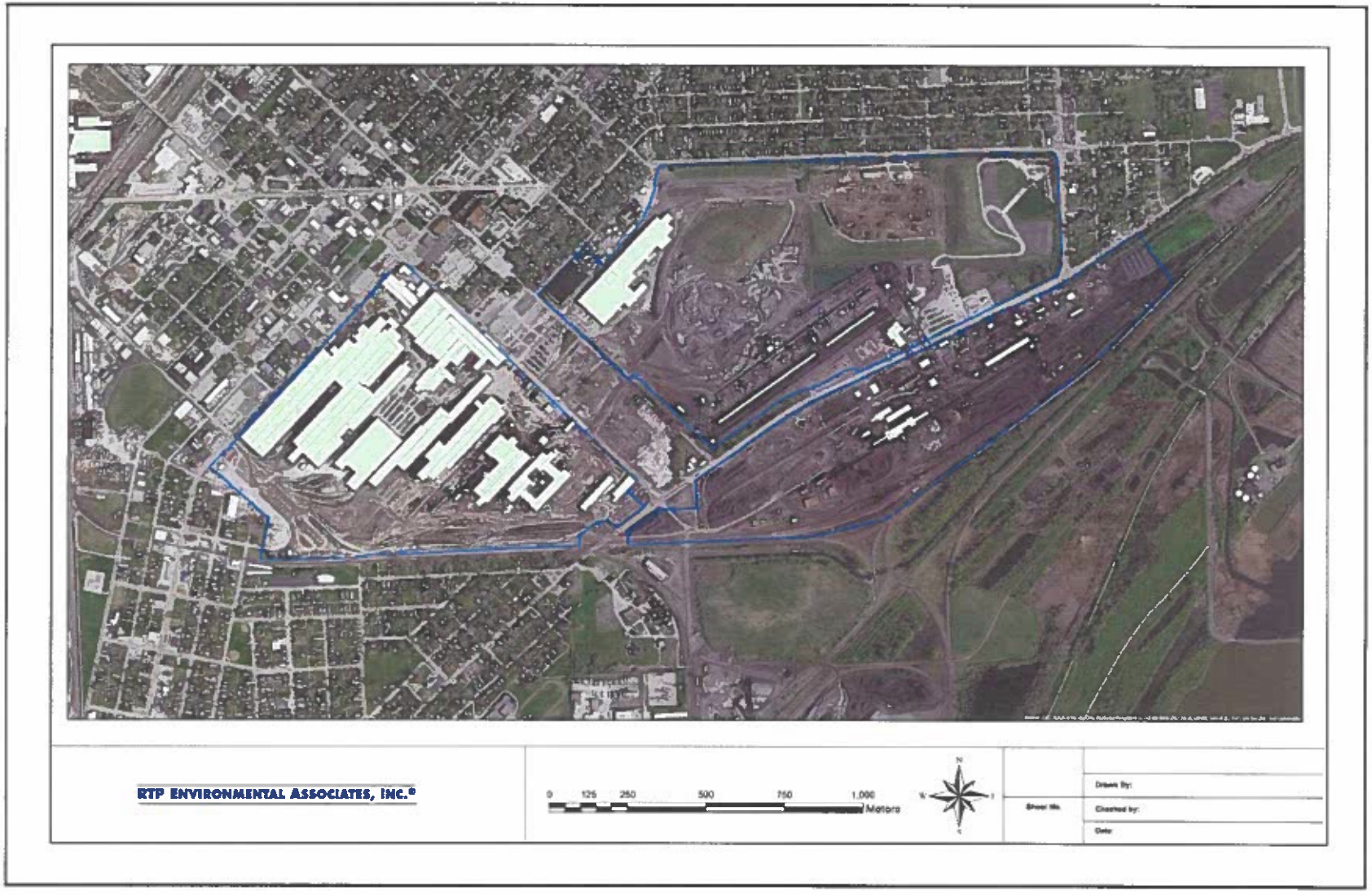

Figure 3. Structures Included in the US Steel GEP Analysis

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4.4 Monitored Background Data

Ambient, background pollutant concentrations are needed to establish a representative background concentration to complete the NAAQS portion of the *Source Impact Analysis* of 40 CFR § 52.21(k). The background concentrations are added to the modeled concentrations to assess NAAQS compliance. Ambient pollutant concentrations are also needed to fulfill the *Air Quality Analysis* requirement of 40 CFR § 52.21(m), as discussed in Section 5.0herein.

Pursuant to 40 CFR § 52.21(i)(5), requirements for ambient monitoring data may be waived by the permitting authority if projected increases in ambient concentrations due to the project are less than the Significant Monitoring Concentrations. However, in light of the decision of the D.C. Circuit Court of Appeals *Sierra Club v. EPA*,[5] US Steel has elected not to request such a waiver at this time.

The USEPA Monitoring Guidelines[6], other USEPA interpretive guidance, and USEPA administrative decisions clarify that representative, existing air quality monitoring data may be used to fulfill the PSD pre-construction monitoring requirements and establish background concentrations needed for assessing NAAQS compliance, in lieu of monitoring data. USEPA's Monitoring Guidelines suggest specific criteria to determine representativeness of off-site data: *quality of the data, currentness of the data, and monitor location*.

There are many existing ambient CO monitors within 100 miles in the facility (Figure 4). Existing monitoring data have been evaluated in relation to the criteria provided in USEPA's Ambient Monitoring Guidelines as being representative of the US Steel site.

We have used recently available, quality assured data (2016-2018) from the AQS monitor in East St. Louis, IL (AQS Site # 17-163-0010). 2018 is the latest year of complete, available data. The 4th quarter of 2019 is incomplete and data are not

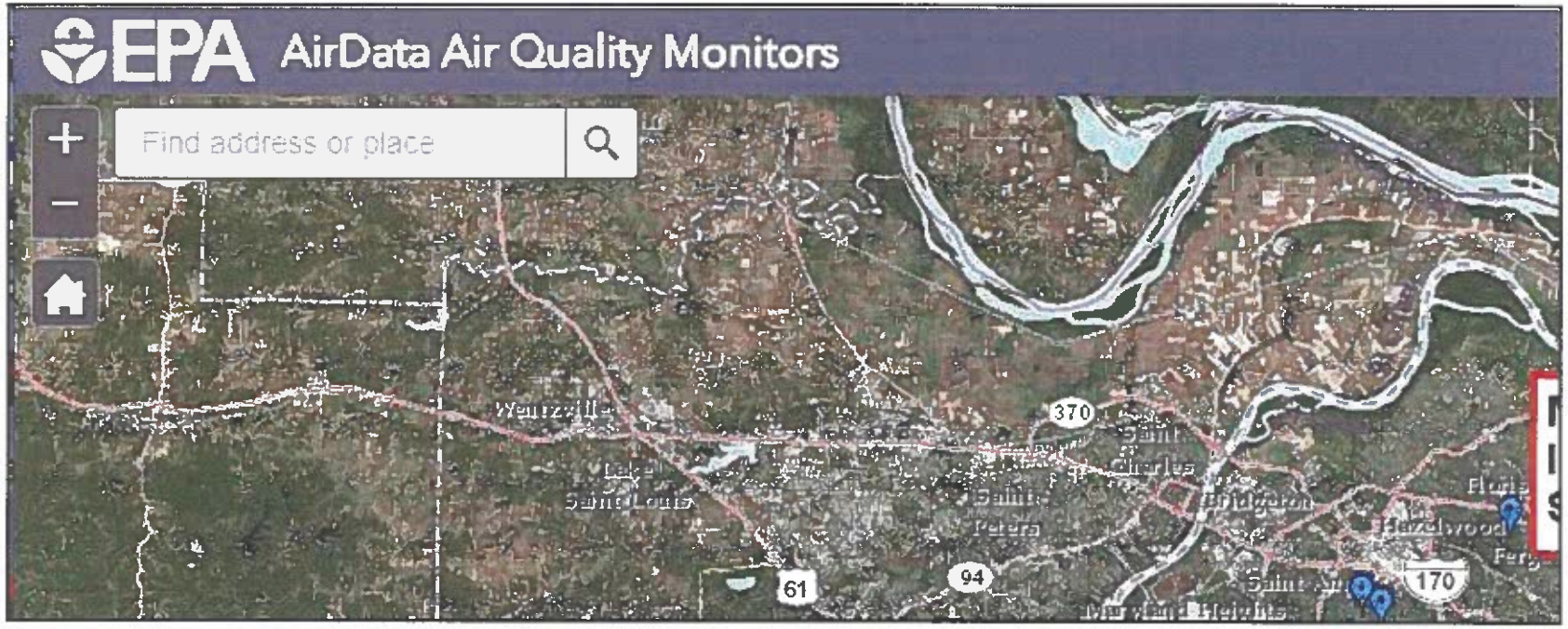

Figure 4. Ambient Air Quality Monitors in the Vicinity of the US Steel Facility

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available for 2020-2021. This monitor best represents background concentrations near the facility as it is the closest monitor with current CO data and is in the vicinity of the site and therefore representative of conditions as the site. The background data are presented in Table 1.

Table 1. Proposed Background Concentrations 2016-2018

Pollutant	Averaging Time	Design Value (ppb)[µg/m^3]	Basis	AQS Site No.
CO	1-hour	(2,200) [2,515]	Maximum	17-163-0010 St. Louis
	8-hour	(1,440) [1,646]		

The existing monitoring data satisfy the criteria provided in USEPA's Ambient Monitoring Guidelines[7] as being representative of the site.

Monitor Location

Of the monitors available, the East St. Louis monitor represents background concentrations as it is the closest monitor with data for the pollutants of concern that is not also significantly influenced by the localized source impacts.

Data Quality

The monitor data were collected and quality assured by the IEPA.

Currentness of Data

The data were collected during 2016-2018, which represents the recently available, quality assured data available for use in assessing compliance.

4.5 Receptor Data

Modeled receptors were placed in all areas considered as "ambient air" pursuant to 40 CFR 50.1(e). Ambient air is defined as that portion of the atmosphere, external to buildings, to which the general public has access. Approximately 14,100 receptors were used in the AERMOD significant impacts analysis. The receptor grid consisted of three cartesian grids and receptors located at 50m intervals along the facility fence line.

The first cartesian grid extended to approximately 3.0km from the facility in all directions. Receptors in this region were spaced at 100m intervals. The second grid extended to 7.5km. Receptor spacing in this region were 250m. A third grid extended to 15km with a spacing of 500m. The receptor grid was designed such that maximum facility impacts fall within the 100m spacing of receptors. The receptor grid spacing is presented in Table 2.

Table 2. Receptor Grid Spacing

Receptor Spacing (m)	Distance from Facility (m)
100	3,000
250	5,000
500	15,000

The US Steel facility is located in southern Illinois. Terrain within 10km of the site is generally flat. Receptor elevations and hill height scale factors were calculated with AERMAP (18081). The elevation data were obtained from the USGS one arc second National Elevation Data (NED) obtained from the USGS. Locations were based upon a NAD83, UTM Zone 15 projection. The near-field receptor grid is presented in Figure 5.

4.6 Meteorological Data

The 2016-2020, 5-year sequential hourly surface meteorological data from the National Weather Service (NWS) at St. Louis Lambert Field (WBAN No. 13994) and upper air data from the NWS station in Lincoln, IL (WBAN No. 04833) were used in the analysis. These data were processed into a "model-ready" format using AERMET version 21112.

The AERMET meteorological processor requires estimates of the following surface characteristics: surface roughness length, albedo, and Bowen ratio. The surface roughness length is related to the height of obstacles to the wind flow. It is the height above the surface where the average wind speed is zero. The smoother the surface, the lower the roughness length. The surface roughness length influences the surface shear stress and is an important factor in calculating mechanical turbulence and stability. The albedo is the fraction of the total incident solar radiation reflected by the surface back to space without absorption.

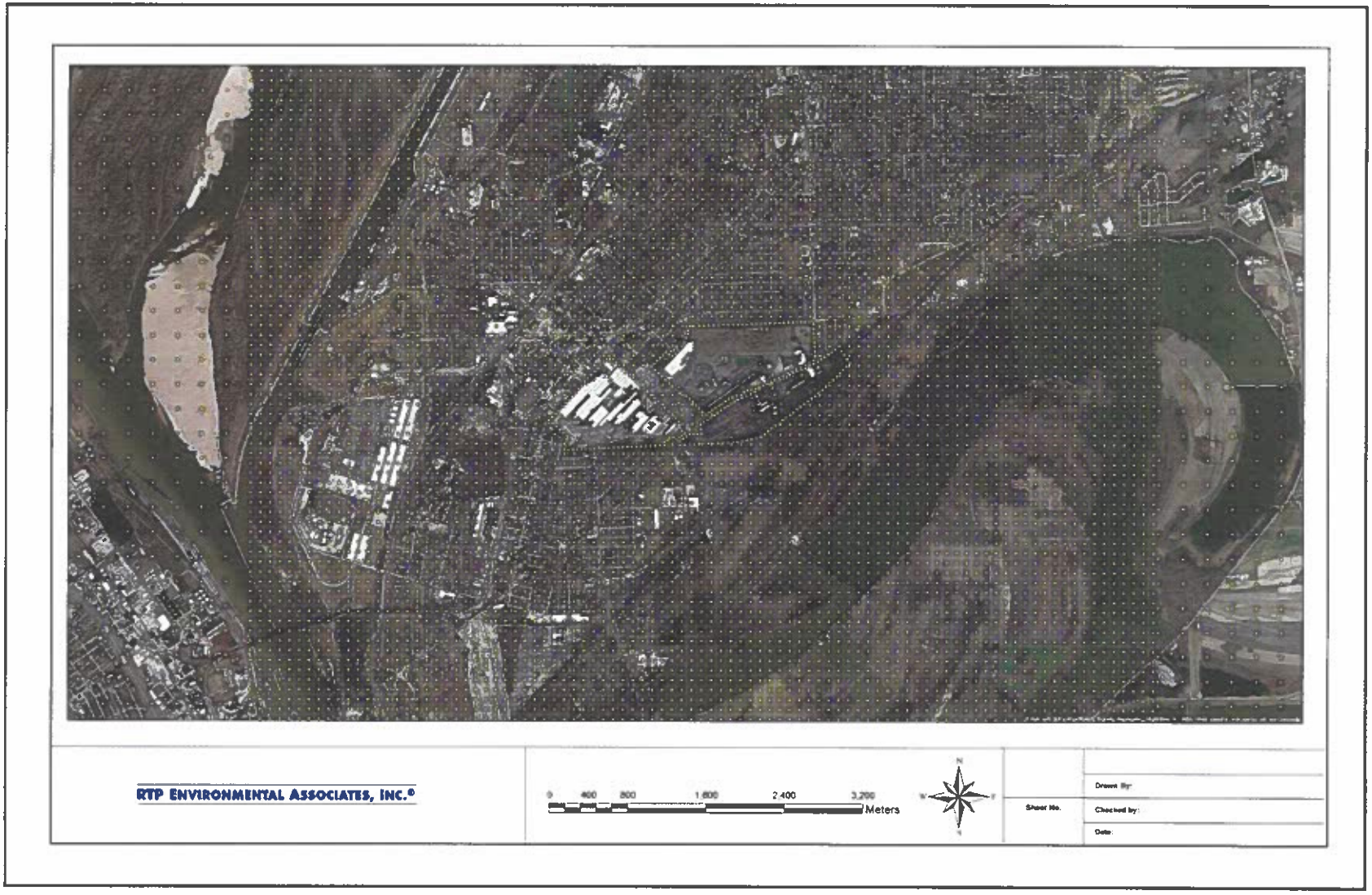

Figure 5. US Steel Facility Near-field Receptor Grid

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The Bowen ratio is an indicator of surface moisture and is the ratio of the sensible heat flux to the latent heat flux. The albedo and Bowen ratio are used for determining the planetary boundary layer parameters for convective conditions due to the surface sensible heat flux. Estimates of the surface characteristics were made by the IEPA using USEPA's AERSURFACE program (Version 13016) and provided to RTP Environmental. A 1km search radius was employed at the location of the meteorological tower. Twelve sectors of 30 degrees each and seasonal resolution were used in the AERSURFACE analysis. RTP employed the "ADJ_U*" option to allow for adjustments to the friction velocity under low wind speeds was employed.

The use of NWS meteorological data for dispersion modeling can often lead to a high incidence of calms and variable wind conditions if the data are collected by Automated Surface Observing Stations ("ASOS"), as are in use at most NWS stations since the mid-1990's. A calm wind is defined as a wind speed less than 3 knots and is assigned a value of 0 knots. In addition, variable wind observations may include wind speeds up to 6 knots, but the wind direction is reported as missing, if the wind direction varies more than 60 degrees during the 2-minute averaging period for the observation. The AERMOD model currently cannot simulate dispersion under calm or missing wind conditions. To reduce the number of calms and missing winds in the surface data, archived 1-minute winds for the ASOS stations were used to calculate hourly average wind speed and directions, which were used to supplement the standard archive of hourly observed winds processed in AERMET. The USEPA AERMINUTE program (Version 15272) was used for these calculations. A wind rose of the 5-year meteorological dataset is provided in Figure 6.

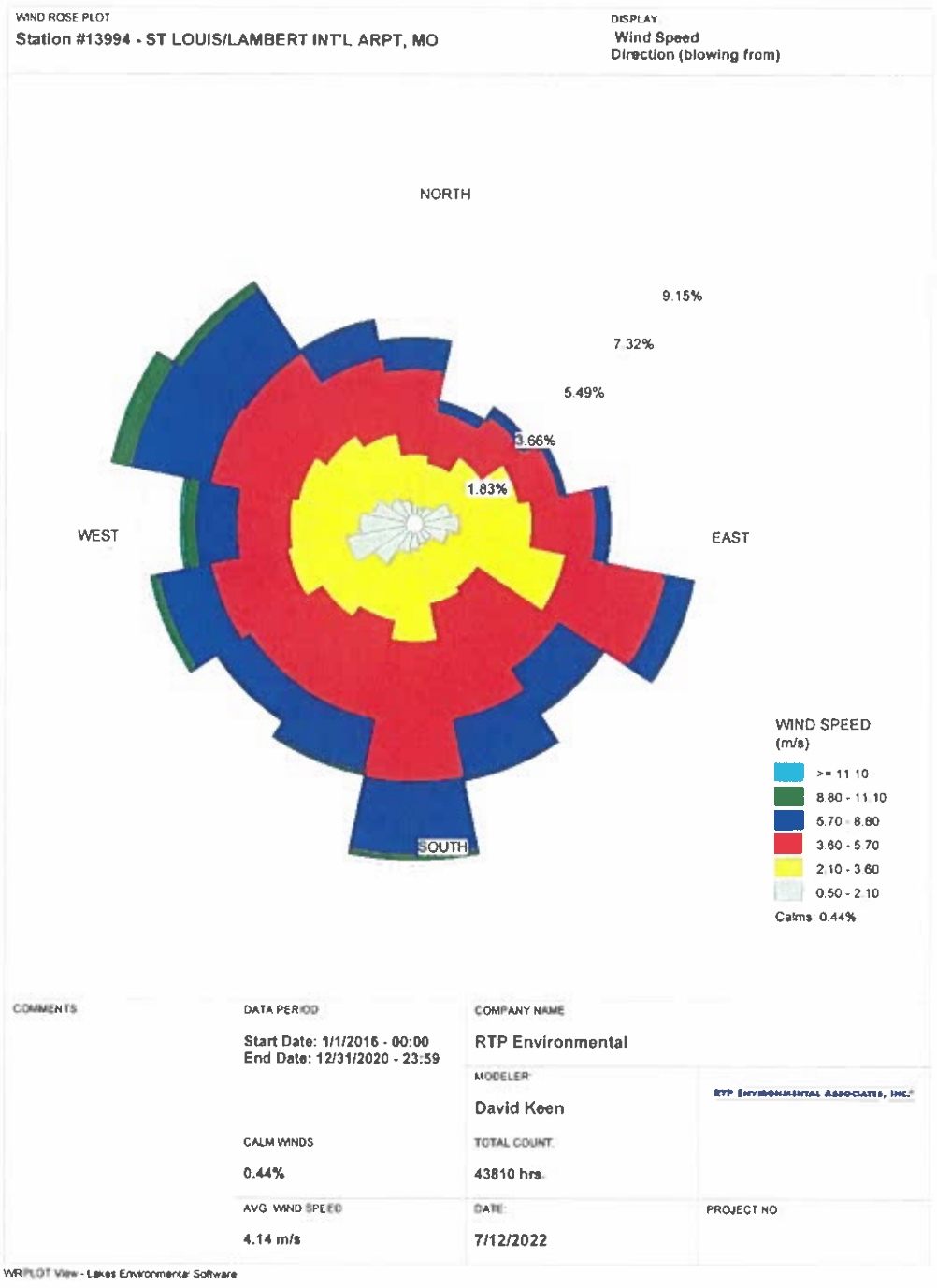

Figure 6. Lambert Field Windrose 2014-2018.

5.0 MODELING METHODOLOGY

5.1 Pollutants Subject to Review

USS Steel is proposing changes to the CO emission limitations in the 1996 Construction Permit that were established per the PSD requirements. Therefore, as requested by Illinois EPA, dispersion modeling of CO emissions have been evaluated and compared to the NAAQS.

5.2 Significant Impact Analysis

The air quality analysis was conducted in two phases: an initial or significant impact analysis, and a refined phase NAAQS analysis. In the significant impact analysis, the calculated maximum impacts due to the project were determined for CO.[b] These impacts determined the net change in air quality resulting from the proposed revision to modification permitted under the 1996 Construction Permit. Five years of meteorological data were used in the significant impact analysis. Maximum modeled CO concentrations were compared to the significance levels. The PSD Class II Significant Impact Levels for CO are listed in Table 3.

Table 3. PSD Class II Significant Impact Levels

Pollutant	Averaging Time	PSD Class II Significant Impact Levels ($\mu g/m^3$)
CO	1-hour	2,000
	8-hour	500

[b] For some of the affected emissions units, in place of project related emissions increases, we conservatively used the potential to emit of CO.

5.3 NAAQS Analysis

Following the determination of significant impacts, a refined air quality analysis to determine compliance with the CO NAAQS was conducted. In the NAAQS analysis, impacts from the US Steel facility were added to concentrations calculated from other nearby sources, plus a regional background concentration. The resultant total concentrations were compared to the NAAQS to assess compliance. The receptors modeled in the NAAQS analyses were limited to those showing a significant CO impact. Five years of meteorological data were again used in this analysis.

Nearby Source Inventory

Off-site sources were included in the NAAQS analysis. A 50km radius was used to define the screening area. A list of sources that are located within the screening area has been obtained from the IEPA as well as the Missouri Department of Natural Resources ("MDNR"). Section 8.3.3.b of Appendix W to 40 CFR Part 51 states that the number of nearby sources to be explicitly modeled is expected to be few, except in unusual situations. Appendix W further states that the sources to be included will usually be located within the first 10 to 20km from the source under consideration. In addition, it states that identification of nearby sources calls for the exercise of professional judgment by the appropriate reviewing authority. Further, USEPA's Guidance for PM2.5 Permit Modeling reiterates the Appendix W emphasis on a 10km screening radius for determining which nearby sources to include in the cumulative modeling analysis.

We conservatively included all sources provided by the IEPA and MDNR that are located within 50km of the US Steel facility. Total facility, potential emissions (i.e., all sources at a facility) were used in the NAAQS evaluation.

NAAQS Compliance Assessment

Ambient background concentrations (as discussed in more detail in Section 4.4) were then added to assess NAAQS compliance. The modeled and monitored values shown in Table 4 were used for this assessment.

Table 4. Monitored and Modeled Values Used to Assess NAAQS Compliance

Pollutant	Averaging Time	Monitored Value	Modeled Value
CO	1-hour & 8-hour	Maximum over 3 years	Highest, second high over 5 years

The NAAQS are shown in Table 5.

Table 5. National Ambient Air Quality Standards

Pollutant	Averaging Time	National Ambient Air Quality Standards ($\mu g/m^3$)	
		Primary	Secondary
CO	1-hour	40,000	--
	8-hour	10,000	--

6.0 RESULTS

Attachment B to this report provides the model summary output. AERMOD input and output files, including the BPIP-PRIME files, are included on the enclosed CD.

6.1 Significant Impact Analysis Results

The project results in CO impacts in excess of the 8-hour Significant Impact Level shown in Table 3. The significant impact analysis results are presented in Table 6. Based upon the results of the significant impacts analysis, a cumulative, NAAQS analysis was conducted.

6.2 NAAQS Analysis Results

Following the determination of significant impacts, an analysis was conducted to assess compliance with the CO NAAQS. The project resulted in insignificant 1-hr CO impacts, as a result the 1-hr average was not included in the NAAQS assessment. All sources located within 50km of the US Steel facility were modeled in conjunction with the US Steel facility in assessing compliance. Background concentrations were added to the model results to assess compliance. Evaluation of compliance with the CO short term standards was based upon the maximum of the highest-second-highest values from the five-year meteorological dataset.

The results of the NAAQS analysis are presented in Table 7. As can be seen, the model demonstrates compliance.

Table 6. Significant Impact Analysis Results

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	PSD Significant Class II Impact Level ($\mu g/m^3$)	Significant Monitoring Concentration ($\mu g/m^3$)	Maximum Distance to a Significant Impact (km)
CO	1-hr	1,157	2,000	N/A	NA
	8-hr	692	500	575	2.2

N/A – Not applicable, impacts calculated to be insignificant.

Table 7. NAAQS Analysis Results

Pollutant	Averaging Period	Modeled Concentration ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Comment
CO	8-hour	2,045	1,646	3,691	10,000	Compliant

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ATTACHMENT A
MODELING INPUT DATA

US Steel Granite City Point Source Model Input (NAD83, Zone 15)
Last Update (10-5-22)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	CO Potential Emissions (lb/hr)	CO Emissions Increase (lb/hr)
132833	DEFAULT	Blast Furnace A Stoves	749816.02	4286809.08	416.83	217.0	500.0	49.66	7.0	1604.52	1604.52
132838	DEFAULT	Blast Furnace B Stoves	749665.50	4286719.93	417.16	225.0	500.0	51.05	9.8	1837.76	1837.76
132837	DEFAULT	Blast Furnace Gas Flare #1	749777.33	4286841.02	418.21	221.8	1831.7	65.62	15.4	6280.99	6280.99
240479	DEFAULT	Blast Furnace Gas Flare #2	749865.93	4286920.23	416.24	221.8	1831.7	65.62	15.4	6280.99	0.00
132836	DEFAULT	Casthouse Baghouse	749616.61	4286732.18	417.75	63.0	150.0	63.88	11.0	63.77	21.68
132927	DEFAULT	Blast Furnace A and B Iron Spout Baghouse	749831.35	4286818.73	415.98	43.0	123.0	43.04	7.8	6.43	2.19
238459	DEFAULT	Cogeneration Boiler BFG-fired some NG-firing	749776.38	4287073.85	415.19	137.0	400.1	62.11	6.0	203.08	0.00
132867	DEFAULT	Boiler 11	749865.15	4286883.84	416.24	149.9	335.0	29.82	8.0	90.48	90.48
132872	DEFAULT	Boiler 12	749881.40	4286887.85	416.50	150.0	335.0	26.74	8.0	90.48	90.48
BOF	DEFAULT	BOF ESP	748415.00	4286681.00	416.57	125.0	400.0	50.00	15.0	4121.79	1274.01
BOF2ND	DEFAULT	BOF Secondary Baghouse	748625.57	4286763.99	413.00	160.0	275.0	38.55	17.0	19.69	19.69
132842	DEFAULT	Slab Reheat Furnace #1	747729.70	4286762.02	417.52	56.8	650.1	44.88	8.0	26.52	0.00
172532	DEFAULT	Slab Reheat Furnace #2	747715.25	4286747.05	416.47	56.8	650.1	44.88	8.0	26.52	0.00
172512	DEFAULT	Slab Reheat Furnace #3	747700.79	4286730.53	415.88	56.8	650.1	44.88	8.0	26.52	0.00
172514	DEFAULT	Slab Reheat Furnace #4	747700.27	4286714.00	416.08	146.0	736.1	26.94	13.7	40.76	0.00
132849	DEFAULT	Galvanizing line #8 - fume scrubber	748883.00	4287195.00	416.57	80.0	80.0	41.66	3.0	0.00	0.00
229337	DEFAULT	Galvanizing line #8 - space heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229338	DEFAULT	Galvanizing line #8 - drying oven and storage area heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229339	DEFAULT	Galvanizing line #8 - miscellaneous heaters	748398.00	4287038.00	418.90	39.0	284.1	23.16	2.0	0.00	0.00
229601	DEFAULT	Emergency Generator (3500 HP)	749641.00	4286863.00	416.17	37.0	442.0	32.80	1.9	0.00	0.00
GTEWY1	DEFAULT	Gateway Energy & Coke Co., LLC - Coking (New Main Stack)	749279.00	4286984.00	415.78	199.9	293.1	48.249	13.0	2.62E+01	0.00
GTEWY2	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 2 of 6	749549.00	4287055.00	418.18	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY3	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 3 of 6	749433.00	4286972.00	418.93	26.0	299.9	68.093	4.5	6.64E-02	0.00
GTEWY4	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 4 of 6	749357.00	4286918.00	418.64	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY5	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 5 of 6	749278.00	4286861.00	418.44	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY6	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 6 of 6	749202.00	4286808.00	418.60	26.0	299.9	68.093	4.5	6.64E-02	0.00
GTEWY7	DEFAULT	Gateway Energy & Coke Co., LLC - Charging - Stack 1 of 6	749624.00	4287108.00	418.50	26.0	299.9	68.093	4.5	6.68E-02	0.00
GTEWY8	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 1	749199.00	4286809.00	418.60	85.0	2000.0	74.653	9.0	7.30E-01	0.00
GTEWY9	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 1 of 6	749620.00	4287113.00	418.11	20.0	400.0	69.602	5.0	1.31E+00	0.00
GTEWY10	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 2	749274.00	4286862.00	418.31	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY11	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 3	749353.00	4286919.00	418.67	85.0	2000.0	74.653	9.0	7.30E-01	0.00
GTEWY12	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 4	749429.00	4286973.00	419.00	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY13	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 5	749545.00	4287055.00	418.27	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY14	DEFAULT	Gateway Energy & Coke Co., LLC - Waste heat stack 6	749620.00	4287109.00	418.34	85.0	2000.0	74.653	9.0	7.35E-01	0.00
GTEWY15	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 2 of 6	749545.00	4287060.00	418.24	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY16	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 3 of 6	749429.00	4286977.00	418.93	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY17	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 4 of 6	749352.00	4286923.00	418.57	20.0	400.0	69.602	5.0	1.31E+00	0.00
GTEWY18	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 5 of 6	749274.00	4286866.00	418.24	20.0	400.0	69.602	5.0	1.32E+00	0.00
GTEWY19	DEFAULT	Gateway Energy & Coke Co., LLC - Pushing - Stack 6 of 6	749198.00	4286813.00	418.77	20.0	400.0	69.602	5.0	1.32E+00	0.00

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US Steel Granite City Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	CO Potential Emissions (lb/hr)	CO Emissions Increase (lb/hr)
26070	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748457.20	4286596.40	413.88	169.0	21.6	78.6	1.373	1.373
26080	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748466.60	4286606.00	413.98	169.0	21.6	78.6	1.373	1.373
26090	Ladle Preheaters/Dryers (formerly BOF 4, NG & COG) - Roof Monitor	748475.40	4286616.10	413.88	169.0	21.6	78.6	1.373	1.373
26100	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748483.60	4286624.10	413.85	169.0	21.6	78.6	1.029	1.029
26110	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748495.20	4286635.90	414.01	169.0	21.6	78.6	1.029	0.000
26120	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748504.10	4286646.00	414.37	169.0	21.6	78.6	1.029	0.000
26130	Ladle Preheaters / Dryers (formerly BOF 5, NG & COG) - Roof Monitor	748513.90	4286656.70	414.63	169.0	21.6	78.6	1.029	0.000
26570	Galv Line 8	748368.26	4287046.91	420.41	101.7	12.3	48.5	0.254	0.000
26580	Galv Line 8	748374.01	4287041.49	420.11	101.7	12.3	48.5	0.254	0.000
26590	Galv Line 8	748379.56	4287036.28	419.82	101.7	12.3	48.5	0.254	0.000
26600	Galv Line 8	748420.52	4286997.79	419.55	38.0	15.1	38.0	0.254	0.000
26610	Galv Line 8	748428.00	4286990.81	419.95	38.0	15.1	38.0	0.254	0.000
26620	Galv Line 8	748436.60	4286982.91	419.85	38.0	15.1	38.0	0.254	0.000
26630	Galv Line 8	748444.54	4286975.49	419.62	38.0	15.1	38.0	0.254	0.000
26640	Galv Line 8	748451.78	4286968.87	418.50	38.0	15.1	38.0	0.254	0.000
26650	Galv Line 8	748324.79	4287118.60	421.65	38.0	15.6	17.7	0.254	0.000
26660	Galv Line 8	748331.95	4287112.00	421.52	38.0	15.6	17.7	0.254	0.000
26670	Galv Line 8	748340.34	4287104.30	421.39	38.0	15.6	17.7	0.254	0.000
26680	Galv Line 8	748347.69	4287097.51	421.29	38.0	15.6	17.7	0.254	0.000
26690	Galv Line 8	748354.48	4287091.31	421.16	38.0	15.6	17.7	0.254	0.000
26700	Galv Line 8	748362.29	4287084.18	420.87	38.0	15.6	17.7	0.254	0.000
26710	Galv Line 8	748370.46	4287076.71	420.51	38.0	15.6	17.7	0.254	0.000
26720	Galv Line 8	748378.04	4287069.70	420.14	38.0	15.6	17.7	0.254	0.000
26730	Galv Line 8	748385.51	4287062.91	419.52	38.0	15.6	17.7	0.254	0.000
0126A_1	Slag Pit Volume 1	749691.91	4286762.44	418.70	53.0	29.0	17.7	0.000	0.000
0126A_2	Slag Pit Volume 2	749708.01	4286772.50	421.33	53.0	29.0	17.7	0.000	0.000
0126A_3	Slag Pit Volume 3	749724.24	4286782.31	420.44	53.0	29.0	17.7	0.000	0.000
0126A_4	Slag Pit Volume 4	749740.84	4286791.62	419.00	53.0	29.0	17.7	0.000	0.000
0126A_5	Slag Pit Volume 5	749757.20	4286801.31	418.86	53.0	29.0	17.7	0.000	0.000

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Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL131772	DEFAULT	Star Memorial Pet Crematory - Crematory	749244.00	4324486.00	641.44	16.0	800.0	27.585	1.0	2.70E+00	0.00E+00	0.00E+00
IL131841	DEFAULT	Alton Steel Inc. - Electric arc furnaces	747753.00	4307832.00	433.07	100.0	250.1	31.029	24.2	2.25E+02	7.07E+01	7.07E+01
IL131845	DEFAULT	Alton Steel Inc. - 14 inch rolling mill reheat furnace	747645.00	4307692.00	432.64	106.0	200.0	2.394	16.0	2.40E+01	0.00E+00	0.00E+00
IL131945	DEFAULT	Alton Memorial Hospital - 3 Boilers	746364.00	4309470.00	521.36	89.0	389.9	24.108	3.0	0.00E+00	1.28E+01	1.28E+01
IL132052	DEFAULT	Olin Winchester, LLC - Package Boiler (B-4)	750887.00	4308614.00	435.63	35.0	400.0	84.854	2.0	0.00E+00	4.57E+00	4.57E+00
IL132062	DEFAULT	Olin Winchester, LLC - Package Boiler (B-3)	750891.00	4308619.00	435.89	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132063	DEFAULT	Olin Winchester, LLC - Package Boiler (B-2)	750892.00	4308613.00	435.53	35.0	400.0	84.854	2.0	0.00E+00	4.57E+00	4.57E+00
IL132064	DEFAULT	Olin Winchester, LLC - Package Boiler (B-1)	750888.00	4308609.00	435.30	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132065	DEFAULT	Olin Winchester, LLC - Package Boiler (B-5)	750883.00	4308610.00	435.27	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL132148	DEFAULT	Amsted Rail Co., Inc. - Electric Arc Furnace #1 (EF-1)	747122.00	4287625.00	425.26	55.0	250.1	54.087	6.2	3.84E+01	4.07E+00	4.07E+00
IL132149	DEFAULT	Amsted Rail Co., Inc. - Electric Arc Furnace #2 (EF-2)	747147.00	4287625.00	425.20	44.0	250.1	42.443	7.0	3.84E+01	4.07E+00	4.07E+00
IL132193	DEFAULT	Velocity Services, LLC. - North American Boiler	748928.00	4286192.00	416.21	27.0	450.1	24.305	2.3	2.36E+00	0.00E+00	0.00E+00
IL132194	DEFAULT	Velocity Services, LLC. - Cleaver Brooks boiler	748928.00	4286192.00	416.21	29.0	440.0	39.590	2.0	2.36E+00	0.00E+00	0.00E+00
IL132225	DEFAULT	Gateway Regional Medical Center - Boiler #3	748587.00	4287448.00	426.05	48.0	600.0	41.131	4.5	1.53E+00	1.28E+01	1.28E+01
IL132226	DEFAULT	Gateway Regional Medical Center - Boilers #1 and 2	748592.00	4287452.00	425.95	48.0	600.0	38.966	4.5	3.07E+00	2.57E+01	2.57E+01
IL132247	DEFAULT	Prairie Farms Dairy, Inc. - Boiler #1	747505.00	4287550.00	424.64	75.0	375.0	30.078	2.5	1.30E-01	0.00E+00	0.00E+00
IL132248	DEFAULT	Prairie Farms Dairy, Inc. - Boiler #2	747505.00	4287550.00	424.64	25.0	375.0	65.010	2.5	2.40E-01	1.19E+00	1.19E+00
IL132324	DEFAULT	Precoat Metals - Afterburner AB1 and AB2	749469.00	4292538.00	424.97	34.0	1000.0	64.518	4.0	3.23E+00	0.00E+00	0.00E+00
IL132424	DEFAULT	Highland Electric Light Plant - Engine IC-5	788126.93	4293320.17	534.65	28.0	612.1	84.854	2.0	2.07E+01	0.00E+00	0.00E+00
IL132425	DEFAULT	Highland Electric Light Plant - Engine IC-7	788126.93	4293320.17	534.65	57.0	734.1	6.265	11.4	2.51E+01	0.00E+00	0.00E+00
IL132496	DEFAULT	ConocoPhillips Co. - Catalytic reformer #1 (STK12-4)	754869.00	4302625.00	442.55	349.9	600.0	56.810	15.0	6.28E+01	9.53E+01	9.53E+01
IL132510	DEFAULT	ConocoPhillips Co. - Distilling unit: HTR-DU1-F301 (STK5-2)	754327.00	4303077.00	444.69	185.0	319.0	21.878	8.0	1.21E+01	0.00E+00	0.00E+00
IL132511	DEFAULT	ConocoPhillips Co. - Distilling unit: HTR-DU1-F302 (STK5-1)	754326.00	4303100.00	444.49	150.0	150.0	11.677	8.5	1.57E+01	5.29E+00	5.29E+00
IL132512	DEFAULT	ConocoPhillips Co. - Steam methane reformer: SMR Heater (HTR-SMR - STK12-8)	754873.00	4302750.00	443.04	199.9	749.9	36.638	12.0	4.75E+01	6.82E+01	6.82E+01
IL132516	DEFAULT	ConocoPhillips Co. - Rectified absorption unit: Reboiler heater (HTR-RAU-DEBUT - STK5-5)	754470.00	4302943.00	444.98	75.0	850.0	34.440	5.0	7.14E+00	0.00E+00	0.00E+00
IL132517	DEFAULT	ConocoPhillips Co. - Rectified absorption system to RFG	754240.00	4303144.00	443.47	150.0	710.0	26.338	6.0	0.00E+00	1.20E+02	1.20E+02
IL132519	DEFAULT	ConocoPhillips Co. - Cracked absorption unit (HTR-CAU-ROSTILL - STK5-4)	754468.00	4302963.00	445.41	85.0	800.0	22.173	7.2	6.72E+00	0.00E+00	0.00E+00
IL132526	DEFAULT	ConocoPhillips Co. - CCU-1 Startup heater B-1	754240.00	4303144.00	443.47	212.0	500.1	86.953	4.5	0.00E+00	3.55E+01	3.55E+01
IL132535	DEFAULT	ConocoPhillips Co. - Catalytic cracking unit #2 (STK6-3)	754848.00	4302895.00	443.27	199.9	175.0	49.954	11.0	4.72E+01	2.17E+03	2.17E+03
IL132551	DEFAULT	ConocoPhillips Co. - Alkylation unit: HTR-ALKY-HM2 (STK6-6)	754930.00	4303043.00	442.59	150.9	475.1	12.398	5.7	4.32E+00	0.00E+00	0.00E+00
IL132556	DEFAULT	ConocoPhillips Co. - Utility boiler #15 (STK12-15)	754859.00	4302776.00	443.44	132.0	425.0	43.165	7.0	2.65E+01	1.62E+01	1.62E+01
IL132557	DEFAULT	ConocoPhillips Co. - Utility boiler #16 (STK12-16)	754875.00	4302778.00	443.21	132.0	425.0	43.165	7.0	2.78E+01	1.41E+01	1.41E+01
IL132558	DEFAULT	ConocoPhillips Co. - Utility boiler 17 (STK12-17)	754902.00	4302784.00	442.91	150.0	317.0	52.218	10.0	3.60E+01	1.82E+01	1.82E+01
IL132559	DEFAULT	ConocoPhillips Co. - Utility boiler 18 (STK6-9)	754919.00	4302809.00	442.52	100.0	325.0	14.465	6.2	3.00E+01	6.61E+00	6.61E+00
IL132561	DEFAULT	ConocoPhillips Co. - Hydrodesulfurization unit #1: Charge heater (HTR-HDU-1 - STK13-1)	755217.00	4302588.00	442.16	150.0	790.1	32.144	5.0	5.60E+00	0.00E+00	0.00E+00
IL132564	DEFAULT	ConocoPhillips Co. - Hydrodesulfurization unit #2: Charge heater (HTR-HDU-2 - STK12-14)	755022.00	4302530.00	442.95	150.0	900.1	31.422	5.8	4.90E+00	0.00E+00	0.00E+00
IL132565	DEFAULT	ConocoPhillips Co. - Cat reformer #3: Stabilizer reboiler (HTR-CR3-H2 - STK12-9)	755014.00	4302580.00	442.62	150.0	950.1	7.019	7.8	4.79E+00	0.00E+00	0.00E+00
IL132567	DEFAULT	ConocoPhillips Co. - Catalytic reformer unit #3: Charge heater (HTR-CR3 -H4)	755019.00	4302571.00	442.65	150.0	800.0	28.766	7.8	1.75E+01	8.04E+00	8.04E+00
IL132568	DEFAULT	ConocoPhillips Co. - Catalytic reformer unit #3: First interreactor heater (HTR-CR3-H5)	755019.00	4302548.00	442.78	150.0	749.9	26.929	7.8	2.11E+01	6.93E+00	6.93E+00
IL132569	DEFAULT	ConocoPhillips Co. - Cat reformer #3: Second interreactor heater (HTR-CR3-H6 - STK12-12)	755019.00	4302559.00	442.72	150.0	749.9	14.006	7.8	5.55E+00	0.00E+00	0.00E+00
IL132594	DEFAULT	ConocoPhillips Co. - Sulfuric acid tank	755114.00	4302829.00	441.93	40.0	186.0	26.273	2.0	1.78E+00	2.35E+00	2.35E+00
IL132598	DEFAULT	ConocoPhillips Co. - CCU-2 Startup heater B-1	754240.00	4303144.00	443.47	16.0	509.1	32.964	3.2	4.40E-01	0.00E+00	0.00E+00
IL132599	DEFAULT	Airgas USA, LLC - Liquified carbon dioxide plant	756314.00	4302509.00	435.93	30.0	70.1	79.573	0.2	4.10E-01	0.00E+00	0.00E+00
IL132701	DEFAULT	Kinder Morgan Liquids Terminals, LLC - New Truck loading rack	752998.00	4303578.00	435.63	20.0	70.1	0.262	2.2	4.87E+00	0.00E+00	0.00E+00
IL132739	DEFAULT	National Maintenance and Repair - Cleaver Brooks boiler (Stack 1 of 2)	750915.00	4300904.00	402.46	34.0	450.1	23.321	2.0	1.90E+00	5.00E+00	5.00E+00
IL132777	DEFAULT	Elias Kallal & Schaaf Funeral Home & Crematory - Crematorium	742098.00	4312210.00	627.20	30.0	1400.1	18.368	1.7	3.00E+00	0.00E+00	0.00E+00
IL132781	DEFAULT	Christ Bros Products, LLC - Baghouse	754160.00	4283243.00	419.46	32.0	240.0	83.706	3.9	5.56E+01	2.48E+01	2.48E+01
IL132928	DEFAULT	Enable Mississippi River Transmission, LLC - Engine SN-02	782556.00	4285336.00	492.29	30.0	1000.0	9.414	2.6	1.36E+01	0.00E+00	0.00E+00
IL133625	DEFAULT	Waterloo City Light Plant - Engine #1	748326.00	4246769.00	640.45	29.0	749.9	13.579	2.3	4.00E+01	1.35E+00	1.35E+00
IL133627	DEFAULT	Waterloo City Light Plant - Engine #9	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL133628	DEFAULT	Waterloo City Light Plant - Engine #10	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL135983	DEFAULT	Lakeview Memorial Gardens - Crematory	762896.00	4273894.00	579.89	16.0	895.0	26.666	2.6	8.40E+00	0.00E+00	0.00E+00
IL136012	DEFAULT	Breckenridge of IL - Natural gas combustion	756461.00	4277782.00	423.82	38.0	341.0	25.781	2.7	3.94E+00	0.00E+00	0.00E+00
IL136014	DEFAULT	Touchette Regional Hospital - 2 Boilers	751890.00	4273014.00	415.94	39.0	800.0	6.560	3.7	2.26E+00	0.00E+00	0.00E+00
IL136018	DEFAULT	Upchurch Ready Mix Concrete Company - Boiler	749859.00	4276616.00	418.44	30.0	376.1	29.684	3.7	0.00E+00	3.00E-01	3.00E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL136098	DEFAULT	Safety Kleen Systems, Inc. - Pipe still (heat exchanger)	749786.00	4276425.00	420.28	15.0	170.0	0.295	1.0	0.00E+00	1.38E+00	1.38E+00
IL136125	DEFAULT	Milam Recycling and Disposal Facility - Open flare	750434.00	4282812.00	420.54	42.0	1800.1	10.070	1.0	1.83E+01	6.00E+00	6.00E+00
IL136129	DEFAULT	Village of Freeburg - Engine #6	769352.00	4257578.00	509.42	24.0	749.9	24.239	1.8	3.93E+00	0.00E+00	0.00E+00
IL136130	DEFAULT	Village of Freeburg - Engine #4	769352.00	4257578.00	509.42	25.0	550.0	87.871	1.3	9.60E+00	0.00E+00	0.00E+00
IL136131	DEFAULT	Village of Freeburg - Engine #7	769352.00	4257578.00	509.42	22.0	900.1	18.926	2.7	4.50E+01	4.43E+00	4.43E+00
IL136169	DEFAULT	Darling Ingredients, Inc. - Continuous rendering process	747472.00	4281438.00	414.93	44.0	74.9	84.854	4.0	6.67E+00	1.43E+00	1.43E+00
IL136187	DEFAULT	Asphalt Sales & Products Inc. - Drum mix asphalt plant	772959.00	4275690.00	514.30	33.0	325.0	47.134	4.5	6.49E+01	2.90E+01	2.90E+01
IL136486	DEFAULT	Cerro Flow Products, LLC. - Piercing Mill Furnace #2	746228.00	4275272.00	407.32	25.0	299.9	38.901	2.0	8.65E-01	0.00E+00	0.00E+00
IL136547	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	747162.00	4269805.00	448.72	36.0	315.1	86.592	3.5	1.34E+01	5.91E+00	5.91E+00
IL142809	DEFAULT	Magnesium Elektron North America - Combustion units	746452.00	4285724.00	415.49	60.0	450.1	30.537	2.0	1.02E+01	4.44E+00	4.44E+00
IL143317	DEFAULT	Waterloo City Light Plant - Engine #11	748326.00	4246769.00	640.45	17.0	936.1	84.854	1.0	1.50E+01	3.60E+00	3.60E+00
IL143319	DEFAULT	Waterloo City Light Plant - Engine #7	748326.00	4246769.00	640.45	33.0	749.9	84.854	2.0	3.41E+01	0.00E+00	0.00E+00
IL143320	DEFAULT	Waterloo City Light Plant - Engine #8	748326.00	4246769.00	640.45	27.0	680.1	84.230	2.3	1.87E+01	1.36E+00	1.36E+00
IL145809	DEFAULT	ConocoPhillips Co. - Crude heaters (STK5-3)	754415.00	4303016.00	445.93	311.9	530.0	87.970	14.0	7.81E+01	1.98E+01	1.98E+01
IL145820	DEFAULT	ConocoPhillips Co. - Sulfur recovery unit #1 (STK3-1)	752928.00	4303077.00	428.41	125.0	965.9	17.712	7.2	0.00E+00	4.05E+01	4.05E+01
IL145826	DEFAULT	ConocoPhillips Co. - Supplemental air compressor engine CCU-1	754240.00	4303144.00	443.47	15.0	117.1	20.369	1.5	7.10E-01	1.74E+00	1.74E+00
IL145838	DEFAULT	ConocoPhillips Co. - Sulfur recovery unit #2 (STK3-2)	752929.00	4303071.00	428.38	125.0	965.9	17.712	7.2	0.00E+00	4.05E+01	4.05E+01
IL145850	DEFAULT	ConocoPhillips Co. - Flare for major effluent treatment project	754240.00	4303144.00	443.47	30.0	78.0	14.006	9.2	4.51E+00	0.00E+00	0.00E+00
IL147845	DEFAULT	Mayco Mfg, LLC - Britt kettles combustion stack	747189.00	4286970.00	421.78	34.0	250.1	2.362	1.1	2.00E-01	0.00E+00	0.00E+00
IL147846	DEFAULT	Mayco Mfg, LLC - Mixed metals A-1 dross baghouse discharge stack	747189.00	4286970.00	421.78	30.0	95.1	52.611	5.0	5.77E-01	0.00E+00	0.00E+00
IL148354	DEFAULT	ConocoPhillips Co. - Catalytic cracking unit #1 (STK6-2)	754864.00	4302895.00	442.88	199.9	175.0	49.954	11.0	2.32E+01	3.84E+01	3.84E+01
IL149873	DEFAULT	City of Alton - Incinerator	749456.00	4310990.00	446.33	25.0	1400.1	53.038	1.0	1.40E+00	0.00E+00	0.00E+00
IL149908	DEFAULT	Charles E. Mahoney - Drum mix asphalt plant	749517.00	4309892.00	443.14	25.0	295.1	66.289	4.0	5.74E+01	2.56E+01	2.56E+01
IL154190	DEFAULT	Milam Recycling and Disposal Facility - Engine #1	750544.00	4282853.00	411.88	26.0	820.0	86.231	0.8	6.93E+00	1.78E+00	1.78E+00
IL154191	DEFAULT	Milam Recycling and Disposal Facility - Engine #2	750538.00	4282852.00	412.01	26.0	820.0	86.231	0.8	6.93E+00	1.78E+00	1.78E+00
IL154192	DEFAULT	Milam Recycling and Disposal Facility - Engine #3	750548.00	4282855.00	411.81	26.0	820.0	86.231	0.8	7.14E+00	1.84E+00	1.84E+00
IL155302	DEFAULT	Alton Steel Inc. - Ladle Furnace	747753.00	4307832.00	433.07	74.0	275.1	87.215	3.0	2.24E+01	1.12E+01	1.12E+01
IL155304	DEFAULT	Precoat Metals - Boiler B1	749469.00	4292538.00	424.97	24.0	700.1	20.730	1.6	8.80E-01	0.00E+00	0.00E+00
IL155305	DEFAULT	Granite City Pickling & Warehousing - Boiler	746973.00	4286890.00	422.41	50.0	331.1	15.449	2.7	7.06E-01	0.00E+00	0.00E+00
IL155307	DEFAULT	Kraft Heinz Co. - Boiler B	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL155437	DEFAULT	Southwestern Illinois Correctional Center - 2 Boilers	753202.00	4278290.00	421.46	32.0	450.1	15.285	1.5	7.06E-01	0.00E+00	0.00E+00
IL155441	DEFAULT	Asphalt Sales & Products Inc. - Asphalt heaters and boilers	772959.00	4275690.00	514.30	33.0	341.0	18.368	3.2	0.00E+00	2.80E+00	2.80E+00
IL156624	DEFAULT	US Air Force/Scott Air Force Base - Boilers and Heaters	774337.00	4270862.00	440.32	30.0	331.1	23.288	2.2	4.81E+00	0.00E+00	0.00E+00
IL156970	DEFAULT	Olin Winchester, LLC - Package Boiler (B-6)	750906.00	4308625.00	436.06	35.0	400.0	84.854	2.0	0.00E+00	4.60E+00	4.60E+00
IL159940	DEFAULT	Afton Chemical Corp. - 258 Sulfonation Stack	746513.00	4276305.00	407.05	158.0	70.1	41.820	1.0	0.00E+00	5.59E+00	5.59E+00
IL159942	DEFAULT	Afton Chemical Corp. - Unit 266; Flare 36-0011/36-0610	746653.00	4276356.00	410.10	100.0	700.1	59.368	0.7	8.55E+00	4.90E+01	4.90E+01
IL159965	DEFAULT	Afton Chemical Corp. - Flare 36-0219	746513.00	4276305.00	407.05	146.0	1000.0	42.837	0.4	3.84E+00	2.74E+01	2.74E+01
IL160741	DEFAULT	Brady McCasland, Inc. - Compaction plant	748518.00	4276987.00	413.75	17.0	1521.1	65.469	1.8	5.20E-01	0.00E+00	0.00E+00
IL160742	DEFAULT	Darling Ingredients, Inc. - Kewanee boiler	747472.00	4281438.00	414.93	35.0	450.1	54.448	2.6	1.96E+00	1.51E+01	1.51E+01
IL160799	DEFAULT	ConocoPhillips Co. - Supplemental air compressor engine CCU-2	754240.00	4303144.00	443.47	48.0	117.1	20.369	1.5	0.00E+00	1.74E+00	1.74E+00
IL160898	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0110	746653.00	4276489.00	405.22	45.0	350.0	17.318	7.0	4.89E+00	0.00E+00	0.00E+00
IL165120	DEFAULT	BFI Waste Systems of North America, Inc. - Flare	758882.00	4264336.00	574.97	35.0	1600.1	23.485	0.8	6.80E+00	0.00E+00	0.00E+00
IL166479	DEFAULT	Union Electric Co. - Turbine CT02A	745573.00	4283620.00	420.60	30.0	850.0	18.860	11.4	7.73E+01	2.73E+01	2.73E+01
IL166491	DEFAULT	Enable Mississippi River Transmission, LLC - Turbine SN-03	782556.00	4285336.00	492.29	30.0	749.9	86.854	2.5	9.56E+00	0.00E+00	0.00E+00
IL167781	DEFAULT	Amsted Rail Co., Inc. - Pouring and casting (PR/CST-1)	747025.00	4287611.00	424.80	101.0	251.0	34.768	9.7	0.00E+00	6.70E-01	6.70E-01
IL167787	DEFAULT	Amsted Rail Co., Inc. - Ladle Preheater (LDP-1)	747039.00	4287611.00	424.93	82.0	505.0	31.488	6.1	6.50E+00	2.20E-01	2.20E-01
IL167858	DEFAULT	ConocoPhillips Co. - Scot unit	754240.00	4303144.00	443.47	16.0	115.1	15.580	9.0	0.00E+00	1.72E+02	1.72E+02
IL169226	DEFAULT	Messer, LLC - 2 Boilers	752309.00	4301220.00	434.42	15.0	800.0	0.525	1.4	2.52E+00	0.00E+00	0.00E+00
IL172707	DEFAULT	St. Anthony's Hospital - Boiler #4	745097.00	4310364.00	584.58	64.0	400.0	58.614	2.3	0.00E+00	6.02E+00	6.02E+00
IL179611	DEFAULT	Highland Electric Light Plant - Engine IC-1	788126.93	4293320.17	534.65	12.0	656.0	86.920	1.2	1.44E+01	0.00E+00	0.00E+00
IL179671	DEFAULT	Village of Freeburg - Engine #1	769352.00	4257578.00	509.42	30.0	500.1	40.311	1.0	8.55E+00	8.25E-01	8.25E-01
IL179672	DEFAULT	Village of Freeburg - Engine #2	769352.00	4257578.00	509.42	30.0	500.1	40.311	1.0	8.55E+00	8.25E-01	8.25E-01
IL179673	DEFAULT	Village of Freeburg - Engine #3a	769352.00	4257578.00	509.42	25.0	500.1	55.170	1.0	5.92E+00	0.00E+00	0.00E+00
IL181173	DEFAULT	ConocoPhillips Co. - Loading rack	752292.00	4299987.00	429.92	40.0	1800.1	87.510	2.0	1.53E+00	0.00E+00	0.00E+00
IL183733	DEFAULT	Veolia ES Technical Solutions, LLC - Hazardous waste incinerator #4 (rotary kiln)	745532.00	4275942.00	414.76	57.0	650.9	32.570	2.8	3.17E+00	1.16E+01	1.16E+01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL189069	DEFAULT	US Air Force/Scott Air Force Base - Diesel generators	774337.00	4270862.00	440.32	37.0	402.0	29.389	1.3	5.83E+01	0.00E+00	0.00E+00
IL190090	DEFAULT	Contract Services, LLC - 3 Boilers	746767.00	4275755.00	417.81	40.0	310.0	50.381	4.2	8.53E+00	5.14E+00	5.14E+00
IL192953	DEFAULT	Midwest Metal Coatings, LLC - Chemical coater/infrared oven (CC/ IRO)	748281.00	4290395.00	423.88	34.0	110.0	18.926	3.0	2.90E-01	0.00E+00	0.00E+00
IL192964	DEFAULT	Midwest Metal Coatings, LLC - Afterburner	748281.00	4290395.00	423.88	34.0	900.1	23.780	5.0	3.28E-01	0.00E+00	0.00E+00
IL192967	DEFAULT	Midwest Metal Coatings, LLC - Boiler (B1)	748281.00	4290395.00	423.88	34.0	400.0	67.338	1.5	2.12E+00	0.00E+00	0.00E+00
IL198552	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	778702.00	4276345.00	439.34	35.0	297.1	62.254	3.8	2.95E+01	1.32E+01	1.32E+01
IL201652	DEFAULT	Empire Comfort Systems - Stack	763529.00	4266192.00	477.26	25.0	800.0	14.334	1.0	2.69E+00	0.00E+00	0.00E+00
IL204833	DEFAULT	Milam Recycling and Disposal Facility - 3 Passive solar flares	750550.00	4282537.00	594.06	20.0	1800.1	57.138	0.7	4.23E+00	4.38E+00	4.38E+00
IL207740	DEFAULT	Chemtrade Solutions, LLC - Scrubber C007	753339.00	4281367.00	422.21	30.0	70.1	0.394	0.3	0.00E+00	2.00E-01	2.00E-01
IL208343	DEFAULT	Center Point Terminal Co. - Asphalt and polymer modified blend tank (T-9)	746361.00	4289240.00	416.44	33.0	185.1	0.951	1.5	1.00E-01	0.00E+00	0.00E+00
IL209238	DEFAULT	Concrete Supply, LLC - Natural gas combustion	757768.00	4302270.00	444.69	20.0	341.0	25.781	2.7	9.69E-01	0.00E+00	0.00E+00
IL209433	DEFAULT	Alton Water Treatment Facility - Stack	742583.00	4309460.00	488.98	22.0	400.0	85.083	0.7	0.00E+00	5.50E-01	5.50E-01
IL211274	DEFAULT	Kienstra-Illinois, LLC - Natural gas combustion	764550.00	4296982.00	575.95	20.0	341.0	25.781	2.7	7.68E-01	0.00E+00	0.00E+00
IL211772	DEFAULT	Center Point Terminal Co. - Incinerator/waste heat boiler	746361.00	4289240.00	416.44	18.0	650.0	7.970	2.0	1.83E-01	1.05E+00	1.05E+00
IL212692	DEFAULT	Chain of Rocks Recycling & Disposal - Open flare	746945.00	4293274.00	431.59	20.0	1400.1	47.265	0.7	6.92E+00	1.06E+00	1.06E+00
IL212881	DEFAULT	Koch Fertilizer, LLC - Ammonia heater	750008.00	4305316.00	428.15	25.0	250.1	42.443	1.0	2.43E+00	5.30E-01	5.30E-01
IL213573	DEFAULT	Illinois Department of Transportation - R and K model 367-1 incinerator	732106.00	4332182.00	623.79	15.0	736.1	30.865	2.8	2.88E+00	0.00E+00	0.00E+00
IL213834	DEFAULT	Darling Ingredients, Inc. - Johnson boiler	747472.00	4281438.00	414.93	33.0	450.1	46.937	2.8	1.96E+00	1.51E+01	1.51E+01
IL213854	DEFAULT	Solvay Fluorides, LLC - Boiler	750245.00	4276115.00	419.72	30.0	361.0	7.314	2.8	1.44E+00	0.00E+00	0.00E+00
IL215315	DEFAULT	Madison County Sand, LLC - Drum mix asphalt plant	758921.00	4289026.00	422.01	32.0	245.0	64.452	4.1	1.63E+01	5.00E-01	5.00E-01
IL217756	DEFAULT	Phillips 66 Pipeline, LLC - Truck loading racks	744935.00	4274152.00	407.25	20.0	70.1	10.594	2.0	1.10E+01	0.00E+00	0.00E+00
IL218530	DEFAULT	ConocoPhillips Co. - North property ground flare (FLR1-2)	754486.00	4303322.00	445.08	195.0	1800.1	2.394	3.0	1.41E+01	0.00E+00	0.00E+00
IL218537	DEFAULT	Custom Steel Processing - Scrubber	746335.00	4286043.00	416.99	55.0	70.1	49.036	4.2	0.00E+00	1.00E-01	1.00E-01
IL218539	DEFAULT	Custom Steel Processing - Sulfuric acid storage tank	746335.00	4286043.00	416.99	35.0	127.0	0.000	2.4	0.00E+00	1.00E-01	1.00E-01
IL218569	DEFAULT	Contract Services, LLC - Boiler #4	746767.00	4275755.00	417.81	40.0	310.0	49.036	3.7	1.30E+01	1.64E+00	1.64E+00
IL218687	DEFAULT	ConocoPhillips Co. - Gas plant sour water stripper	754240.00	4303144.00	443.47	15.0	128.9	11.382	2.9	1.06E+00	0.00E+00	0.00E+00
IL218995	DEFAULT	Asphalt Sales & Products Inc. - Asphalt silos and truck loadout	772959.00	4275690.00	514.30	32.0	86.1	84.854	1.5	1.26E+00	0.00E+00	0.00E+00
IL219420	DEFAULT	Crown Textile Services - Boiler	744287.00	4259382.00	466.40	24.0	450.1	35.227	1.7	1.03E+00	0.00E+00	0.00E+00
IL220266	DEFAULT	American Colloid Co. - Sand drying	746862.00	4287239.00	419.91	72.0	491.1	28.766	3.3	1.29E+00	0.00E+00	0.00E+00
IL220267	DEFAULT	American Colloid Co. - Space Heaters	746862.00	4287239.00	419.91	35.0	198.1	21.484	1.4	2.30E-01	0.00E+00	0.00E+00
IL220618	DEFAULT	Asphalt Sales & Products Inc. - Drum mix asphalt plant	757560.00	4299901.00	441.63	32.0	280.0	68.322	4.3	7.61E+01	3.40E+01	3.40E+01
IL220849	DEFAULT	ConocoPhillips Co. - Alkylation unit flare (FLR6-1)	755035.00	4303081.00	442.55	199.9	1800.1	2.034	2.5	1.85E+01	0.00E+00	0.00E+00
IL222033	DEFAULT	Waterloo City Light Plant - Dual fuel-fired Turbine GT1	748326.00	4246769.00	640.45	39.0	612.1	41.590	4.8	1.77E+01	0.00E+00	0.00E+00
IL222134	DEFAULT	Asphalt Sales & Products Inc. - Asphalt silo loading	757560.00	4299901.00	441.63	26.0	123.0	4.986	1.7	7.00E-01	0.00E+00	0.00E+00
IL222135	DEFAULT	Asphalt Sales & Products Inc. - Asphalt heaters and boilers	757560.00	4299901.00	441.63	35.0	361.0	26.896	3.7	0.00E+00	2.80E+00	2.80E+00
IL222988	DEFAULT	Apex Oil Co., Inc. - Thermal oxidizers	752471.00	4302667.00	431.07	18.0	820.0	43.985	2.3	2.98E+00	0.00E+00	0.00E+00
IL223796	DEFAULT	Union Electric Co. - Turbine CT03	745735.00	4282930.00	420.96	38.0	603.1	74.948	3.4	4.90E+01	1.30E+00	1.30E+00
IL223797	DEFAULT	Union Electric Co. - Turbine CT04	745776.00	4282947.00	421.16	38.0	603.1	74.948	3.4	4.90E+01	1.30E+00	1.30E+00
IL223798	DEFAULT	Union Electric Co. - Turbine CT05	745538.00	4283620.00	420.90	38.0	603.1	74.948	3.4	6.90E+01	9.00E-01	9.00E-01
IL224167	DEFAULT	Interurban ILAWC - Emergency generator	757265.00	4276109.00	482.38	29.0	880.1	51.463	1.3	1.10E+01	4.60E+00	0.00E+00
IL224416	DEFAULT	Belleville Landfill, Inc. - Flare	760402.00	4264040.00	571.88	35.0	1600.1	8.659	0.8	1.22E+01	0.00E+00	0.00E+00
IL224592	DEFAULT	Christ Bros Products, LLC - Drum mix asphalt plant	755685.00	4299823.00	431.10	32.0	251.0	53.628	4.1	3.09E+01	1.38E+01	1.38E+01
IL224594	DEFAULT	Christ Bros Products, LLC - Asphalt tank heaters and boilers	755701.00	4299841.00	427.46	10.0	416.0	42.443	1.0	1.18E+00	2.80E+00	2.80E+00
IL224838	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-01	750039.00	4285426.00	410.47	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224839	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-02	750044.00	4285416.00	410.24	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224840	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-03	750049.00	4285406.00	410.37	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224841	DEFAULT	Enable Mississippi River Transmission, LLC - Compressor engine SN-04	750054.00	4285397.00	410.30	22.0	1125.1	66.453	1.1	5.67E+00	0.00E+00	0.00E+00
IL224901	DEFAULT	Premcor Refining Group, Inc. - Thermal oxidizer	752775.00	4302414.00	429.95	20.0	342.1	49.462	0.8	7.40E-01	0.00E+00	0.00E+00
IL225166	DEFAULT	Metro Crematory - Crematory	754120.00	4290785.00	417.29	18.0	736.1	84.854	1.0	1.50E+00	0.00E+00	0.00E+00
IL225832	DEFAULT	ConocoPhillips Co. - Startup/malfunction/breakdown	754240.00	4303144.00	443.47	103.0	623.9	21.681	4.6	2.86E+01	1.91E+02	1.91E+02
IL225843	DEFAULT	City of O'Fallon - 400 kW (591 HP) Diesel generator	774612.00	4277280.00	434.42	13.0	500.1	86.592	0.7	3.37E+00	0.00E+00	0.00E+00
IL225844	DEFAULT	City of O'Fallon - 900 kW (1 322 HP) Diesel generator	774612.00	4277280.00	434.42	17.0	500.1	86.592	0.7	7.55E+00	0.00E+00	0.00E+00
IL225960	DEFAULT	Waterloo City Light Plant - Engine #4	748326.00	4246769.00	640.45	37.0	680.1	87.904	2.5	3.32E+01	0.00E+00	0.00E+00
IL226013	DEFAULT	Milam Recycling and Disposal Facility - 325 HP Tub grinder	750550.00	4282537.00	594.06	7.0	627.0	74.030	0.3	2.20E+00	8.00E-01	8.00E-01
IL226014	DEFAULT	Milam Recycling and Disposal Facility - Enclosed flare	750476.00	4282825.00	419.62	55.0	1400.1	0.656	12.0	2.40E+01	6.08E+00	6.08E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL226015	DEFAULT	Milam Recycling and Disposal Facility - 760 HP Tub grinder	750550.00	4282537.00	594.06	8.0	627.0	70.881	0.7	5.10E+00	1.90E+00	1.90E+00
IL226184	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - 1F Mix muller (MM-3) Low profile turbine (LF-1) and Induction form sta	750075.00	4306259.00	432.32	41.0	209.9	36.080	2.1	2.00E+00	0.00E+00	0.00E+00
IL226204	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #4 (SA-4)	750150.00	4308388.00	431.10	90.0	350.0	41.426	1.6	9.33E+01	0.00E+00	0.00E+00
IL226256	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip Anneal #3 (SA-3)	750439.00	4308328.00	433.83	100.0	350.0	62.746	1.3	9.83E+01	0.00E+00	0.00E+00
IL226257	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - #7 Strip Anneal (SA-7)	750222.00	4308335.00	433.20	89.0	850.0	38.671	1.5	1.18E+02	0.00E+00	0.00E+00
IL226352	DEFAULT	Olin Winchester, LLC - Hammermill 1 2 and 3 (HM-1 HM-2 and HM-3)	750495.00	4308287.00	434.42	21.0	160.1	19.647	1.8	8.03E+00	0.00E+00	0.00E+00
IL226612	DEFAULT	Solutia Inc. - Santoflex process: Thermal oxidizer 2770934	746325.00	4275822.00	405.12	112.0	865.0	16.794	12.6	1.50E+01	0.00E+00	0.00E+00
IL226783	DEFAULT	Schildknecht Funeral Home, Inc. - Crematory	769033.00	4275796.00	549.57	17.0	1241.0	13.612	1.7	1.20E+00	0.00E+00	0.00E+00
IL227030	DEFAULT	ConocoPhillips Co. - #4 Crude unit heater H-24 (STK9-5)	753051.00	4302413.00	428.81	179.9	550.0	26.207	8.5	2.27E+01	0.00E+00	0.00E+00
IL227032	DEFAULT	ConocoPhillips Co. - Hydrogen plant #1 flare (FLR12-2)	755194.00	4302793.00	443.67	130.0	1800.1	7.970	1.7	1.62E+01	0.00E+00	0.00E+00
IL227034	DEFAULT	ConocoPhillips Co. - Sulfur operation	754240.00	4303144.00	443.47	158.0	590.1	37.753	3.4	0.00E+00	3.00E+01	3.00E+01
IL227035	DEFAULT	ConocoPhillips Co. - Process heater HP-1 (STK12-6)	755194.00	4302793.00	443.67	127.0	360.1	27.093	7.5	6.97E+00	0.00E+00	0.00E+00
IL227038	DEFAULT	ConocoPhillips Co. - SZU Charge heater H-3	755219.00	4302667.00	442.29	150.0	567.1	25.518	5.0	5.75E+00	0.00E+00	0.00E+00
IL227333	DEFAULT	Waterloo City Light Plant - Engine SG5	750635.00	4249410.00	628.97	8.0	924.0	61.172	0.7	1.40E+00	0.00E+00	0.00E+00
IL227400	DEFAULT	Collinsville Wastewater Treatment Plant - Emergency diesel generator (2922 HP/2180 kW)	758289.00	4283982.00	419.36	36.0	692.0	67.371	2.0	1.72E+01	1.20E+00	0.00E+00
IL227432	DEFAULT	Totall Metal Recycling, Inc. - Safety certification unit	748030.00	4289120.00	422.74	6.0	587.0	8.069	1.2	1.00E-01	0.00E+00	0.00E+00
IL227590	DEFAULT	Illinois Electric Works - 3 Burn off ovens	747872.00	4288124.00	423.20	46.0	250.1	41.230	2.4	1.17E+00	6.90E-02	6.90E-02
IL227679	DEFAULT	Union Electric Co. - Diesel generator	745516.00	4283326.00	430.38	26.0	490.0	60.811	1.4	1.30E+00	1.60E-01	1.60E-01
IL228119	DEFAULT	St. Clair Crematory - Human crematory	773291.00	4275644.00	507.28	17.0	1241.0	13.612	1.7	1.20E+00	0.00E+00	0.00E+00
IL228260	DEFAULT	Center Ethanol Co. - West boiler	745888.00	4275662.00	412.66	75.0	428.1	43.460	3.0	3.23E+00	0.00E+00	0.00E+00
IL228262	DEFAULT	Center Ethanol Co. - East boiler	745888.00	4275662.00	412.66	75.0	428.1	45.428	3.0	3.23E+00	0.00E+00	0.00E+00
IL228263	DEFAULT	Center Ethanol Co. - RTO	745888.00	4275662.00	412.66	50.0	310.0	70.684	5.5	6.85E+00	0.00E+00	0.00E+00
IL228294	DEFAULT	ConocoPhillips Co. - Distilling west refinery flare (FLR10-1)	753647.00	4302546.00	430.31	197.0	1800.1	6.626	3.0	2.51E+01	0.00E+00	0.00E+00
IL228295	DEFAULT	ConocoPhillips Co. - SZU Regenerator vent	755209.00	4302720.00	442.32	44.0	135.1	32.341	2.0	1.78E+00	2.35E+00	2.35E+00
IL229921	DEFAULT	Christ Bros Products, LLC - 8 Heaters and boilers	754160.00	4283243.00	419.46	37.0	400.0	20.664	1.8	1.18E+00	2.80E+00	2.80E+00
IL229922	DEFAULT	Christ Bros Products, LLC - Silo filling	754160.00	4283243.00	419.46	25.0	74.0	0.262	0.4	5.10E-01	0.00E+00	0.00E+00
IL229923	DEFAULT	Christ Bros Products, LLC - Truck loading	754160.00	4283243.00	419.46	29.0	135.1	48.052	2.0	5.80E-01	0.00E+00	0.00E+00
IL230300	DEFAULT	Afton Chemical Corp. - Flare 36-0090	746478.00	4276293.00	407.28	45.0	1600.1	0.656	8.0	2.20E+00	0.00E+00	0.00E+00
IL230350	DEFAULT	Village of Freeburg - Engine #10	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL230355	DEFAULT	Asphalt Sales & Products Inc. - Truck loadout	757560.00	4299901.00	441.63	28.0	135.1	43.198	1.9	7.90E-01	0.00E+00	0.00E+00
IL231259	DEFAULT	Village of Freeburg - Engine #11	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL231260	DEFAULT	Village of Freeburg - Engine #12	769352.00	4257578.00	509.42	28.0	929.9	87.674	1.5	1.28E+01	3.20E+00	3.20E+00
IL231291	DEFAULT	Kurrus Funeral Home - 2 Crematories	759066.00	4271234.00	547.11	18.0	787.0	13.186	1.1	2.70E+00	0.00E+00	0.00E+00
IL232739	DEFAULT	ConocoPhillips Co. - Benzene extraction unit #3 (STK6-4)	754923.00	4302930.00	442.59	185.0	470.0	16.138	9.7	1.22E+01	0.00E+00	0.00E+00
IL232785	DEFAULT	Roxana Landfill, Inc. - Enclosed flare	759153.00	4301368.00	619.62	35.0	1600.1	20.008	12.0	2.31E+01	1.76E+00	1.76E+00
IL233294	DEFAULT	Gateway Terminals, LLC. - Marine vapor combustion unit (MVCU)	744607.00	4275093.00	422.70	74.0	514.0	25.158	3.3	1.69E+01	0.00E+00	0.00E+00
IL233295	DEFAULT	Gateway Terminals, LLC. - Truck/Rail vapor destruction unit (TRCU)	744607.00	4275093.00	422.70	74.0	514.0	25.158	3.3	8.39E+00	0.00E+00	0.00E+00
IL235261	DEFAULT	Gulfstream Aerospace Services Corp. - Make-up air unit 19-3	747629.00	4273560.00	410.10	42.0	577.0	29.356	2.5	1.63E+00	0.00E+00	0.00E+00
IL235939	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #5 (SA-5)	750151.00	4308373.00	430.91	90.0	450.1	54.087	1.4	1.07E+02	0.00E+00	0.00E+00
IL235940	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Strip anneal #6 (SA-6)	750207.00	4308390.00	431.82	110.0	580.0	62.779	1.3	1.07E+02	0.00E+00	0.00E+00
IL236260	DEFAULT	Bunge-SF Grain, LLC. - Grain Dryer	746158.00	4281045.00	417.55	96.0	105.0	87.904	8.2	5.06E+00	1.71E+01	1.71E+01
IL236359	DEFAULT	City of Belleville - 2 Emergency generators (1500 kW each)	763544.00	4265595.00	474.70	28.0	627.0	73.767	1.2	2.57E+01	1.84E+00	0.00E+00
IL236927	DEFAULT	Kraft Heinz Co. - Boiler C	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236928	DEFAULT	Kraft Heinz Co. - Boiler D	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236929	DEFAULT	Kraft Heinz Co. - Boiler E	748105.00	4289580.00	423.56	40.0	380.0	68.946	2.0	1.44E+00	0.00E+00	0.00E+00
IL236930	DEFAULT	National Maintenance and Repair - Cleaver Brooks boiler (Stack 2 of 2)	750920.00	4300904.00	402.46	34.0	450.1	23.321	2.0	1.90E+00	5.00E+00	5.00E+00
IL237099	DEFAULT	Union Electric Co. - Turbine CT02B	745573.00	4283613.00	419.69	30.0	850.0	18.860	11.4	7.74E+01	2.73E+01	2.73E+01
IL237182	DEFAULT	Highland Electric Light Plant - Engine IC-6	788126.93	4293320.17	534.65	28.0	612.1	84.854	2.0	1.32E+01	0.00E+00	0.00E+00
IL237183	DEFAULT	Highland Electric Light Plant - Engine IC-8	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	2.57E+01	0.00E+00	0.00E+00
IL237340	DEFAULT	Charles E. Mahoney - Asphalt silo filling	749517.00	4309892.00	443.14	25.0	74.0	0.262	0.4	5.30E-01	0.00E+00	0.00E+00
IL237341	DEFAULT	Charles E. Mahoney - Truck loadout	749517.00	4309892.00	443.14	27.0	136.0	42.050	1.9	6.00E-01	0.00E+00	0.00E+00
IL237362	DEFAULT	Charles E. Mahoney - Asphalt heaters and boilers	749517.00	4309892.00	443.14	10.0	350.0	69.995	1.0	1.18E+00	2.80E+00	2.80E+00
IL237659	DEFAULT	Green Plains Madison, LLC - Boiler #1	745256.00	4285477.00	414.14	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL237660	DEFAULT	Green Plains Madison, LLC - Fire Pump back-up Engine (460 HP)	745191.00	4285409.00	413.85	13.0	627.0	86.231	0.8	4.80E-01	9.40E-01	0.00E+00
IL237661	DEFAULT	Green Plains Madison, LLC - Electrical system backup Engine (1495 HP)	745144.00	4285537.00	415.88	28.0	627.0	73.767	1.2	3.54E+00	1.21E+01	0.00E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL237679	DEFAULT	Green Plains Madison, LLC - Indirect dryer #1	745191.00	4285468.00	415.12	71.0	387.1	12.136	4.6	7.97E+00	4.10E-01	4.10E-01
IL237866	DEFAULT	Amsted Rail Co., Inc. - Curing oven	746913.00	4287625.00	419.23	39.0	258.0	27.978	1.9	2.52E-01	0.00E+00	0.00E+00
IL237899	DEFAULT	Center Ethanol Co. - Emergency generator	745888.00	4275662.00	412.66	28.0	627.0	73.767	1.2	3.30E+00	0.00E+00	0.00E+00
IL237903	DEFAULT	Center Ethanol Co. - Ethanol loadout Rack	745888.00	4275662.00	412.66	19.0	99.1	7.806	0.7	8.86E-01	0.00E+00	0.00E+00
IL238199	DEFAULT	Solutia Inc. - An in-situ soil vapor extraction system	746325.00	4275822.00	405.12	15.0	70.1	73.406	0.2	4.00E-01	0.00E+00	0.00E+00
IL238839	DEFAULT	Waterloo City Light Plant - Turbine Generator (GT2)	748326.00	4246769.00	640.45	39.0	965.9	87.937	4.8	1.78E+01	0.00E+00	0.00E+00
IL238942	DEFAULT	ConocoPhillips Co. - Rental Boiler #3	754240.00	4303144.00	443.47	20.0	550.0	46.412	4.0	1.65E+00	0.00E+00	0.00E+00
IL239395	DEFAULT	Amsted Rail Co., Inc. - Sand dryer	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	1.24E+00	0.00E+00	0.00E+00
IL239396	DEFAULT	Amsted Rail Co., Inc. - Thermal sand reclaimer	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	3.70E-01	0.00E+00	0.00E+00
IL239899	DEFAULT	Shell Oil Products US - RTO	753758.00	4303650.00	442.59	19.0	200.0	33.948	2.5	0.00E+00	8.47E-01	8.47E-01
IL240053	DEFAULT	Westwood Lands, Inc. - Process heater DFH-1	748864.00	4285684.00	412.99	39.0	284.1	23.157	2.0	8.30E-01	0.00E+00	0.00E+00
IL240359	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0210	746660.00	4276488.00	405.74	45.0	350.0	17.318	7.0	4.89E+00	0.00E+00	0.00E+00
IL240360	DEFAULT	Afton Chemical Corp. - Boiler 500-15-0310	746674.00	4276485.00	407.25	45.0	350.0	17.318	7.0	4.91E+00	0.00E+00	0.00E+00
IL241300	DEFAULT	ConocoPhillips Co. - VOC Flare (West - FLR4-1)	753428.00	4303073.00	428.81	30.0	1800.1	26.174	0.7	1.43E+00	0.00E+00	0.00E+00
IL241301	DEFAULT	ConocoPhillips Co. - VOC Flare (East - FLR4-2)	753441.00	4303073.00	428.77	30.0	1800.1	26.174	0.7	1.43E+00	0.00E+00	0.00E+00
IL241302	DEFAULT	ConocoPhillips Co. - Coker north flare (FLR1-3)	754947.00	4303684.00	444.23	139.0	911.0	26.535	5.4	0.00E+00	3.08E+01	3.08E+01
IL241303	DEFAULT	ConocoPhillips Co. - VF-5 Heater (H350H4 - STK1-1)	754937.00	4303459.00	444.98	150.0	650.0	26.765	12.0	0.00E+00	1.35E+01	1.35E+01
IL241304	DEFAULT	ConocoPhillips Co. - Coker north heater (H351H2 - STK1-2)	754953.00	4303305.00	444.85	150.0	500.1	22.304	10.0	0.00E+00	7.37E+00	7.37E+00
IL241305	DEFAULT	ConocoPhillips Co. - Coker north heater (H351H1 - STK1-3)	754986.00	4303306.00	444.82	150.0	500.1	22.304	10.0	0.00E+00	7.38E+00	7.38E+00
IL241312	DEFAULT	ConocoPhillips Co. - Heater HP-2 (STK7-1)	755263.00	4302920.00	443.86	118.0	400.0	45.002	10.8	0.00E+00	2.87E+01	2.87E+01
IL241405	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #1	756504.00	4295421.00	425.00	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL241449	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #2	756494.00	4295735.00	424.74	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL242126	DEFAULT	Center Point Terminals Co. - Tank Heater	746359.00	4289027.00	411.84	49.0	331.1	32.144	2.5	1.03E+00	0.00E+00	0.00E+00
IL245579	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #3	756198.00	4295409.00	424.97	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL245580	DEFAULT	Procter & Gamble Distributing - Emergency diesel generator #4	756182.00	4295721.00	424.77	26.0	490.0	60.811	1.4	1.68E+01	0.00E+00	0.00E+00
IL245839	DEFAULT	Milam Recycling and Disposal Facility - Landfill gas conversion plant	750666.00	4282895.00	413.09	55.0	70.1	0.000	4.5	3.80E+00	9.00E-01	9.00E-01
IL246759	DEFAULT	Stookey Township WWTP - 2000 kW Emergency generator	756253.00	4269975.00	518.86	28.0	627.0	73.767	1.2	1.54E+01	0.00E+00	0.00E+00
IL246761	DEFAULT	Omega Partners Hartford, LLC - Truck Rail Marine racks loadout and VCUs	752232.00	4300866.00	430.74	33.0	69.5	0.328	0.3	6.60E+00	0.00E+00	0.00E+00
IL246762	DEFAULT	Omega Partners Hartford, LLC - Boiler 1 and 2	752273.00	4300698.00	430.18	58.0	436.0	27.650	3.4	3.83E+00	0.00E+00	0.00E+00
IL248060	DEFAULT	Kraft Heinz Co. - Boiler F	748105.00	4289580.00	423.56	26.0	380.0	34.407	2.0	1.44E+00	0.00E+00	0.00E+00
IL248262	DEFAULT	Olin Winchester, LLC - New Rotary retort process (RDR-2)	750495.00	4308287.00	434.42	16.0	119.9	26.634	1.7	9.62E+00	0.00E+00	0.00E+00
IL248799	DEFAULT	Gateway Terminals, LLC. - 600 HP Boiler	744607.00	4275093.00	422.70	26.0	440.0	39.557	2.2	2.11E+00	0.00E+00	0.00E+00
IL249480	DEFAULT	Highland Electric Light Plant - Engine IC-2	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.44E+01	0.00E+00	0.00E+00
IL249481	DEFAULT	Highland Electric Light Plant - Engine IC-3	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.25E+01	0.00E+00	0.00E+00
IL249482	DEFAULT	Highland Electric Light Plant - Engine IC-9	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.50E+01	0.00E+00	0.00E+00
IL249483	DEFAULT	Highland Electric Light Plant - Engine IC-10	788126.93	4293320.17	534.65	57.0	734.1	61.762	11.4	1.50E+01	0.00E+00	0.00E+00
IL249499	DEFAULT	Roxana Landfill, Inc. - Zink ultra-Low emissions (Zule) Flare	759153.00	4301368.00	619.62	60.0	1800.1	46.838	13.0	1.25E+01	1.55E+01	1.55E+01
IL250343	DEFAULT	Mayco Mfg, LLC - Natural gas combustion	747189.00	4286970.00	421.78	39.0	284.1	23.157	2.0	1.74E+00	0.00E+00	0.00E+00
IL250892	DEFAULT	ConocoPhillips Co. - Lift station pump (21028)	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	1.40E+00	4.90E-01	4.90E-01
IL250893	DEFAULT	ConocoPhillips Co. - Lift station pump (21029)	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	1.30E+00	4.60E-01	4.60E-01
IL250894	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #1	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250895	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #2	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250896	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #3	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	5.98E+00	2.10E+00	2.10E+00
IL250897	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #4	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250898	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #5	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	6.01E+00	2.12E+00	2.12E+00
IL250899	DEFAULT	ConocoPhillips Co. - Non-emergency air compressor #6	754240.00	4303144.00	443.47	26.0	490.0	60.811	1.4	5.98E+00	2.10E+00	2.10E+00
IL251099	DEFAULT	Amsted Rail Co., Inc. - Annealing Furnace 18	747071.00	4287670.00	426.02	39.0	284.1	23.157	2.0	1.12E+00	1.00E-01	1.00E-01
IL251286	DEFAULT	Premcor Refining Group, Inc. - Vapor Combustion Unit	752775.00	4302414.00	429.95	53.0	289.0	24.830	2.9	1.00E+01	0.00E+00	0.00E+00
IL251735	DEFAULT	ConocoPhillips Co. - Diesel engine (605 HP)	754240.00	4303144.00	443.47	15.0	69.5	0.328	0.3	3.50E+00	0.00E+00	0.00E+00
IL251754	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #1	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL253107	DEFAULT	Allnex USA, Inc. - Natural gas combustion	749698.00	4276478.00	418.37	58.0	436.0	27.650	3.4	3.26E+00	0.00E+00	0.00E+00
IL253166	DEFAULT	Cerro Flow Products, LLC. - Generators	746228.00	4275272.00	407.32	26.0	490.0	60.811	1.4	9.23E-01	2.82E-01	2.82E-01
IL253167	DEFAULT	City of Belleville - Emergency diesel generator (1500 kW)	762469.00	4266351.00	468.70	26.0	490.0	60.811	1.4	1.16E+01	0.00E+00	0.00E+00
IL253300	DEFAULT	Phillips 66 Pipeline, LLC - Engines (insignificant activities)	744935.00	4274152.00	407.25	26.0	490.0	60.811	1.4	9.23E-01	0.00E+00	0.00E+00
IL253361	DEFAULT	Amsted Rail Co., Inc. - Sand regeneration process (combustion)	746975.00	4287537.00	422.05	39.0	284.1	23.157	2.0	2.80E-01	2.80E-01	2.80E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
IL253367	DEFAULT	Green Plains Madison, LLC - Boiler #2	745258.00	4285486.00	414.27	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253368	DEFAULT	Green Plains Madison, LLC - Boiler #3	745260.00	4285491.00	414.24	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253369	DEFAULT	Green Plains Madison, LLC - Boiler #4	745262.00	4285500.00	414.21	71.0	284.1	22.960	3.3	1.29E+00	5.00E-01	5.00E-01
IL253370	DEFAULT	Green Plains Madison, LLC - Indirect dryer #2	745164.00	4285430.00	414.60	81.0	387.1	8.430	5.5	7.97E+00	4.10E-01	4.10E-01
IL253386	DEFAULT	GBC Metals, LLC (d/b/a Olin Brass) - Engines (insignificant activities)	750423.00	4308352.00	434.28	26.0	490.0	60.811	1.4	9.23E-01	0.00E+00	0.00E+00
IL253738	DEFAULT	Milam Recycling and Disposal Facility - 2000 scfm Utility Flare	750550.00	4282537.00	594.06	36.0	852.0	18.565	4.6	1.83E+01	7.32E+00	7.32E+00
IL253769	DEFAULT	Vedia ES Technical Solutions, LLC - 2 Emergency generators	745532.00	4275942.00	414.76	26.0	490.0	60.811	1.4	7.41E-01	0.00E+00	0.00E+00
IL254175	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #2	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254176	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #3	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254177	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #4	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254178	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #5	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254179	DEFAULT	Chain of Rocks Recycling & Disposal - Passive flare #6	746944.00	4293274.00	431.79	10.0	841.0	4.756	0.5	4.95E-01	0.00E+00	0.00E+00
IL254699	DEFAULT	HSHS St. Elizabeth's Hospital - 2 Emergency generators	767237.00	4275111.00	541.01	28.0	627.0	73.767	1.2	1.93E+01	0.00E+00	0.00E+00
IL255341	DEFAULT	Roxana Landfill, Inc. - New open flare	759153.00	4301368.00	619.62	45.0	1800.1	61.434	1.3	3.77E+01	8.17E+00	8.17E+00
IL255527	DEFAULT	Magnesium Elektron North America - Natural gas combustion	746452.00	4285724.00	415.49	39.0	284.1	23.157	2.0	4.20E-01	0.00E+00	0.00E+00
IL255741	DEFAULT	ConocoPhillips Co. - Utility Boiler #19 (BLR-19)	754755.00	4302798.00	442.16	132.0	304.1	46.281	7.0	0.00E+00	1.54E+01	1.54E+01
IL255816	DEFAULT	Mayco Mfg, LLC - Expansion: Natural gas combustion	747189.00	4286970.00	421.78	39.0	284.1	23.157	2.0	1.94E+00	0.00E+00	0.00E+00
IL255953	DEFAULT	Moore Recycling Concrete & Asphalt, LLC - Drum mix asphalt plant	762178.00	4246660.00	463.19	35.0	251.0	56.908	4.0	1.32E+01	0.00E+00	0.00E+00
IL256624	DEFAULT	PBT Acquisition, LLC - ASR Dryer	748704.00	4280830.00	418.77	32.0	305.0	19.483	1.5	2.53E+00	0.00E+00	0.00E+00
IL257535	DEFAULT	Marathon Ashland Pipe Line, LLC - Marine vapor combustion unit	751239.00	4302663.00	402.85	51.0	810.1	27.749	7.4	2.71E+01	0.00E+00	0.00E+00
SJEFF1	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	410.0	370.0	54.081	19.0		1.44E+02	1.44E+02
SJEFF2	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	125.0	210.0	59.173	6.6		2.04E-02	2.04E-02
SJEFF3	DEFAULT	RIVER CEMENT CO. DBA BUZZI UNICEM USA SELMA PLANT	733431.84	4229131.13	406.36	10.0	1100.0	23.333	0.5		1.32E-01	0.00E+00
SJEFF15	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	52.0	260.0	10.666	2.0		5.09E-03	5.09E-03
SJEFF16	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.29E-01	2.29E-01
SJEFF17	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.40E-03	2.40E-03
SJEFF18	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		2.29E-01	0.00E+00
SJEFF19	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		1.80E-03	1.80E-03
SJEFF20	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		1.20E-03	1.20E-03
SJEFF21	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		5.40E-04	5.40E-04
SJEFF22	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		4.80E-04	4.80E-04
SJEFF23	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		4.20E-04	4.20E-04
SJEFF24	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	10.0	1100.0	23.333	0.5		3.00E-04	3.00E-04
SJEFF25	DEFAULT	SPECIALTY ELECTRONIC MATERIALS US INC THE RIVERSIDE PLANT	728353.47	4240500.97	465.09	15.0	1049.0	149.734	0.2		4.80E-04	0.00E+00
SJEFF26	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	700.0	270.0	82.001	20.7		1.73E+03	1.73E+03
SJEFF27	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	700.0	270.0	82.001	29.0		2.50E+03	2.50E+03
SJEFF28	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	30.0	985.0	105.633	1.3		8.52E-06	0.00E+00
SJEFF29	DEFAULT	AMEREN MISSOURI RUSH ISLAND ENERGY CENTER	739491.07	4224078.19	407.87	240.0	600.0	32.999	7.0		3.54E-03	3.54E-03
SJEFF59	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	3.03E-01	2.17E-03	2.17E-03
SJEFF60	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	3.03E-01	2.17E-03	2.17E-03
SJEFF61	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.003	1.7	4.20E-02	3.00E-04	3.00E-04
SJEFF62	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	392.0	0.000	1.7	1.12E-02	7.98E-05	7.98E-05
SJEFF63	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	27.0	1800.0	10.046	1.5	2.86E-02	1.63E-01	1.63E-01
SJEFF65	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	0.0	0.000	0.5	1.45E-02	4.34E-04	4.34E-04
SJEFF66	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	0.0	0.000	0.5	1.40E-02	4.20E-04	4.20E-04
SJEFF67	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	-459.7	0.003	2.0	8.35E-02	5.97E-04	5.97E-04
SJEFF68	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	20.0	-459.7	0.003	2.0	3.54E-01	2.53E-03	2.53E-03
SJEFF69	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	14.0	-459.7	0.003	2.0	2.51E-01	1.79E-03	1.79E-03
SJEFF70	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	1.11E+00	3.37E-01	0.00E+00
SJEFF71	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	1.11E+00	3.37E-01	0.00E+00
SJEFF72	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	5.0	-459.7	0.003	0.5	3.32E-01	1.02E-01	0.00E+00
SJEFF73	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	10.0	-459.7	0.003	1.0	1.92E-05	1.37E-07	1.37E-07
SJEFF74	DEFAULT	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	10.0	-459.7	0.003	1.0	1.92E-05	1.37E-07	1.37E-07
SJEFF82	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	156.0	611.0	39.902	5.8	7.38E-02	3.77E+00	3.77E+00
SJEFF83	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	156.0	611.0	39.902	5.8	1.96E-01	6.37E+00	6.37E+00

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SJEFF86	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	20.0	0.0	0.000	0.5	1.26E-01	9.00E-04	9.00E-04
SJEFF92	DEFAULT	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	10.0	1100.0	23.333	0.5		2.17E+00	0.00E+00
SJEFF99	DEFAULT	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	2.5	170.0	46.499	2.0	5.60E-01	4.25E-02	4.25E-02
SJEFF100	DEFAULT	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	2.5	170.0	46.499	2.0	1.60E-01	1.14E-03	1.14E-03
SJEFF125	DEFAULT	FRED WEBER, INC. ANTONIA	720102.79	4248877.71	670.57	20.0	250.0	49.249	5.0		5.88E-02	5.88E-02
SJEFF128	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		2.33E-01	2.33E-01
SJEFF129	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1354.0	25.666	1.0		1.92E-02	1.92E-02
SJEFF130	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	30.0	1448.0	22.418	2.0		9.62E-03	9.62E-03
SJEFF131	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		3.50E-01	3.50E-01
SJEFF132	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1413.0	18.734	2.0		2.95E-01	2.95E-01
SJEFF133	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1347.0	16.316	1.0		1.54E-02	1.54E-02
SJEFF134	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	30.0	1448.0	22.418	2.0		6.01E-03	6.01E-03
SJEFF135	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	18.0	1354.0	25.666	1.0		1.44E-02	1.44E-02
SJEFF136	DEFAULT	ANIMAL CARE SERVICE INC FESTUS	724479.42	4236856.27	436.22	28.0	1600.0	18.734	2.0		7.50E-02	7.50E-02
SJEFF137	DEFAULT	JEFFERSON COUNTY CREMATION SERVICES LC PEVELY	728536.07	4239554.88	583.23	10.0	1100.0	23.333	0.5		9.39E-02	9.39E-02
SJEFF138	DEFAULT	SIMPSON CONSTRUCTION MATERIALS PAULINA HILLS SITE	726459.86	4259186.04	426.64	12.0	885.0	42.441	0.5		1.29E-01	1.29E-01
SJEFF144	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	32.0	247.0	0.853	3.7	3.03E+00	1.21E+00	1.21E+00
SJEFF145	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	5.0	400.0	0.003	2.0	5.35E-02	3.07E-01	3.07E-01
SJEFF146	DEFAULT	N. B. WEST CONTRACTING CO INC HOUSE SPRINGS ASPHALT	712353.42	4251763.19	532.22	5.0	400.0	0.003	2.0	3.61E-03	9.62E-08	9.62E-08
SSTC1	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	496.5	138.7	46.759	23.6		2.32E+02	2.32E+02
SSTC2	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	496.5	136.6	46.844	23.6		2.89E+02	2.89E+02
SSTC3	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	212.0	325.0	50.000	4.5		8.90E-04	8.90E-04
SSTC4	DEFAULT	AMEREN MISSOURI SIOUX ENERGY CENTER	734752.14	4310260.61	445.64	25.0	1100.0	23.333	1.0		1.42E+00	0.00E+00
SSTC9	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC10	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC11	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC12	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC13	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		2.23E-04	2.23E-04
SSTC14	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	50.0	1000.0	0.151	2.3		1.70E-03	1.70E-03
SSTC15	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	14.0	1063.0	40.515	0.4		3.59E-01	0.00E+00
SSTC16	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	3.0	1011.0	154.085	0.8		1.08E+00	0.00E+00
SSTC17	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	3.0	1011.0	154.085	0.8		1.06E+00	0.00E+00
SSTC18	DEFAULT	SSM HEALTH ST JOSEPHS HOSPITAL	718499.57	4295433.59	515.16	14.0	1063.0	56.732	0.4		3.66E-01	2.38E-04
SSTC28	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		2.16E+01	2.16E+01
SSTC29	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		7.21E+02	7.21E+02
SSTC30	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	250.0	365.0	12.999	10.0		2.16E+01	2.16E+01
SSTC31	DEFAULT	GENERAL MOTORS LLC WENTZVILLE CENTER	689428.03	4299089.70	622.57	53.0	520.0	58.999	1.8		1.33E-01	1.33E-01
SSTC45	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		2.31E+00	2.31E+00
SSTC46	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		2.66E-02	2.66E-02
SSTC47	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	10.0	1100.0	23.333	0.5		1.52E+00	0.00E+00
SSTC48	DEFAULT	SSM HEALTH ST JOSEPH HOSPITAL WEST	693164.96	4297283.00	533.89	66.0	200.0	0.003	3.0		1.50E-03	1.50E-03
SSTC57	DEFAULT	BLASTCO INC	690213.84	4297755.23	543.44	20.0	0.0	0.000	0.5		3.96E-04	3.96E-04
SSTC63	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	65.0	16.499	1.5		4.20E-03	4.20E-03
SSTC64	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	17.0	450.0	27.631	1.3		4.09E-03	4.09E-03
SSTC65	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	20.0	0.0	0.000	0.5		4.10E-03	4.10E-03
SSTC66	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	77.0	33.015	1.5		1.56E-03	1.56E-03
SSTC67	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	77.0	33.015	1.5		8.40E-04	8.40E-04
SSTC68	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	33.0	450.0	39.416	1.5		1.44E-03	1.44E-03
SSTC69	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	400.0	29.708	1.0		1.74E-03	1.74E-03
SSTC70	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	30.0	450.0	24.803	1.2		4.68E-03	4.68E-03
SSTC71	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	28.0	475.0	1.667	0.5		0.00E+00	0.00E+00
SSTC72	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	28.0	450.0	27.500	2.3		0.00E+00	0.00E+00
SSTC73	DEFAULT	TRUE MANUFACTURING CO O'FALLON	702777.57	4297717.78	496.26	10.0	1100.0	23.333	0.5		3.07E+00	0.00E+00
SSTC87	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	2.10E-02	6.31E-04	6.31E-04
SSTC88	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	3.14E-02	1.73E-04	1.73E-04

R011323

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTC89	DEFAULT	HANSEN'S TREE SERVICE O'FALLON	697357.18	4298189.47	585.40	20.0	0.0	0.000	0.5	1.20E+00	3.65E-01	3.65E-01
SSTC98	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC99	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC100	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC101	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	3.87E-01	2.76E-03	2.76E-03
SSTC102	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC103	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC104	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC105	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC106	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTC107	DEFAULT	AMERISTAR ST. CHARLES	718432.28	4294005.30	443.64	1.0	-459.7	0.003	1.0	1.27E-03	9.46E-04	0.00E+00
SSTL1	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	250.0	326.0	101.627	11.0		2.28E-02	2.28E-02
SSTL2	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	250.0	326.0	101.627	11.0		2.20E-02	2.20E-02
SSTL3	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	350.0	345.0	135.400	14.0		2.97E+02	2.97E+02
SSTL4	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	350.0	374.0	123.284	16.0		4.69E+02	4.69E+02
SSTL5	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	40.0	642.0	38.100	1.0		5.46E-03	5.46E-03
SSTL6	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL7	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		1.96E+00	1.96E+00
SSTL8	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL9	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		2.01E-02	2.01E-02
SSTL10	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		4.55E-01	4.55E-01
SSTL11	DEFAULT	AMEREN MISSOURI MERAMEC ENERGY CENTER	732736.78	4253752.81	418.24	32.0	1050.0	103.799	12.0		1.10E-02	1.10E-02
SSTL14	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	99.0	440.0	9.432	4.5	9.84E-01	1.42E+00	1.42E+00
SSTL15	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	99.0	440.0	9.432	4.5	1.06E-02	7.55E-05	7.55E-05
SSTL16	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	10.0	1100.0	23.333	0.5	5.03E+00	1.53E+00	0.00E+00
SSTL17	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	104.0	450.0	7.172	1.2	2.91E+00	4.19E+00	4.19E+00
SSTL18	DEFAULT	MISSOURI BAPTIST MEDICAL CENTER NORTH BALLAS	722244.75	4279363.47	652.56	104.0	450.0	7.172	1.2	9.59E-02	6.85E-04	6.85E-04
SSTL19	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	40.0	315.0	30.098	4.0		2.95E-05	2.95E-05
SSTL20	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	40.0	315.0	30.098	4.0		2.24E-02	2.24E-02
SSTL21	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	10.0	1100.0	23.333	0.5		1.06E+00	0.00E+00
SSTL22	DEFAULT	MONSANTO WORLD HEADQUARTERS LINDBERGH BLVD	726250.11	4283348.63	691.57	10.0	1100.0	23.333	0.5		5.74E-04	0.00E+00
SSTL23	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		2.57E+01	2.57E+01
SSTL24	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		6.69E-03	6.69E-03
SSTL25	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	80.0	150.0	50.000	3.0		2.66E-02	2.66E-02
SSTL26	DEFAULT	U. S. SILICA COMPANY PACIFIC	698244.91	4262010.04	471.16	110.0	70.0	0.003	2.7		1.39E-02	1.39E-02
SSTL27	DEFAULT	ST. JOHNS MERCY MEDICAL CNTR/MAINTENANCE NEW BALLAS RD	722224.73	4280414.44	627.82	30.0	400.0	4.951	4.0		1.11E+01	1.11E+01
SSTL28	DEFAULT	ST. JOHNS MERCY MEDICAL CNTR/MAINTENANCE NEW BALLAS RD	722224.73	4280414.44	627.82	30.0	400.0	4.951	4.0		1.95E-02	1.95E-02
SSTL29	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	159.0	300.0	32.667	4.8		3.08E-05	3.08E-05
SSTL30	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	159.0	300.0	32.667	4.8		2.36E-02	2.36E-02
SSTL31	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		4.34E-01	0.00E+00
SSTL32	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		4.04E-03	0.00E+00
SSTL33	DEFAULT	MONSANTO CHESTERFIELD VILLAGE	712608.90	4282124.50	590.78	10.0	1100.0	23.333	0.5		3.77E+00	0.00E+00
SSTL37	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	175.0	350.0	4.849	9.0	0.00E+00	0.00E+00	0.00E+00
SSTL38	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	175.0	350.0	4.849	9.0	2.24E+00	1.60E-02	1.60E-02
SSTL39	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	21.0	475.0	9.616	1.2	0.00E+00	0.00E+00	0.00E+00
SSTL40	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	21.0	475.0	9.616	1.2	6.04E-01	4.31E-03	4.31E-03
SSTL41	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	1.39E+01	2.34E-03	0.00E+00
SSTL42	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	2.12E+01	3.78E-02	0.00E+00
SSTL43	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	10.0	1100.0	23.333	0.5	1.59E+01	4.87E+00	0.00E+00
SSTL44	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	9.13E-02	2.37E+01	2.37E+01
SSTL45	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	9.02E-02	4.11E+01	4.11E+01
SSTL46	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	1.05E-01	1.48E+01	1.48E+01
SSTL47	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7	2.86E-01	2.62E+01	2.62E+01
SSTL48	DEFAULT	WASHINGTON UNIVERSITY DANFORTH CAMPUS	734425.40	4281363.46	506.46	55.0	316.0	84.150	0.7		2.04E-03	2.04E-03
SSTL66	DEFAULT	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	20.0	230.5	31.309	5.1		3.27E-01	3.27E-01

R011324

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTL70	DEFAULT	FRED WEBER, INC. ANTIRE	711291.07	4264547.49	448.49	30.0	250.0	58.950	4.0		1.27E+00	1.27E+00
SSTL76	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	45.0	400.0	44.167	2.5	5.58E+00	8.24E+00	8.24E+00
SSTL77	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	45.0	400.0	44.167	2.5	1.38E+00	9.87E-03	9.87E-03
SSTL78	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	38.0	400.0	25.968	2.0	3.02E+00	4.47E+00	4.47E+00
SSTL79	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	38.0	400.0	25.968	2.0	1.06E+00	7.57E-03	7.57E-03
SSTL80	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	50.0	461.0	14.616	3.0	2.95E+00	4.36E+00	4.36E+00
SSTL81	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	50.0	461.0	14.616	3.0	7.02E-01	5.01E-03	5.01E-03
SSTL82	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	1.0	100.0	12.733	0.1	1.66E+00	1.19E-02	1.19E-02
SSTL83	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	15.0	955.0	19.800	0.7	2.52E+01	4.49E-02	0.00E+00
SSTL84	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	7.0	960.0	113.182	0.8	2.50E+01	7.63E+00	0.00E+00
SSTL85	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	30.0	965.0	31.234	5.0	2.03E-01	1.04E-02	1.04E-02
SSTL86	DEFAULT	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	17.0	72.0	29.882	2.8		5.58E-03	5.58E-03
SSTL88	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	28.0	1400.0	25.466	1.0		1.01E+00	1.01E+00
SSTL89	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	38.3	1400.0	21.568	12.0		7.77E-01	7.77E-01
SSTL90	DEFAULT	CHAMP LANDFILL COMPANY LLC	720845.43	4291144.98	571.46	38.0	1400.0	21.568	12.0		6.35E-01	6.35E-01
SSTL92	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	40.0	1200.0	61.381	1.1		1.86E-02	1.86E-02
SSTL93	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	40.0	1200.0	61.381	1.1		6.98E-02	6.98E-02
SSTL94	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	45.0	1200.0	50.226	1.3		1.70E+01	1.70E+01
SSTL95	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	45.0	1200.0	50.226	1.3		5.43E+01	5.43E+01
SSTL96	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	35.0	1200.0	53.051	1.0		1.22E-01	1.22E-01
SSTL97	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	584.0	1450.0	21.923	4.7		1.08E-03	1.08E-03
SSTL98	DEFAULT	BRIDGETON LANDFILL, LLC	722107.35	4294454.70	459.06	584.0	1450.0	21.923	4.7		1.07E-03	1.07E-03
SSTL100	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	17.2	500.0	25.000	3.0		9.06E+00	9.06E+00
SSTL101	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	17.2	500.0	25.000	3.0		7.14E-03	7.14E-03
SSTL102	DEFAULT	SSM HEALTH ST MARYS HOSPITAL	734075.92	4279544.88	601.67	130.0	1009.0	53.156	1.0		2.56E+00	0.00E+00
SSTL106	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		6.63E-02	6.63E-02
SSTL107	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		1.15E-02	1.15E-02
SSTL108	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	12.0	900.0	38.100	1.2		8.33E+00	0.00E+00
SSTL109	DEFAULT	SSM HEALTH DEPAUL HOSPITAL - ST. LOUIS BRIDGETON	723046.72	4292134.06	542.16	45.0	450.0	21.932	3.0		1.37E-03	1.37E-03
SSTL111	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	3.02E+00	4.35E+00	4.35E+00
SSTL112	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	4.17E-01	2.98E-03	2.98E-03
SSTL113	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	4.40E-03	6.49E-03	6.49E-03
SSTL114	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	45.0	425.0	1.667	2.0	6.81E-01	4.86E-03	4.86E-03
SSTL115	DEFAULT	VETERANS ADMIN MEDICAL CENTER JEFFERSON BARRACKS DRIVE	736944.98	4264089.51	508.83	10.0	1100.0	23.333	0.5	1.02E+02	3.11E+01	0.00E+00
SSTL116	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	35.0	270.0	10.000	4.0	1.45E-01	6.26E-03	6.26E-03
SSTL117	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	35.0	270.0	10.000	4.0	9.17E-01	6.55E-03	6.55E-03
SSTL118	DEFAULT	CHRISTIAN HOSPITAL NORTHEAST DUNN ROAD	739738.60	4295554.78	565.65	15.0	-459.7	0.003	1.0	3.28E+01	3.00E-01	0.00E+00
SSTL120	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	15.0	65.0	7.165	2.2		3.20E-03	3.20E-03
SSTL121	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	16.0	75.0	26.949	1.1		8.96E-03	8.96E-03
SSTL122	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	29.0	600.0	14.167	2.5		4.83E-01	4.83E-01
SSTL123	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	30.0	365.0	12.001	1.2		4.48E-01	4.48E-01
SSTL124	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	29.0	360.0	25.499	0.7		1.63E-01	1.63E-01
SSTL126	DEFAULT	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	20.0	0.0	0.000	0.5		1.23E-02	1.23E-02
SSTL127	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	30.0	650.0	11.998	1.3		3.60E-03	3.60E-03
SSTL128	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	30.0	650.0	11.998	1.3		1.79E+01	1.79E+01
SSTL129	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	26.0	650.0	13.264	2.0		2.26E-03	2.26E-03
SSTL130	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	26.0	650.0	13.264	2.0		1.44E+01	1.44E+01
SSTL131	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	54.0	1800.0	17.218	2.3		1.21E-03	1.21E-03
SSTL132	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	10.0	1100.0	23.333	0.5		9.83E-01	9.83E-01
SSTL133	DEFAULT	REICHHOLD LLC 2 VALLEY PARK	718899.54	4269850.38	422.90	10.0	1100.0	23.333	0.5		9.83E-01	9.83E-01
SSTL141	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	25.0	495.0	4.068	2.5		3.40E+00	3.40E+00
SSTL142	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	25.0	495.0	4.068	2.5		8.76E-04	8.76E-04
SSTL143	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	30.0	450.0	0.003	1.5		5.59E-04	5.59E-04
SSTL144	DEFAULT	ST. ANTHONY'S MEDICAL CENTER KENNERLY ROAD	728489.70	4265428.04	633.14	10.0	1100.0	23.333	0.5		4.66E-02	0.00E+00
SSTL147	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	25.0	550.0	1.181	0.7	9.18E-01	8.00E-01	8.00E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SSTL148	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	25.0	550.0	1.181	0.7	1.58E+00	5.47E-03	5.47E-03
SSTL149	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	15.2	446.0	19.393	1.7	4.42E-01	2.28E-01	2.28E-01
SSTL150	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	15.2	446.0	19.393	1.7	9.14E-02	4.81E-03	4.81E-03
SSTL151	DEFAULT	MSD, MISSOURI RIVER WWTP MO RIVER WASTERWATER TREATMENT PLANT	718333.79	4290583.38	444.32	16.0	77.0	4.774	2.0	2.46E+00	4.74E-01	4.74E-01
SSTL152	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	42.0	300.0	38.494	4.2	2.49E+01	5.49E+00	5.49E+00
SSTL153	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	26.7	400.0	26.785	0.8	3.84E-03	1.20E-04	1.20E-04
SSTL154	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	26.7	400.0	26.785	0.8	4.60E-02	1.44E-03	1.44E-03
SSTL162	DEFAULT	MACLAN INDUSTRIES	742056.49	4291436.76	495.44	14.0	190.0	0.003	0.2		2.29E-01	2.29E-01
SSTL165	DEFAULT	MISSOURI AMERICAN WATER-CENTRAL PLANT CHESTERFIELD	715427.34	4284896.78	451.44	22.0	871.0	24.016	0.8		1.02E-01	1.02E-01
SSTL166	DEFAULT	MISSOURI AMERICAN WATER-CENTRAL PLANT CHESTERFIELD	715427.34	4284896.78	451.44	10.0	871.0	24.016	0.8		2.38E-01	2.38E-01
SSTL169	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	1.79E-01	1.28E-03	1.28E-03
SSTL170	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	25.0	-459.7	0.003	0.8	2.33E+01	3.69E-03	3.69E-03
SSTL171	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	18.0	-459.7	0.003	4.0	1.61E+00	6.69E-02	6.69E-02
SSTL172	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	15.0	-459.7	0.003	2.0	1.20E-02	8.60E-05	8.60E-05
SSTL173	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	16.0	-459.7	0.003	0.5	9.34E-01	2.85E-01	2.85E-01
SSTL174	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	4.62E-03	3.30E-05	3.30E-05
SSTL175	DEFAULT	SPIRE MISSOURI, EAST INC.	736637.09	4302290.45	525.66	20.0	0.0	0.000	0.5	4.62E-03	3.30E-05	3.30E-05
SSTL196	DEFAULT	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	7.7	25.0	11.788	0.9	3.02E+00	1.28E-01	1.28E-01
SSTL199	DEFAULT	A.G. RECYCLING	734844.18	4284158.21	525.43	10.0	1100.0	23.333	0.5		1.59E-01	1.59E-01
SSTL200	DEFAULT	A.G. RECYCLING	734844.18	4284158.21	525.43	10.0	1100.0	23.333	0.5		7.25E-01	7.25E-01
SSTL209	DEFAULT	MISSOURI-AMERICAN WATER CO FLORISSANT	728394.88	4300010.04	461.78	15.0	896.0	0.000	14.0		9.51E+00	9.51E+00
SSTL214	DEFAULT	THE HARPER COMPANY	731184.93	4292013.86	588.35	10.0	1100.0	23.333	0.5		2.75E-01	0.00E+00
SCITY1	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	330.0	21.217	10.0		2.38E-02	2.38E-02
SCITY2	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	100.0	350.0	47.149	3.0		5.80E-02	5.80E-02
SCITY3	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		1.67E+01	1.67E+01
SCITY4	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		1.78E-02	1.78E-02
SCITY5	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		2.53E+01	2.53E+01
SCITY6	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	225.0	350.0	18.468	10.0		2.15E-02	2.15E-02
SCITY7	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	135.0	950.0	19.367	1.5		1.75E+01	1.75E+01
SCITY8	DEFAULT	ANHEUSER-BUSCH INC ST. LOUIS	743002.81	4275906.67	469.19	20.0	50.0	70.000	1.0		1.69E+00	1.69E+00
SCITY9	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	70.0	200.0	0.003	5.5	1.33E+00	9.51E-03	9.51E-03
SCITY10	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	70.0	200.0	0.003	5.5	2.13E+00	1.52E-02	1.52E-02
SCITY11	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	100.0	145.0	62.500	4.5	2.53E+00	1.81E-02	1.81E-02
SCITY12	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	100.0	145.0	62.500	4.5	3.20E-01	2.29E-03	2.29E-03
SCITY13	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	12.0	200.0	0.335	1.0	3.77E+00	1.15E+00	0.00E+00
SCITY14	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	50.400	2.0	3.55E-02	1.07E-03	1.07E-03
SCITY15	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	50.400	2.0	3.07E-02	9.22E-04	9.22E-04
SCITY16	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	45.0	150.0	69.751	1.7	3.07E-02	9.22E-04	9.22E-04
SCITY17	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	16.0	77.0	24.600	0.2		1.41E-03	1.41E-03
SCITY18	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	3.0	800.0	0.335	0.5	1.63E-01	4.98E-02	0.00E+00
SCITY22	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	20.0	0.0	0.000	0.5	5.72E-03	1.72E-04	1.72E-04
SCITY23	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	6.00E-02	1.83E-02	0.00E+00
SCITY24	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	785.0	42.283	0.3	2.11E+00	6.44E-01	0.00E+00
SCITY25	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	785.0	42.283	0.3	8.12E-03	4.79E-03	0.00E+00
SCITY26	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	1.73E-02	5.29E-03	0.00E+00
SCITY27	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	42.0	77.0	3.734	0.2	4.35E-02	1.33E-02	0.00E+00
SCITY28	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	20.0	200.0	0.335	1.0	1.98E-01	6.04E-02	0.00E+00
SCITY29	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.07E-01	3.27E-02	0.00E+00
SCITY30	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.09E-04	3.32E-05	0.00E+00
SCITY31	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	22.0	212.0	1.296	1.0	5.28E-01	1.61E-01	0.00E+00
SCITY32	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	90.0	77.0	33.215	2.2	1.09E-04	3.32E-05	0.00E+00
SCITY33	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	10.0	1100.0	23.333	0.5	3.65E-02	1.12E-02	0.00E+00
SCITY34	DEFAULT	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.0	800.0	0.335	0.5	1.98E-01	6.04E-02	0.00E+00
SCITY48	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		2.58E-01	2.58E-01
SCITY49	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		2.42E-02	2.42E-02

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITYS0	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		1.20E+00	1.20E+00
SCITY51	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	111.0	300.0	72.900	4.0		1.51E-01	1.51E-01
SCITY52	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		1.17E+00	1.17E+00
SCITY53	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		6.91E-03	6.91E-03
SCITY54	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		1.17E+00	1.17E+00
SCITY55	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	115.0	280.0	41.099	5.0		7.87E-03	7.87E-03
SCITY56	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	30.0	975.0	237.684	0.8		3.10E-02	0.00E+00
SCITY57	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		2.59E+01	2.59E+01
SCITY58	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		5.09E+00	5.09E+00
SCITY59	DEFAULT	ASHLEY ENERGY LLC	745321.30	4280225.01	423.00	161.0	250.0	34.101	4.0		3.48E-02	3.48E-02
SCITY60	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.97E-01	3.97E-01	3.97E-01
SCITY61	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.97E-01	5.32E-02	5.32E-02
SCITY62	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.00E+00	4.43E+00	4.43E+00
SCITY63	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.30E+00	2.36E-02	2.36E-02
SCITY64	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.00E+00	4.43E+00	4.43E+00
SCITY65	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.20E+00	2.29E-02	2.29E-02
SCITY66	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	20.0	0.0	0.000	0.5	4.42E+01	1.33E+00	1.33E+00
SCITY67	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	69.0	318.0	63.035	3.0	4.19E+00	4.64E+00	4.64E+00
SCITY68	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	69.0	318.0	63.035	3.0	6.11E-01	5.15E-03	5.15E-03
SCITY69	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	3.04E+00	4.48E+00	4.48E+00
SCITY70	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	225.0	280.0	35.784	7.3	1.14E+00	8.17E-03	8.17E-03
SCITY71	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	10.0	1100.0	23.333	0.5	2.98E-03	4.70E-07	0.00E+00
SCITY72	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279906.98	511.94	10.0	1100.0	23.333	0.5	7.05E+00	2.15E+00	0.00E+00
SCITY83	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		1.14E-04	1.14E-04
SCITY84	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		4.07E-03	4.07E-03
SCITY85	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	430.0	35.000	2.0		8.40E-03	8.40E-03
SCITY86	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		1.14E+00	1.14E+00
SCITY87	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		4.07E-03	4.07E-03
SCITY88	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		1.14E+00	1.14E+00
SCITY89	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	50.0	280.0	35.000	2.0		4.07E-03	4.07E-03
SCITY90	DEFAULT	VETERANS ADMIN MEDICAL CENTER JOHN COCHRAN DIV	741047.52	4280704.99	545.64	10.0	1100.0	23.333	0.5		2.47E+00	0.00E+00
SCITY110	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	32.0	120.0	15.453	2.0		2.08E-02	2.08E-02
SCITY111	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	481.0	200.0	9.432	3.0		5.70E-03	5.70E-03
SCITY112	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	56.0	400.0	15.922	4.0		6.81E+01	6.81E+01
SCITY113	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	56.0	400.0	15.922	4.0		3.75E-02	3.75E-02
SCITY114	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	45.0	122.0	151.818	2.0		1.14E-02	1.14E-02
SCITY115	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	80.0	171.0	69.682	2.0		5.14E-03	5.14E-03
SCITY116	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	78.0	176.0	88.484	1.2		1.43E-03	1.43E-03
SCITY117	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	10.0	1100.0	23.333	0.5		1.91E-03	1.91E-03
SCITY121	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	42.0	340.0	37.776	4.0		9.43E+01	9.43E+01
SCITY122	DEFAULT	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	42.0	340.0	37.776	4.0		5.31E-02	5.31E-02
SCITY123	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		6.41E+00	6.41E+00
SCITY124	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		7.35E-03	7.35E-03
SCITY125	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		1.86E-02	1.86E-02
SCITY126	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	55.0	700.0	14.738	1.2		5.89E-04	5.89E-04
SCITY127	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	30.0	140.0	0.125	2.0		1.44E-03	1.44E-03
SCITY128	DEFAULT	ELANTAS PDG, INC. SECOND ST	743167.86	4284941.73	426.35	15.4	752.2	32.451	1.0		7.85E-03	0.00E+00
SCITY129	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	4.665	2.0		3.72E-03	3.72E-03
SCITY132	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	6.916	3.3		1.72E-02	1.72E-02
SCITY133	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1700.0	36.601	2.0		3.72E-03	3.72E-03
SCITY136	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	1800.0	8.301	3.7		8.58E-03	8.58E-03
SCITY137	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	42.0	1700.0	4.665	2.0		3.72E-03	3.72E-03
SCITY140	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	44.0	200.0	47.149	3.0		5.82E-03	5.82E-03
SCITY141	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	44.0	200.0	47.149	3.0		5.82E-03	5.82E-03
SCITY142	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	34.0	200.0	39.649	2.8		5.16E-03	5.16E-03

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY143	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY144	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY145	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY146	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	33.0	300.0	20.551	2.2		1.98E-03	1.98E-03
SCITY147	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	25.0	300.0	14.865	2.0		1.14E-02	1.14E-02
SCITY148	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	20.0	0.0	0.000	0.5		3.30E-03	3.30E-03
SCITY149	DEFAULT	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	37.0	600.0	38.983	1.2		1.98E-03	1.98E-03
SCITY156	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.19E-02	1.19E-02
SCITY157	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.20E-02	1.20E-02
SCITY158	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	115.0	210.0	38.885	5.0		1.19E-02	1.19E-02
SCITY159	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	14.0	490.0	60.200	0.5		7.80E-01	0.00E+00
SCITY160	DEFAULT	ST. ALEXIUS HOSPITAL JEFFERSON CAMPUS	741441.37	4274961.73	544.65	12.6	200.0	205.400	0.5		7.80E-01	0.00E+00
SCITY162	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	210.0	260.0	17.733	2.8	2.69E+00	1.16E-01	1.16E-01
SCITY163	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	210.0	260.0	17.733	2.8	6.20E+00	4.43E-02	4.43E-02
SCITY164	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.20E+00	9.30E-03	0.00E+00
SCITY165	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.18E+00	9.20E-03	0.00E+00
SCITY166	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.77E+00	8.30E-03	0.00E+00
SCITY167	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.12E+00	9.10E-03	0.00E+00
SCITY168	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.01E+00	1.23E+00	0.00E+00
SCITY169	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.15E+00	1.80E-02	0.00E+00
SCITY170	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	4.90E+00	1.08E-02	0.00E+00
SCITY171	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.52E+00	1.88E-02	0.00E+00
SCITY172	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	4.71E+00	2.04E-01	2.04E-01
SCITY173	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	1.09E+01	7.76E-02	7.76E-02
SCITY174	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	2.50E+00	1.08E-01	1.08E-01
SCITY175	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	184.2	400.0	1.949	5.5	6.01E+00	4.29E-02	4.29E-02
SCITY176	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	6.24E+00	1.38E-02	0.00E+00
SCITY177	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	5.17E+00	1.14E-02	0.00E+00
SCITY178	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	9.14E+00	2.02E-02	0.00E+00
SCITY179	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.31E+00	9.84E-01	0.00E+00
SCITY180	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.98E+00	8.40E-03	0.00E+00
SCITY181	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.29E-01	3.53E-03	3.53E-03
SCITY183	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.29E-01	2.41E-03	2.41E-03
SCITY185	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.24E-02	5.89E-04	5.89E-04
SCITY187	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.36E-01	1.69E-03	1.69E-03
SCITY189	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	1.37E+00	4.86E-01	0.00E+00
SCITY190	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	247.0	190.0	20.417	1.2	5.35E-02	2.31E-03	2.31E-03
SCITY191	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	247.0	190.0	20.417	1.2	5.00E-01	3.57E-03	3.57E-03
SCITY192	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	3.69E+01	6.78E-02	0.00E+00
SCITY193	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	8.48E+00	1.56E-02	0.00E+00
SCITY194	DEFAULT	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	10.0	1100.0	23.333	0.5	2.09E+01	4.41E-02	0.00E+00
SCITY227	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	250.0	18.068	1.0		2.54E-03	2.54E-03
SCITY228	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	150.0	22.218	1.0		1.20E+00	1.20E+00
SCITY229	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	25.0	0.0	0.000	1.0		2.19E-04	2.19E-04
SCITY242	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	60.0	250.0	71.667	1.7		2.39E-03	2.39E-03
SCITY243	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	60.0	400.0	19.833	1.5		4.37E-03	4.37E-03
SCITY244	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	20.0	0.0	0.000	0.5		1.37E-04	1.37E-04
SCITY245	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	55.0	750.0	11.168	4.2		8.16E-03	8.16E-03
SCITY246	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	43.0	500.0	7.467	2.5		7.33E-05	7.33E-05
SCITY247	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	20.0	0.0	0.000	0.5		3.46E-04	3.46E-04
SCITY248	DEFAULT	PQ CORPORATION -THE	739053.43	4285317.19	495.80	36.0	375.0	1.716	2.0		2.48E-03	2.48E-03
SCITY266	DEFAULT	HUMANE SOCIETY OF MISSOURI ST. LOUIS - MACKLIND AVE	737162.32	4278817.40	474.08	24.0	1139.0	15.515	1.7		1.10E-02	1.10E-02
SCITY267	DEFAULT	HUMANE SOCIETY OF MISSOURI ST. LOUIS - MACKLIND AVE	737162.32	4278817.40	474.08	28.0	1800.0	15.584	2.0		6.76E-01	6.76E-01
SCITY275	DEFAULT	ALSCO, INC ST. LOUIS	743334.17	4275818.28	427.92	10.0	1100.0	23.333	0.5		2.33E+01	2.33E+01
SCITY276	DEFAULT	ALSCO, INC ST. LOUIS	743334.17	4275818.28	427.92	10.0	1100.0	23.333	0.5		4.99E-03	4.99E-03

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY277	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	23.5	800.0	0.003	0.5	7.11E-01	1.25E-05	0.00E+00
SCITY278	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	3.05E-01	1.28E-04	1.28E-04
SCITY279	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	6.87E-01	4.91E-03	4.91E-03
SCITY280	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	3.05E-02	1.28E-05	1.28E-05
SCITY281	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	250.0	0.003	1.3	6.89E-01	4.92E-03	4.92E-03
SCITY282	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.0	250.0	0.003	1.0	1.22E-01	5.27E-03	5.27E-03
SCITY283	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.0	250.0	0.003	1.0	2.73E-01	1.95E-03	1.95E-03
SCITY284	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.5	250.0	0.003	2.0	5.10E-01	2.56E-04	2.56E-04
SCITY285	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	22.5	250.0	0.003	2.0	1.38E+00	9.84E-03	9.84E-03
SCITY286	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	8.65E-01	1.53E-05	0.00E+00
SCITY287	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	7.84E+00	1.38E-04	0.00E+00
SCITY288	DEFAULT	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY ST LOUIS	743107.71	4275132.40	439.30	20.5	800.0	0.003	1.5	7.84E+00	1.38E-04	0.00E+00
SCITY289	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		2.26E-03	2.26E-03
SCITY290	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		2.91E+01	2.91E+01
SCITY291	DEFAULT	ARTCO ST. LOUIS-AMERICAN RIVER TRANS CO ST. LOUIS	741227.54	4273049.76	423.52	28.0	400.0	50.535	2.0		1.63E-03	1.63E-03
SCITY292	DEFAULT	SOUTHERN METAL PROCESSING	739807.53	4271091.77	426.02	31.0	1590.0	19.255	2.5		1.28E+01	1.28E+01
SCITY293	DEFAULT	SOUTHERN METAL PROCESSING	739807.53	4271091.77	426.02	31.0	1590.0	19.255	2.5		3.47E+00	3.47E+00
SCITY295	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	2.14E+00	6.17E+01	6.17E+01
SCITY296	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.81E+00	1.29E-02	1.29E-02
SCITY297	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	8.93E-01	2.57E+01	2.57E+01
SCITY298	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	6.62E+00	4.73E-02	4.73E-02
SCITY299	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.89E+00	5.45E+01	5.45E+01
SCITY300	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	7.92E+00	5.66E-02	5.66E-02
SCITY301	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	2.14E+00	6.17E+01	6.17E+01
SCITY302	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	220.0	350.0	14.856	5.0	1.04E+00	7.40E-03	7.40E-03
SCITY303	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	10.0	1100.0	23.333	0.5	9.62E+00	5.13E+00	0.00E+00
SCITY304	DEFAULT	SSM HEALTH ST. LOUIS UNIVERSITY HOSPITAL	740357.18	4278600.20	527.85	10.0	1100.0	23.333	0.5	5.11E+00	6.08E+00	0.00E+00
SCITY315	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	10.0	1100.0	23.333	0.5	6.50E+00	1.98E+00	0.00E+00
SCITY316	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	7.40E-02	2.22E-03	2.22E-03
SCITY317	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	7.40E-02	2.22E-03	2.22E-03
SCITY318	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	10.0	1100.0	23.333	0.5	9.62E-01	3.00E-01	3.00E-01
SCITY319	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	2.00E-02	6.00E-04	6.00E-04
SCITY320	DEFAULT	J S ALBERICI CONSTRUCTION	736723.60	4285287.44	575.43	20.0	0.0	0.000	0.5	1.26E-02	3.70E-04	3.70E-04
SCITY321	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	380.0	33.766	2.0	8.99E-01	3.88E-02	3.88E-02
SCITY322	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	380.0	33.766	2.0	4.60E-01	3.28E-03	3.28E-03
SCITY323	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	1.40E-02	3.08E-05	0.00E+00
SCITY324	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	7.00E-04	1.54E-06	0.00E+00
SCITY325	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	850.0	73.133	0.7	5.78E-03	1.22E-05	0.00E+00
SCITY326	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	8.71E-02	3.76E-03	3.76E-03
SCITY327	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	8.30E-01	5.93E-03	5.93E-03
SCITY328	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	7.46E-01	3.22E-02	3.22E-02
SCITY329	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	80.0	405.0	33.766	2.0	9.04E-01	6.46E-03	6.46E-03
SCITY330	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	15.0	1007.0	51.050	0.7	4.68E-01	1.03E-03	0.00E+00
SCITY331	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	10.0	1100.0	23.333	0.5	4.06E+00	1.24E+00	0.00E+00
SCITY332	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	10.0	1100.0	23.333	0.5	2.02E-01	1.44E-03	1.44E-03
SCITY333	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	6.0	1157.0	35.000	0.3	8.24E+00	2.52E+00	0.00E+00
SCITY334	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	6.0	1076.0	151.667	0.3	2.56E+00	7.82E-01	0.00E+00
SCITY335	DEFAULT	NESTLE PURINA PETCARE COMPANY ST. LOUIS	743912.49	4278167.30	467.68	8.9	815.0	37.835	0.8	6.13E-01	1.35E-03	0.00E+00
SCITY344	DEFAULT	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	32.0	200.0	2.933	1.2		5.04E-03	5.04E-03
SCITY353	DEFAULT	CHRISTY REFRACTORIES CO L.L.C	738223.37	4278219.85	483.66	1.0	325.0	0.003	1.0		9.60E-02	9.60E-02
SCITY355	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	431.0	79.216	2.0		9.54E-01	9.54E-01
SCITY356	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	455.0	79.216	2.0		9.54E-01	9.54E-01
SCITY357	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	428.0	79.216	2.0		9.54E-01	9.54E-01
SCITY358	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01
SCITY359	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01

Off-Site Point Source Model Input (NAD83, Zone 15)

Source ID		Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Stack Height (ft)	Temp (F)	Exit Velocity (ft/sec)	Stack Diameter (ft)	Potential Emissions (lb/hr)		
										CO	SOx	SO2 (1-hour)
SCITY360	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	565.0	985.0	23.035	0.7		3.05E-01	3.05E-01
SCITY361	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	660.0	300.0	23.035	1.5		1.09E-03	1.09E-03
SCITY362	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	660.0	300.0	23.035	1.5		4.92E-03	4.92E-03
SCITY363	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	390.0	960.0	23.035	9.5		7.17E-01	7.17E-01
SCITY364	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	390.0	960.0	23.035	9.5		7.17E-01	7.17E-01
SCITY365	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		1.19E+00	1.19E+00
SCITY366	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		5.13E+00	5.13E+00
SCITY367	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		8.24E+00	8.24E+00
SCITY368	DEFAULT	SOUTHWESTERN BELL TELEPHONE COMPANY	744346.61	4279152.95	459.35	290.0	722.0	96.401	2.0		8.24E+00	8.24E+00
SCITY380	DEFAULT	BKEP MATERIALS, LLC ST. LOUIS TERMINAL CO	739332.17	4270413.67	420.93	25.0	450.0	20.000	2.5		2.46E-03	2.46E-03
SCITY381	DEFAULT	BKEP MATERIALS, LLC ST. LOUIS TERMINAL CO	739332.17	4270413.67	420.93	12.0	150.0	8.333	1.0		1.63E-01	1.63E-01
SCITY394	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	10.0	1100.0	23.333	0.5		2.06E+00	0.00E+00
SCITY395	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5		9.53E-03	9.53E-03
SCITY396	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5		1.71E-03	1.71E-03
SCITY401	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		9.30E-05	9.30E-05
SCITY402	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		4.97E-03	4.97E-03
SCITY403	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		5.07E-05	5.07E-05
SCITY404	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	40.0	200.0	21.667	2.5		2.48E-03	2.48E-03
SCITY405	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	10.0	1100.0	23.333	0.5		1.83E-02	0.00E+00
SCITY406	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	23.5	200.0	16.667	2.9		2.55E+00	2.55E+00
SCITY407	DEFAULT	SSM CARDINAL GLENNON CHILDRENS HOSPITAL	740376.29	4278334.05	544.29	23.5	200.0	16.667	2.9		2.87E-02	2.87E-02
CJEFF34	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	36.6	77.0	20.600	1.8	2.68E-02		
CJEFF35	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	350.0	40.000	2.0	2.90E-01		
CJEFF36	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	41.667	2.5	2.07E-01		
CJEFF37	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	20.0	0.0	0.000	0.5	9.13E-03		
CJEFF43	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	56.0	370.0	33.333	2.5	1.01E-01		
CJEFF44	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	41.667	2.5	8.06E-01		
CJEFF45	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	112.999	2.5	9.97E-02		
CJEFF46	DEFAULT	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	70.0	850.0	20.600	2.5	2.58E-01		
CSTLC55	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	34.0	375.0	26.555	2.3	1.68E-02		
CSTLC56	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	34.0	375.0	26.555	2.3	1.27E+00		
CSTLC57	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	33.0	428.0	15.669	3.8	1.66E-02		
CSTLC58	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	33.0	428.0	15.669	3.8	3.85E-01		
CSTLC59	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	20.0	250.0	2.083	1.0	7.72E-02		
CSTLC60	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	3.28E+00		
CSTLC61	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	1.29E-01		
CSTLC62	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	5.5	1200.0	254.649	0.2	9.99E-05		
CSTLC63	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	19.0	425.0	7.047	1.7	6.01E-01		
CSTLC64	DEFAULT	ST. LOUIS AIRPORT AUTHORITY LAMBERT INTERNATIONAL BLVD	728947.29	4291571.16	554.63	24.0	270.0	105.951	2.0	3.24E+00		
CSTLC152	DEFAULT	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	43.0	-459.7	3.225	1.0	1.38E-01		
CSTLC155	DEFAULT	FRED WEBER INC. - SOUTH ASPHALT BATCH SOUTH ASPHALT	732929.25	4259955.19	424.64	37.0	230.0	51.250	4.2	2.57E+01		
CSTLC156	DEFAULT	FRED WEBER INC. - SOUTH ASPHALT BATCH SOUTH ASPHALT	732929.25	4259955.19	424.64	12.0	355.0	0.804	1.3	4.03E-01		
CSTLC157	DEFAULT	FRED WEBER INC. - NORTH ASPHALT H and B	720614.10	4290798.15	468.70	31.0	230.0	80.499	4.2	3.93E+01		
CSTLC158	DEFAULT	FRED WEBER INC. - NORTH ASPHALT H and B	720614.10	4290798.15	468.70	20.0	300.0	16.667	1.1	2.29E-01		
CSTLC207	DEFAULT	MISSOURI-AMERICAN WATER CO FLORISSANT	728394.88	4300010.04	461.78	15.0	896.0	0.000	14.0	1.61E+02		
CCITY65	DEFAULT	WASHINGTON UNIV MEDICAL SCHOOL BOILER PLANT	738259.22	4279905.98	511.94	100.0	350.0	29.984	1.3	3.08E-02		
CCITY203	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	250.0	18.068	1.0	3.56E-01		
CCITY204	DEFAULT	INDUSTRIAL CONTAINER SERVICES - MO, LLC MANCHESTER	737686.12	4278652.89	459.06	20.0	150.0	22.218	1.0	1.68E+02		
CCITY344	DEFAULT	GP RECYCLING, LLC	743830.86	4284034.28	422.18	20.0	0.0	0.000	0.5	1.72E-02		
CCITY368	DEFAULT	GP RECYCLING, LLC	740384.08	4280241.69	507.64	10.0	1100.0	23.333	0.5	6.73E+00		
CCITY369	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5	1.33E+00		
CCITY370	DEFAULT	SAINT LOUIS UNIVERSITY FACILITIES SERVICES	740384.08	4280241.69	507.64	20.0	0.0	0.000	0.5	5.69E-02		

Off-Site Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	Potential Emissions (lb/hr) CO	SOx	SO2 (1-hour)
SJEFF64	MERCY HOSPITAL JEFFERSON	728195.03	4230846.83	425.75	16.4	3.8	15.3	1.28E-02	9.13E-05	9.13E-05
SJEFF84	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	4.68E-03	4.68E-03
SJEFF85	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	7.06E-03	7.06E-03
SJEFF87	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	16.4	3.8	15.3	2.29E-01	1.44E-03	1.44E-03
SJEFF88	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6	2.29E-01	3.91E-03	3.91E-03
SJEFF89	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		1.47E-03	1.47E-03
SJEFF90	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		2.29E-01	2.29E-01
SJEFF91	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		6.88E-03	6.88E-03
SJEFF93	ARDAGH GLASS INC. PEVELY	727306.83	4241579.49	466.57	8.2	2.3	7.6		1.38E-03	1.38E-03
SJEFF101	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	4.81E-01	2.40E-02	2.40E-02
SJEFF102	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	6.41E-01	1.42E-02	1.42E-02
SJEFF103	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	5.24E-01	6.09E-03	6.09E-03
SJEFF104	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6	1.51E-01	3.75E-03	3.75E-03
SJEFF105	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6		1.08E-03	1.08E-03
SJEFF106	CARONDELET CORPORATION PEVELY	727491.85	4241725.78	485.56	8.2	2.3	7.6		1.14E-03	1.14E-03
SJEFF107	AERO METAL FINISHING	718099.61	4263747.23	613.55	8.2	2.3	7.6		2.43E-01	2.43E-01
SJEFF126	FRED WEBER, INC. ANTONIA	720102.79	4248877.71	670.57	8.2	2.3	7.6		3.08E+00	3.08E+00
SSTC56	BLASTCO INC	690213.84	4297755.23	543.44	8.2	2.3	7.6		1.47E-01	1.47E-01
SSTL67	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	16.4	3.8	15.3		5.88E-04	5.88E-04
SSTL68	MISSOURI ASPHALT PRODUCTS, LLC WEST LAKE QUARRY MATERIAL CO	721914.39	4294042.31	462.50	16.4	3.8	15.3		1.02E+00	1.02E+00
SSTL125	BODINE ALUMINUM INC WALTON ROAD	730791.15	4286068.83	618.60	8.2	2.3	7.6		7.18E-03	7.18E-03
SSTL197	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	8.2	2.3	7.6		1.80E-01	1.80E-01
SCITY19	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	8.24E-02	2.47E-02	2.47E-02
SCITY20	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	4.44E-03	7.73E-01	7.73E-01
SCITY21	MALLINCKRODT N SECOND	744362.95	4283022.76	417.81	8.2	2.3	7.6	2.59E+00	7.94E-01	7.94E-01
SCITY44	ADM GRAIN COMPANY ST. LOUIS	744141.30	4284932.90	425.39	15.0	0.2	14.0		6.22E-04	6.22E-04
SCITY45	ADM GRAIN COMPANY ST. LOUIS	744141.30	4284932.90	425.39	15.0	0.2	14.0		2.76E-02	2.76E-02
SCITY118	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		7.50E-05	7.50E-05
SCITY119	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		4.00E-01	4.00E-01
SCITY120	ICL SPECIALTY PRODUCTS INC CARONDELET PLANT	737985.63	4270043.36	414.11	8.2	2.3	7.6		2.61E-01	2.61E-01
SCITY130	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY131	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY134	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY135	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY138	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		7.40E-02	7.40E-02
SCITY139	JW ALUMINUM ST. LOUIS	740003.39	4271318.74	425.30	8.2	2.3	7.6		3.00E-04	3.00E-04
SCITY182	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	3.36E-02	2.40E-04	2.40E-04
SCITY184	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	6.59E-02	4.71E-04	4.71E-04
SCITY186	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	3.36E-02	2.40E-04	2.40E-04
SCITY188	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	16.4	3.8	15.3	4.95E-02	3.53E-04	3.53E-04
SCITY195	BARNES JEWISH HOSPITAL	738059.57	4279829.93	507.94	8.2	2.3	7.6	8.40E-02	6.00E-04	6.00E-04
SCITY241	PQ CORPORATION -THE	739053.43	4285317.19	495.80	8.2	2.3	7.6		2.66E-02	2.66E-02
SCITY340	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		3.60E-04	3.60E-04
SCITY341	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.13E-03	1.13E-03
SCITY342	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.20E-03	1.20E-03
SCITY343	PAULO PRODUCTS COMPANY	736597.70	4278776.67	501.12	8.2	2.3	7.6		1.20E-02	1.20E-02
CJEFF33	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.49E-01		
CJEFF38	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.71E-03		
CJEFF39	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	3.22E-03		

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Off-Site Volume Source Inputs

Source ID	Source Description	Easting (m)	Northing (m)	Base Elevation (ft)	Release Height (ft)	Sigma Y (ft)	Sigma Z (ft)	Potential Emissions (lb/hr)		
								CO	SOx	SO2 (1-hour)
CJEFF40	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	2.01E-01		
CJEFF41	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.10E-03		
CJEFF42	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.18E-04		
CJEFF47	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	6.55E-02		
CJEFF48	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	6.56E-06		
CJEFF49	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.09E-04		
CJEFF50	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.48E-04		
CJEFF51	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	5.28E-02		
CJEFF52	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	2.46E-03		
CJEFF53	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.53E-01		
CJEFF54	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.56E-02		
CJEFF55	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.16E-01		
CJEFF56	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	8.45E-03		
CJEFF57	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	3.42E-01		
CJEFF58	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	4.74E-03		
CJEFF59	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.92E-01		
CJEFF60	METAL CONTAINER CORPORATION ARNOLD	730800.10	4257280.94	441.70	16.4	3.8	15.3	1.36E-02		
CSTLC92	THE BOEING COMPANY ST. LOUIS	728742.77	4293777.11	545.54	8.2	2.3	7.6	2.25E-01		
CSTLC151	SIMPSON CONSTRUCTION MATERIALS LLC VALLEY PARK	715996.20	4268469.87	430.05	13.5	1.4	0.7	1.58E-01		
CSTLC195	FRED WEBER, INC. FT. BELLE	739499.97	4302900.13	443.27	13.5	1.4	0.7	5.97E-01		
CCITY343	GP RECYCLING, LLC	743830.86	4284034.28	422.18	8.2	2.3	7.6	5.57E-02		

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ATTACHMENT B
MODEL SUMMARY OUTPUT

10-5-22 US Steel CO Scale-up Significant Impacts Analysis Results

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag		Time	Met File	Sources	Groups	Receptors
AERMOD 22112	Granite City SIL_2019_CO.SUM	CO	1-HR	ALL	1ST	1157.328	746400	4286400	128.82	132.25		0	19020109	STL_LCN19	13	1	14098
AERMOD 22112	Granite City SIL_2016_CO.SUM	CO	1-HR	ALL	1ST	1094.348	750800	4288100	127.44	127.44		0	16121910	STL_LCN16	13	1	14098
AERMOD 22112	Granite City SIL_2018_CO.SUM	CO	1-HR	ALL	1ST	1036.463	745200	4287400	129.9	134.11		0	18112209	STL_LCN18	13	1	14098
AERMOD 22112	Granite City SIL_2020_CO.SUM	CO	1-HR	ALL	1ST	997.1573	746700	4287100	126.89	126.89		0	20010610	STL_LCN20	13	1	14098
AERMOD 22112	Granite City SIL_2017_CO.SUM	CO	1-HR	ALL	1ST	982.0781	748434.9	4287033	127.16	127.16		0	17051502	STL_LCN17	13	1	14098
AERMOD 22112	Granite City SIL_2019_CO.SUM	CO	8-HR	ALL	1ST	691.6775	748481.6	4286378	126.67	126.67		0	19041908	STL_LCN19	13	1	14098
AERMOD 22112	Granite City SIL_2018_CO.SUM	CO	8-HR	ALL	1ST	669.2078	748481.6	4286378	126.67	126.67		0	18111224	STL_LCN18	13	1	14098
AERMOD 22112	Granite City SIL_2017_CO.SUM	CO	8-HR	ALL	1ST	651.0973	750472	4287091	125.7	125.7		0	17090416	STL_LCN17	13	1	14098
AERMOD 22112	Granite City SIL_2016_CO.SUM	CO	8-HR	ALL	1ST	645.9934	748434.9	4287033	127.16	127.16		0	16110108	STL_LCN16	13	1	14098
AERMOD 22112	Granite City SIL_2020_CO.SUM	CO	8-HR	ALL	1ST	618.4866	748434.9	4287033	127.16	127.16		0	20041108	STL_LCN20	13	1	14098

10-5-22 US Steel CO Scale-up Significant Impacts Analysis Results

Pollutant	Average	Group	Rank	Model Conc. (ug/m3)	Significant Impact Level (ug/m3)	% SIL
CO	1-HR	ALL	1ST	1157.3	2,000	58%
CO	8-HR	ALL	1ST	691.7	500	138%

10-5-22 US Steel CO NAAQS Analysis Results

Model	File	Pollutant	Average	Group	Rank	Conc/Dep	East (X)	North (Y)	Elev	Hill	Flag		Time	Met File	Sources	Groups	Receptors
AERMOD 22112	Granite City NAAQS_2016_CO.SUM	CO	8-HR	ALL	2ND	1856.677	748434.9	4287033	127.16	127.16		0	16032208	STL_LCN16	584	1	205
AERMOD 22112	Granite City NAAQS_2017_CO.SUM	CO	8-HR	ALL	2ND	1941.224	748434.9	4287033	127.16	127.16		0	17121624	STL_LCN17	584	1	205
AERMOD 22112	Granite City NAAQS_2018_CO.SUM	CO	8-HR	ALL	2ND	1726.885	748470.1	4287000	126.94	126.94		0	18092424	STL_LCN18	584	1	205
AERMOD 22112	Granite City NAAQS_2019_CO.SUM	CO	8-HR	ALL	2ND	2045.17	748434.9	4287033	127.16	127.16		0	19110908	STL_LCN19	584	1	205
AERMOD 22112	Granite City NAAQS_2020_CO.SUM	CO	8-HR	ALL	2ND	1966.717	748434.9	4287033	127.16	127.16		0	20092408	STL_LCN20	584	1	205

10-5-22 US Steel CO NAAQS Analysis Results

Pollutant	Average	Group	Rank	Model Conc. (ug/m3)	Background Conc. (ug/m3)	Total Conc. (ug/m3)	Standard (ug/m3)	% Standard
CO	8-HR	ALL	2ND	2045.2	1646	3691.2	10,000	37%

Background data from East St. Louis monitor (AQS No. 85-510-029), high second high value from 2016-2018.

R011334

REFERENCES

1. Guidelines on Air Quality Models, (Revised). Appendix W of 40 CFR Part 51, 82 FR 5182, January 17, 2017.

2 . Prevention of Significant Deterioration, The Art and Science of PSD Air Quality Analysis, The Modeling Perspective, Illinois Environmental Protection Agency, Modeling Unit, February 27, 2014..

3. AERSCREEN User's Guide. EPA-454/B-15-005, July 2015.

4. Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for Stack Height Regulations (Revised). EPA-450/4-80-023R, U.S. Environmental Protection Agency, June 1985.

5. *Sierra Club v. EPA*, No. 10-1413, 2013 WL 216018 (Jan. 22, 2013).

6. Ambient Monitor Guidelines for Prevention of Significant Deterioration, EPA-450/4-87-007, USEPA, May 1987.

7. Ambient Monitor Guidelines for Prevention of Significant Deterioration, EPA-450/4-87-007, USEPA, May 1987.

Appendix D – Copies of Construction Permits

· ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19506, SPRINGFIELD, ILLINOIS 62794-9506 · (217) 782-2113

PAT QUINN, GOVERNOR JOHN J. KIM, INTERIM DIRECTOR

217/785-1705

CONSTRUCTION PERMIT/PSD APPROVAL
REVISED

PERMITTEE

U.S. Steel Granite City
Attn: Bryan Kresak, Environmental Director
Route 203 and 20th Street
Granite City, Illinois 62040

Application/Permit No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Orig. Issued: January 25, 1996
Subject: Production Increase
Date Revision Request: May 30, 2012
Date Revision Issued: December 17, 2012 (See Finding 1(c))
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

FINDINGS

1a. Various changes have been made to the provisions of this permit for the Basic Oxygen Furnaces (BOF's), at the request of the Permittee, so that the permit will accommodate an emission reduction project that is planned for particulate emissions from the BOFs. In particular, the revised permit does not include requirements for the operation of these BOF's and the existing electrostatic precipitator (ESP) control system that would be inconsistent with the use of a separate control system with a baghouse for secondary emissions of the BOFs, as is now planned (see Construction Permit Application 11050006).

b. Prior to issuance of this revised permit, a draft of the revised permit underwent a public comment period, including a public hearing.

c. This revised permit will become effective 33 days after the date of issuance unless a petition for review is filed, in accordance with 40 CFR Part 124, with the USEPA's Environmental Appeals Board (Board), in which case, this revised permit will only take effect when and if the Board declines the petition for review or the Board issues a decision on the merits of the appeal that does not include a remand of the proceeding.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month; and

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hour and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Opacity of emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis, pursuant to 35 IAC 212.446(c).

9. The Permittee shall operate and maintain the BOF's and associated capture and control systems in accordance with applicable requirements of the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, including requirements for operational monitoring, performance testing for opacity and emissions of particulate matter,* operation of capture and control systems within established limits for operating parameters, implementation of specified operation and maintenance practices, recordkeeping and reporting.

* As related to testing of emissions, if the Permittee is not willing to consider all particulate matter measured by testing to be PM_{10}, as provided for by 35 IAC 212.108(a)(3), performance tests for emissions

of particulate matter shall also include measurements for emissions of PM_{10} in accordance with 35 IAC 212.108(a)(1) or (2).

Note: This condition requires the Permittee to comply with the operating and maintenance requirements of 40 CFR 63 Subpart FFFFF as the means to verify ongoing compliance with the requirements of Conditions 7 and 8 and to address implementation of good air pollution control practice for the BOF's.

(Former Condition 10 has been removed in this revised permit.)

11a. Flame suppression shall be used and maintained during the entire tapping process.

b. The above requirement for flame suppression and the various requirements for the BOF's in Condition 12 and 13 shall end after the Permittee begins operation of a capture and control system for secondary emissions from the BOF's that makes these requirements infeasible or unnecessary, as explicitly recognized by Construction Permit 11050006 or other construction permit issued by the Illinois EPA for a capture and control system for secondary emissions.

12a. Except for purposes of emissions testing as related to the set points for the capture system for the BOF's, this capture system shall be operated at the following minimum set points for gas flow rate in the ESP stack until and unless the Illinois EPA approves lower minimum set point(s) based on a demonstration that a better level of particulate matter capture efficiency would now be achieved by the charging hoods and primary hoods.

b. Set points requirements while only a single BOF vessel is in operation:

i. Minimum set point during charging process: 550,000 cfm.

ii. Minimum set point during refining process: 650,000 cfm.

iii. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition).

c. i. During dual operation of BOF vessels (a.k.a., overlapping BOF operation), the minimum set point shall be 700,000 cfm.

ii. In addition, overlapping operation of the BOF vessels is subject to the following requirements. These requirements shall be part of the Standard Operating Procedure for the BOFs.

A. The hot metal charge of the second vessel shall be initiated and completed during the time between completion of the blow and start of tap on the first vessel while sufficient draft at the ESP capture system is established and maintained for both vessels.

B. The charge and/or blow on one vessel shall not begin until sufficient draft has been established at the associated ESP capture system (a.k.a., doghouse) and the alloy addition at the vessel tapping has been completed for a least 1 minute.

C. Sufficient draft at the ESP capture system of the vessel being tapped shall be maintained for at least 1 minute after alloy addition has been completed. After such period, the capture system draft may be transferred over to the other.

D. Only overlapping of the hot metal charge of the second vessel after the end of blow and prior to onset of tap of the first vessel and overlapping of tapping of the first vessel, after alloy addition, and the hot metal charge and/or blow on the second vessel are allowed.

13a. i. The Permittee shall operate, maintain and calibrate a continuous operational monitor to ESP stack gas flow rate.

ii. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

b. i. The Permittee shall operate and maintain a continuous operational monitor for waste gas suction, i.e., the static pressure in the main downcomer duct of the ESP.

ii. The Permittee shall record the waste gas suction for each process (i.e., for each charge, each refine, each tap) of each steel production cycle.

c. These monitoring systems shall be calibrated on at least a quarterly basis.

d. These monitoring systems shall be operated at all times that a BOF is in operation and shall be used as mechanisms to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts.

(Former Conditions 14 through 17 have been removed in this revised permit.)

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

(The note that previously accompanied Condition 18 has been removed in this revised permit.)

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 225 million ft^3 per month and 1,346 million ft^3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft^3 per month and 185,030 million ft^3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

    i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

    ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

    iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

    iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

    a. The date (and time for the gate areas) each road or area was treated;

    b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

    c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

    d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

    e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

    f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

    a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

    b. At least weekly, segment of 20th street between Lee and Quincy roads;

    c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM_{10} CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM_{10} contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

(Former Condition 33 has been removed from this revised permit.)

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on the total BFG produced per net ton hot metal (NTHM) derived by the following formula and adjusted per analysis of documented BFG consumptions:

$$\text{mmft}^3 \text{ BFG per month} = \frac{(4.585277 \text{ NTHM/day} + 498.191)}{80} \times \begin{pmatrix} \text{Number of} \\ \text{days in} \\ \text{that month.} \end{pmatrix}$$

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source as of January 15, 1996 and supersede such conditions in cases where a conflict exists.

38a. The following tests shall be performed by no later than August 6, 1997 to demonstrate compliance with the conditions of this permit.

i. Fuel Combustion Units testing: The emissions of particulate matter from boiler #12 while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

b. The test shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 30 days prior to the actual date of testing, a written test plan shall be submitted to the Agency for review and approval. This plan shall describe the specific procedures for testing, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- any other pertinent information

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

(Condition 38 required emission testing following the initial operation of the source with the expansion that has already been conducted by the Permittee. This revised permit does not require that this testing be repeated.)

REPORTING

39. Unless otherwise provided for by the provisions for reporting of deviations in the Clean Air Act Permit Program (CAAPP) permit for the source, if there is a deviation from the requirements of this permit, the Permittee shall submit a report to the Illinois EPA within 30 days after the deviation. The report shall include a description of the deviation, the probable cause of the deviation, the corrective actions that were taken and any preventative measures taken to prevent similar deviations in the future.

40. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

    a. Iron and steel production (tons/month and tons/year, each);

    b. Natural gas and BFG usage ($mmft^3$/month and $mmft^3$/year, each);

    c. Fuel oil usage (thousand gallons/month and thousand gallons/year, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

41a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD). Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM_{10}	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Kevin Smith at 217/782-7048.

Edwin C. Bakowski

Edwin C. Bakowski, P.E.
Manager, Permit Section
Division of Air Pollution Control

Date Signed: December 17, 2012

DES:KLS:psj

cc: IEPA, FOS Region 3

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping) - captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0703	111.19
PM_{10}	0.0703	111.19
SO_2	0.2006	422.00
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.031	49.06
PM_{10}	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0024	5.17
PM_{10}	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00417	6.60
PM_{10}	0.00417	6.60
SO_2	0.0100	15.83

TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.02548	40.32
PM_{10}	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00279	6.01
PM_{10}	0.00279	6.01

TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.16	262.80
PM_{10}	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.01934 lbs/hour	1.26 tons/year

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0987	176.71
PM_{10}	0.06614	118.40
Lead	0.0129 lbs/hour	0.08 tons/year

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.03721	58.88
PM_{10}	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hour	0.09 tons/year

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00032	0.57
PM_{10}	0.00032	0.57

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0016	2.86
PM_{10}	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0050	7.94
PM_{10}	0.0050	7.94

TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00715	12.80
PM_{10}	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00355	6.35
PM_{10}	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.006	10.74
PM_{10}	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00852	15.25
PM_{10}	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.0071	12.71
PM_{10}	0.0071	12.71

TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	0.00722	12.92
PM_{10}	0.00722	12.92

TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage (mmft³/Year)
Natural Gas (Total)	1,346
BFG	185,030
Fuel Oil	365 thousand gallons/year

1. Natural Gas

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	5.1	3.43
PM_{10}	5.1	3.43
SO_2	0.6	0.40
NO_x	306.0	205.94
VOM	2.8	1.88
CO	40.0	26.92

2. BFG

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	2.9	268.29
PM_{10}	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Year)
PM	9.72	1.77
PM_{10}	9.72	1.77
SO_2	141.3	25.79
NO_x	55.0	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM_{10}	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	---	---
BOF Shop	510	451	---	70	12	16,097	1.43
Continuous Casting Operations	71	71	---	90	---	---	---
Certain Fuel Combustion Units[A]	274	274	641	706	2	1,295	0.06
Roadways	27	27	---	---	---	---	---
Material Handling	2	2	---	---	---	---	---
Total	1,102	1,019	1,115	890	171	17.392	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

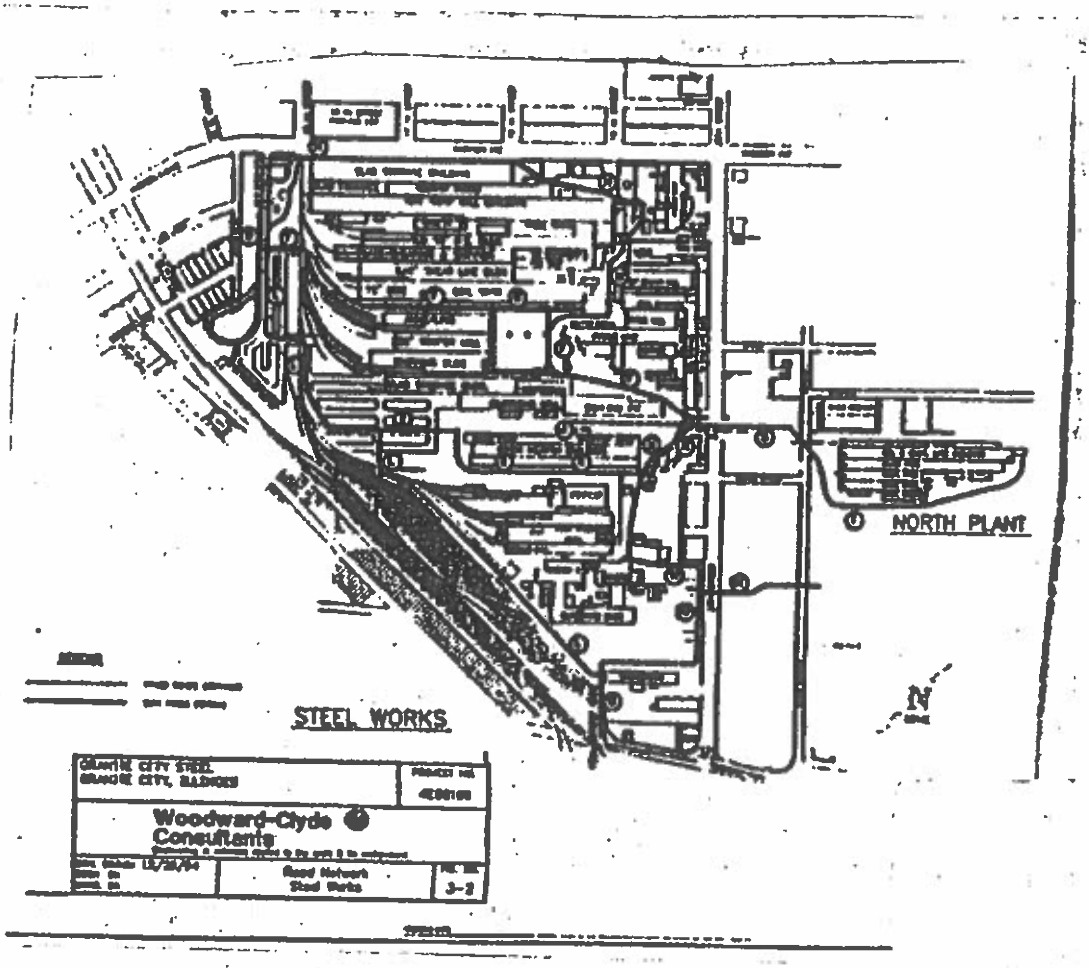
PM_{10}	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

ATTACHMENT A

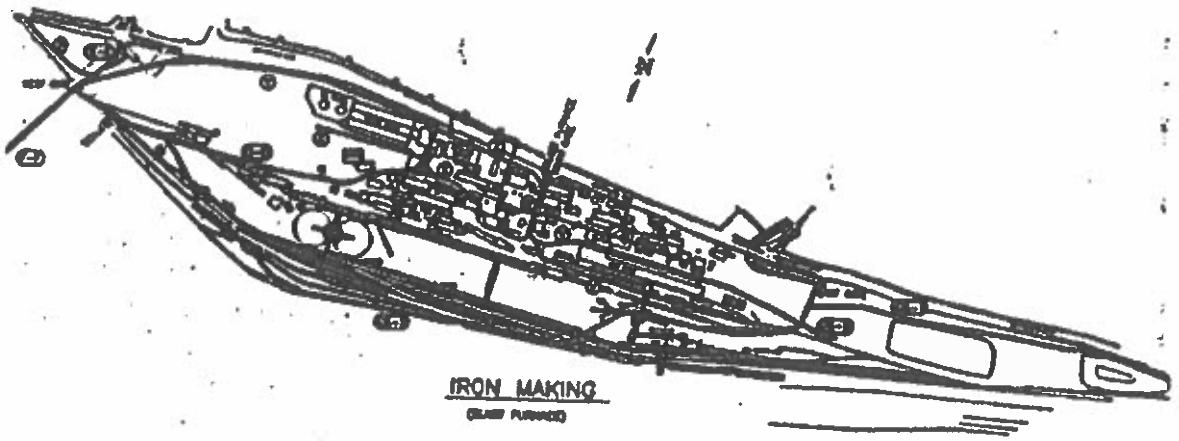
(Former Attachment A has been removed in this revised permit.)

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND MAPS SHOWING THE ROAD SEGMENTS

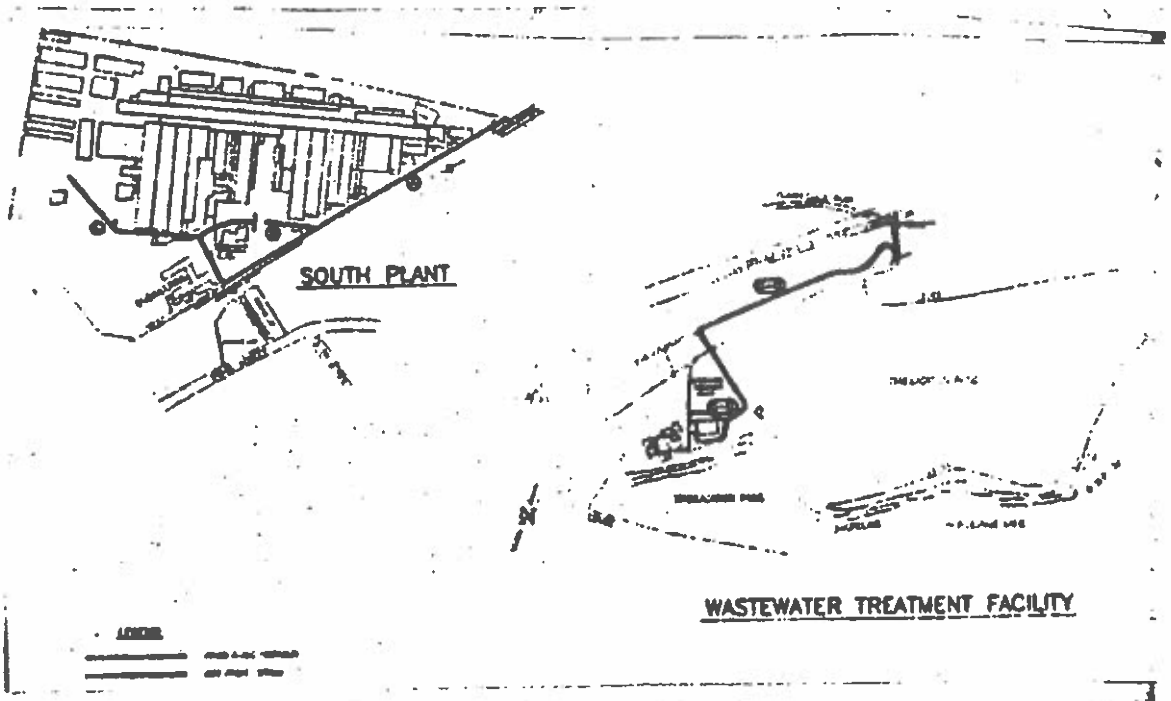


ATTACHMENT B (cont.)



GRANITE CITY STEEL GRANITE CITY, ILLINOIS	PROJECT NO. 4200100
Woodward-Clyde Consultants	
DATE: 12/15/94 DRAWN BY: CHECKED BY:	Flood Potential Iron Making Area
	FIG. NO. 3-3

ATTACHMENT B (cont.)



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

Woodward-Clyde Consultants

Flood Network
South Plant & WWTP

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE EMISSIONS OF PM_{10}

- Historic roadway emissions of 428 tons/year, minus future potential roadway emissions of 27 tons/year, equals a resulting reduction in roadway emissions of 401 tons/year

- Historic material handling emissions of 17 tons/year minus future potential material handling emissions of 2 tons/year, equals a resulting reduction in material handling emissions of 15 tons/year.

- Emission reductions resulting from the sweeping of city streets = 52 tons/year*

- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/year*

Total reductions in the emissions of PM_{10} as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/year

- These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

KLS:psj

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director
217/782-2113

P. O. Box 19506, Springfield, IL 62794-9506

CONSTRUCTION PERMIT

PERMITTEE

Granite City Division
of National Steel Corporation
Attn: Joseph S. Kocot
20th and State Street
Granite City, Illinois 62040

Application No.: 95010001 I.D. No.: 119813AAI
Applicant's Designation: Date Received: January 3, 1995
Subject: Production Increase
Date Issued: January 25, 1996
Location: Southeastern Granite City

Permit is hereby granted to the above-designated Permittee for an increase in the allowable production rate of iron (from 2,372,500 to 3,165,000 net tons per year) and steel (from 2,774,000 to 3,580,000 net tons per year) as described in the above-referenced application. This permit is subject to standard conditions attached hereto and the following special conditions:

1. Prior to issuance of this permit, a draft of this permit has undergone a public notice and comment period, and a public hearing was held.

BLAST FURNACE OPERATIONS

2a. Total combined production of hot metal (a.k.a., iron) from blast furnaces A and B shall not exceed 9,849 net tons per day, averaged over any calendar month, and;

b. Total combined production of hot metal from blast furnaces A and B shall not exceed 3,165,000 net tons per year.

3a. Particulate emissions from the blast furnace casthouse baghouse and iron spout baghouse shall not exceed 0.010 gr/dscf, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

b. The opacity of emissions from the blast furnace casthouse baghouse and the iron spout baghouse shall not exceed 10% on a 6 minute rolling average basis, pursuant to 35 Ill. Adm. Code 212.445(b)(1).

4a. Emissions of particulate matter from any opening in the blast furnace casthouse shall not exceed 20% opacity on a 6-minute rolling average basis beginning from initiation of the opening of the tap hole up to the point where iron and slag stops flowing in the troughs, pursuant to 35 Ill. Adm. Code 212.445(a)(2).

5. Emissions from Blast Furnace operations shall not exceed the limits in attached Tables 1 and 5.

BASIC OXYGEN FURNACE SHOP

6a. Total combined production of liquid steel from the Basic Oxygen Furnaces (BOF's) shall not exceed 11,000 net tons per day, averaged over any calendar month, and;

b. Total combined production of liquid steel from the BOF's shall not exceed 3,580,000 net tons per year.

7. The emissions of PM-10 from the BOF ESP stack for the total of all BOF processes (i.e., operations from the beginning of the charging process through the end of the tapping process) shall not exceed 60.0 lbs/hr and 0.225 lbs per ton of steel in process, pursuant to 35 Ill. Adm. Code 212.458(b)(23).

8. Visible emissions from any opening in the BOF shop (e.g., roof monitor) shall not exceed 20% on a 3 minute rolling average basis.

9a. The Permittee shall determine the opacity from the openings BOF shop on at least a weekly basis. Observations shall be conducted for at least an hour or the entire BOF cycle, whichever is greater.

b. The Permittee shall determine the opacity from the BOF ESP stack for at least one hour on any normal work day (i.e., Monday through Friday) that the continuous opacity monitor on the BOF ESP stack has an outage that exceeds two consecutive hours and is still down. The readings shall commence as soon as possible after the opacity monitor has been down for two consecutive hours. If meteorological conditions or lack of visibility preclude these observations from being conducted, then this shall be noted in the log book.

c. The opacity shall be determined in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9 including the requirement that readings be taken by a certified observer.

d. These determinations shall be recorded in a log book, which at a minimum shall include the date and time of observations, name and title of observer, individual opacity readings, calculated opacity so as to determine compliance with Section 212.123, and calculated opacity relative to 20% opacity on a three minute rolling average basis.

10. The Permittee shall follow the BOF operating procedures and requirements specified in attachment A. These requirements are designed to ensure proper operation of the BOF control system. These procedures shall be posted in the BOF pulpit (a.k.a., control room).

11. Flame suppression shall be used and maintained during the entire tapping process.

12a. The stack gas pulpit set point of the BOF ESP control system shall be set in accordance with the following, so as to establish sufficient particulate matter capture efficiency of the charging and primary hoods:

i. Set point requirements while only a single BOF vessel is in operation;

A. Minimum set point during charging process: 550,000 cfm;

B. Minimum set point during refining process: 650,000 cfm;

C. Minimum set point during tapping process: 200,000 cfm (until one minute after completing alloy addition);

ii. During dual operation of BOF vessels (a.k.a., overlapping BOF operation) the set point shall be set to establish the total draft necessary to control the corresponding portion of the process which is occurring on each vessel during the overlap. For example, minimum set point while charging at one vessel and tapping at the other would be equal to that necessary to establish a flow of 700,000 cfm (i.e., 550,000 + 150,000).

iii. Overlapping operations of the BOF vessels is allowed only as specified in operating permit application number 72080043.

iv. The BOF capture system shall be operated at the above minimum set points until and unless the Agency approves a lower minimum set point based on a demonstration that a better level of particulate matter control will occur, except for purposes of emissions testing as related to the set point.

b. The Permittee shall calibrate, operate, and maintain a continuous strip chart recorder of the ESP stack gas flow rate as measured by the stack gas flow meter during ESP use.

c. The Permittee shall record for each steel production cycle the various stack gas flow rates for each process (i.e., for each charge, each refine, each tap) of each steel production cycle. That is, the Permittee shall be able to distinguish the measured flow rate of stack gas during each production cycle.

d. The stack gas flow meter shall be calibrated on at least a quarterly basis.

13a. Within 270 days of the date issued of this permit, the Permittee shall install, calibrate, operate, and maintain a monitoring device that continually measures and records for each process (i.e., for each charge, each refine, each tap) of each steel production cycle the various exhaust ventilation rates or levels of exhaust ventilation through the main downcommer duct of the ESP emissions capture and transport system.

b. The monitoring system shall be designed to be used as a mechanism to ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks.

c. The monitoring system shall be operated, tested and maintained to ensure accurate and useful data.

d. The Agency may allow an equivalent system or method instead of the above monitoring system provided the Permittee demonstrates, and the Agency approves, that such system or method will ensure sufficient draft is maintained in the emissions capture hoods and transport ducts so as to maximize emissions capture and transport and minimize uncaptured emissions and emission leaks in an equivalent manner, and that such system or method can be installed and operated within the time period required for the monitoring system as stated in this permit.

14a. The Permittee shall visually inspect at least monthly all visible BOF vessel enclosures, hooding and ducts used to capture and transport emissions for the BOF ESP control system.

b. A log shall maintained of these inspections which includes observations of the physical appearance of the capture system and any noted deficiencies (e.g., the presence of any holes in ductwork or hoods, flow constrictions caused by dents or accumulated dust in ductwork, and fan erosion).

c. Any leaks or areas otherwise noted to be in need of repair, shall be repaired as soon as practicable.

15a. The Permittee shall operate, maintain, and repair the BOF ESP in a manner that assures compliance with the conditions of this permit.

b. An adequate inventory of spare parts for the BOF ESP shall be maintained.

16. Written operating procedures for the BOF ESP shall be maintained and updated describing proper normal process and equipment operating parameters, monitoring and instrumentation for measuring control equipment operating parameters, control equipment inspection and maintenance practices, and the availability of spare parts from inventory, local suppliers and other sources.

17. The Permittee shall keep operating records, a maintenance log, and inspection log for the BOF ESP and associated control systems which includes the following:

a. Operating time of the BOF;

b. Operating time of the capture systems and performance parameters, including air flow and fan amperage through the fan motors, gas temperature at inlet to ESP, damper settings, and steam injection rate;

c. Operating time of the ESP and performance parameters, including voltage and amperage of each transformer/rectifier set, number of sections in use;

d. All routine and nonroutine maintenance performed, including dates and duration of outages, inspection schedule and findings, leaks detected, repair actions, and replacements.

18. Emissions from the BOF Shop shall not exceed the limits in attached Tables 2 and 5.

Note: For purposes of this permit, a BOF cycle is defined as the period from the beginning of the charging process through the end of the tapping process. The cycle is comprised of three main processes which are charging, refining, and tapping.

CONTINUOUS CASTING OPERATIONS

19. The continuous casting operations shall comply with 35 Ill. Adm. Code 212.450 and 212.458(b)(8).

20. Emissions from the continuous casting operations shall not exceed the limits in Tables 3 and 5.

FUEL COMBUSTION

21. Total fuel usage for blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares shall not exceed the following limits:

    a. Natural Gas usage: 190 million ft^3 per month and 1,145 million ft3 per year;

    b. Blast Furnace Gas (BFG) usage: 30,800 million ft3 per month and 185,030 million ft3 per year;

    c. Fuel Oil usage: 60 thousand gallons per month and 365 thousand gallons per year.

22. Emissions from the fuel combustion units listed above shall not exceed the limits in Tables 4 and 5.

ON-SITE FUGITIVE DUST CONTROL

(Refer to Attachment B for a table which summarizes the required on-site fugitive dust roadway control measures and maps indicating the referred to road segments)

23. The Permittee shall immediately initiate and maintain the on-site fugitive dust control measures specified in this permit so as eliminate dust spillage on in-plant and out-of-plant roadways.

24a. The Permittee shall sweep or flush at least every day the paved access area below the BOF ESP where ESP dust collection bags are used, stored and transported.

b. The Permittee shall implement a housekeeping program for the non-roadway areas below and around the BOF ESP. This program shall, at a minimum, contain the following:

    i. The ground and other accessible areas where dust may gather shall be swept or cleaned at least every day;

ii. Cleaning shall be performed in such a manner as to minimize the escape of dust into the atmosphere;

iii. Dust collection bags shall be inspected at least daily for rips, tears, or insecure connection to the discharge chutes of the ESP hoppers;

iv. Dust collection bags shall be inspected after removal from, and connection to, the discharge chutes of the ESP hoppers;

v. Ripped or torn bags shall be taken out of service and transported as soon as practicable in a covered truck.

25. Fugitive emissions of particulate matter from any roadway or parking area shall not exceed an opacity of 5%, pursuant to 35 Ill. Adm. code 212.316(e)(1).

26a. UNPAVED ROADS: On unpaved roads that are part of normal traffic patterns as identified in attachment B (including roads B, C, E, N, F-F, and CS(2)) the Permittee shall apply a chemical dust suppressant at least three times a month, with the following exceptions:

i. Road segment G-G, which shall be sprayed at least quarterly;

ii. Road segments P, V, Z, D-D, E-E, and H, which shall be sprayed at least 4 times per month until paving is completed. Paving shall be completed on these roads no later than July 31, 1996;

iii. Road segment L, which shall be sprayed at least 4 times per month.

b. All other unpaved roads shall be treated as necessary.

c. Applications of suppressant may be less frequent than specified above if weather conditions, i.e., precipitation or temperature, interfere with the schedule for spraying, provided each such instance shall be recorded in accordance with the daily records for on-site fugitive dust control required by this permit.

27a. PAVED ROADWAYS AND AREAS: Paved roadways and areas shall be maintained in good condition.

b. On paved roadways and other areas, the Permittee shall sweep or flush as follows:

i. Road segments D, K, M, F, G, J, R, and O shall be swept or flushed at least daily;

ii. Road segments P, V, W, X, Z, D-D, E-E, and CS(1) shall be swept or flushed at least five days per week;

iii. Road segments S and T shall be swept or flushed at least every other day;

iv. Road segments A and H shall be swept or flushed at least once per month;

v. All gate areas leading from the Steelworks area shall be swept or flushed at least daily;

vi. All gate areas leading from the iron making area shall be swept or flushed at least five times per week.

28. The above on-site dust control measures shall be conducted to maximize their effectiveness by performing said measures when the roads or areas are not normally obstructed by parked vehicles and by preferentially using filter sweeping (e.g., Enviro-Whirl sweeper) for the gate areas, the roads and areas surrounding the BOF and BOF ESP, and other key areas.

29. The Permittee shall maintain daily records relative to the on-site fugitive dust control program which includes the following information as a minimum:

a. The date (and time for the gate areas) each road or area was treated;

b. The manner in which the road or area was treated (i.e., filter sweep, conventional sweep, suppressant spray or flush);

c. Detailed information for use of dust suppressant, including but not limited to the application rate, dilution ratio, type of suppressant used, and the number of gallons of suppressant applied;

d. Observations, if any, concerning the condition of the roadway, e.g., presence of parked vehicles, detection of potholes;

e. The amount of precipitation and temperature recorded for each day, and if determination was made to suspend application of suppressant, include name and title of person who made determination to suspend application and explanation;

f. Any and all suspensions or deviations from the designated control procedures, with date, description, and explanation for suspension of application.

OFF-SITE FUGITIVE DUST CONTROL

30. The Permittee or the Permittee's Agent shall sweep or flush the following Granite City street road areas:

a. At least weekly, the quarter mile segment of Madison Avenue in front of the 16th street gate (i.e., 1/8 of a mile in either direction);

b. At least weekly, segment of 20th street between Lee and Quincy roads;

c. At least monthly, segment of 20th street between Madison and Route 203 (a.k.a. Edwardsville Road).

PM-10 CONTINGENCY MEASURES

31. The Permittee shall comply with the additional control measures (e.g., PM-10 contingency plan) required by 35 Ill Adm. Code Part 212 Subpart U.

COMPLIANCE DETERMINATIONS

32a. Compliance with the daily limits of this permit shall be determined from a monthly total of the relevant daily data divided by the number of days in the month.

b. Compliance with the monthly limits of this permit (e.g., fuel usage) shall be determined by direct comparison of monthly data to the applicable limit.

c. i. Compliance with the annual limits of this permit shall be determined based on a calendar year.

ii. A. Compliance with the production limits in conditions 2(b) and 6(b) shall also be determined on a month by month basis by showing that the actual production of iron and steel from the plant did not exceed the scheduled rate of production for a month given in the most recent production schedule provided to the Agency that shows compliance with the following requirements.

B. If no production schedule is submitted to the Agency by the Permittee for a particular year, the scheduled monthly production of iron and steel shall be set at one twelfth of the annual production limits in conditions 2(b) and 6(b).

C. 1. The Permittee may submit a schedule for iron and steel production for each month of the calendar year. Such schedule shall provide the scheduled monthly iron and steel production for each month and the total of such scheduled production shall not exceed the annual production limits in conditions 2(b) and 6(b). This schedule shall be submitted each year no later than December 15th of the preceding year.

2. During the course of the year, the Permittee may submit a revised production schedule which accounts for actual production levels which were below that scheduled for the previous months, provided that in no case shall the scheduled production for prior months in such a revised schedule be lowered to less than actual production levels or raised. Such revised schedule shall be submitted to the Agency no later than 15 days

after the first day of the month for which scheduled production has been raised. Such schedule shall be accompanied by data on actual production in preceding months.

33a. Compliance with opacity limits and measurements of opacity shall be made by opacity readings taken in accordance with the observation procedures set out in 40 CFR Part 60, Appendix A, Method 9.

b. The Permittee shall have at least two employees or agents experienced in making opacity readings to the extent that it is reasonably possible to do so, who shall be able to make the opacity readings required by this permit.

34a. Blast furnace hot metal production shall be measured at the BOF hot metal transfer station, and adjusted by documented slag and iron losses.

b. BOF liquid steel production shall be initially measured by a scale equipped crane and adjusted based upon documented steel production analysis of the continuous casters.

c. BFG usage shall be calculated based on 0.05846 mmft^3 BFG generated per net ton of hot metal produced.

d. Natural gas usage shall be determined by metered volumes.

e. Fuel oil usage shall be determined by tank height differentials.

RECORD KEEPING

35. The Permittee shall keep records of the following items and such other items which may be appropriate to allow the Agency to review compliance:

a. Blast Furnace hot metal production (total combined daily, monthly and annual in tons), including documentation on iron and slag losses;

b. BOF liquid steel production (total combined daily, monthly and annual in tons), including documentation on adjustments made due to production analysis and losses;

c. Fuel usage as follows; Usage of natural gas and BFG (total combined million ft^3 per month and year, each) and fuel oil (total combined gallons/month and year) for the blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

36. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Agency and USEPA upon request. Any records retained in a computer shall be capable of being retrieved and

printed on paper during normal source office hours so as to be able to respond to an Agency request for records during the course of a source inspection.

STARTUP AND TESTING

37. The special conditions of this permit supplement the special conditions of any existing operating permits for this source, and supersede such conditions in cases where a conflict exists.

38. Operation at the increased production rates specified in this permit is allowed for 270 days from the date issued under this construction permit.

39a. The following tests shall be performed to demonstrate compliance with the conditions of this permit within 270 days from the date issued of this permit:

i. Blast Furnace testing: The emissions of particulate matter, volatile organic material, sulfur dioxide, nitrogen oxides, and the opacity from the blast furnace casthouse stack shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.445 and the requirements of this permit;

ii. Hot Metal Desulfurization testing: The emissions of particulate matter from the desulfurization baghouse shall be measured. These tests shall be designed to verify compliance with the requirements of this permit and 35 Ill. Adm. Code 212.446(b)(2);

iii. BOF testing: The emissions of particulate matter, carbon monoxide, and lead from the BOF ESP stack, and the opacity from both the BOF ESP stack and BOF Shop shall be measured. These tests shall be designed to verify compliance with 35 Ill. Adm. Code 212.446, 212.458 and the requirements of this permit;

iv. Fuel Combustion Units testing: The emissions of particulate matter from a representative boiler while burning blast furnace gas shall be measured. This test shall be designed to verify compliance with the requirements of this permit and the emission factor used (i.e., 2.9 lbs particulate emitted per mmcf BFG burned);

v. BFG generation testing: The amount of blast furnace gas generated ($mmft^3$) per ton of hot metal produced shall be determined. The Agency may waive this requirement for testing providing the Permittee submit a sufficient explanation of how BFG generation is determined with justification that such determination is appropriate for purposes of compliance determinations with this permit.

b. These tests shall be performed by an approved independent testing service during conditions which are representative of maximum emissions and at the maximum production rates allowed, or as close

to such rates as reasonable if the Permittee demonstrates to the Agency prior to testing that testing at such production rates within the time constraints of an Agency request to test is not practicable.

c. i. The following methods and procedures shall be used for the testing, unless another method is approved by the Agency: Refer to 40 CFR 60, Appendix A for USEPA test methods;

Location of sample points	USEPA Method 1
Gas flow and velocity	USEPA Method 2
Particulate Matter	USEPA Method 5
Sulfur Dioxide	USEPA Method 6
Nitrogen Oxides	USEPA Method 7
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Lead	USEPA Method 12

ii. All particulate measured shall be considered PM-10 unless emissions are tested by an appropriate USEPA test method for measurement of PM-10, as specified in 35 Ill. Adm. Code 212.110(e).

d. At least 60 days prior to the actual date of testing of the BOF, a written test plan shall be submitted to the Agency for review and approval. This plan shall be describe the specific procedures for testing the BOF, including as a minimum:

i. The persons who will be performing sampling and analysis and their experience with similar tests;

ii. The specific conditions under which testing will be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters for the source and the emissions capture and control system will be determined;

iii. The specific determinations of emissions and operation which are intended to be made, including sampling and monitoring locations;

iv. The test methods which will be used, with the specific analysis methods;

v. Any proposed use of an alternative test method, with detailed justification;

vii. The format and content of the Source Test Report.

e. The Agency shall be notified before these tests to enable the Agency to observe these tests. Notification for the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Agency may at its discretion

accept notifications with shorter advance notice provided that the Agency will not accept such notifications if it interferes with the Agency's ability to observe testing.

f. The Final Report of these tests shall include as a minimum:

i. A tabular summary of results which includes:

- process weight rate and/or fuel usage rate
- production rate
- allowable emission limit
- measured emission rate
- determined emission factor
- compliance demonstrated - Yes/No
- other pertinent information (e.g., for the BOF, pulpit set point for each process of the BOF cycle - charging, refining, and tapping);

ii. Description of test methods and procedures used, including description of sampling train, analysis equipment, and test schedule;

iii. Detailed description of test conditions, including,

- pertinent process information (e.g. fuel or raw material consumption)
- control equipment information, i.e. equipment condition and operating parameters during testing;

iv. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration;

g. Copies of the Final Report for these tests shall be submitted to the Agency within 14 days after the test results are compiled and finalized and in no case later than upon the submittal of the operating permit application for this production increase.

h. Submittals of information shall be made as follows:

i. Notice of Test - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section;

ii. Final Report - one copy to Source Emission Test Specialist, one copy to Regional Office, and one copy to Permit Section.

Pertinent Addresses are:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Source Emission Test Specialist
Intercontinental Center
1701 1st Avenue
Maywood, Illinois 60153

Illinois Environmental Protection Agency
Division of Air Pollution Control
Regional Office
2009 Mall Street
Collinsville, Illinois 62234

Illinois Environmental Protection Agency
Division of Air Pollution Control
Attn: Permit Section
P.O. Box 19506
Springfield, Illinois 62794-9506

REPORTING

40. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Agency's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The report shall include the emissions released in accordance with the record keeping requirements, a copy of the relevant records, and a description of the exceedance or violation, cause of the exceedance, and efforts to reduce emissions and future occurrences. This report shall be sent to:

Illinois EPA
Bureau of Air
Compliance Unit (#39)
P.O. Box 19276
Springfield, Illinois 62794-9276

41. The Permittee shall submit the following additional information from the prior calendar year with the Annual Emissions Report, due May 1st of each year:

a. Iron and steel production (tons/month and tons/yr, each);

b. Natural gas and BFG usage (mmft3/month and mmft3/yr, each);

c. Fuel oil usage (thousand gallons/month and thousand gallons/yr, for each type of oil).

APPLICABILITY OF MAJOR SOURCE RULES

42a. As a consequence of the above conditions, this permit is issued based upon the following changes in emissions, as further described in Table 6, accompanying increased production as allowed by this permit:

i. The increases in emissions of lead and VOM are not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration;

ii. The increase in emissions of NO_x are being accompanied by contemporaneous emission decreases provided by the shutdown of equipment and operations such that the net emissions change is

not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

iii. The increase in emissions of PM and PM-10 are being accompanied by contemporaneous emission decreases provided by additional road dust control and BOF capture and control such that the net emissions change is not significant under 35 Ill. Adm. Code Part 203 or 40 CFR 52.21 - Prevention of Significant Deterioration.

Also, the Permittee has agreed to provide further additional dust control consisting of the sweeping of Granite City public streets and housekeeping measures in the area below and surrounding the BOF ESP. Attachment C is a listing of the emission reductions provided by these control measures.

b. The increases in emissions of SO_2 and CO are significant under 40 CFR 52.21 - Prevention of Significant Deterioration (PSD).. Accordingly, the project is considered a major modification and must comply with the requirements of PSD. These requirements include a demonstration of best available control requirements for affected SO2 and CO emission units, an analysis of air quality impacts, an analysis of the impacts of the project on visibility, vegetation's and soils, and the application and proposed permit must undergo a public participation. The Agency has determined that these additional requirements have been met.

c. The changes in emissions pertinent to this project are summarized as follows:

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	- 52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

Explanatory Note:

PM	=	particulate matter = particulate;
PM-10	=	particulate matter less than or equal to 10 micrometers in size;
SO_2	=	sulfur dioxide;
NO_x	=	nitrogen oxides;
VOM	=	volatile organic material;
CO	=	carbon monoxide;
mm	=	million;
gr/dscf	=	grains per dry standard cubic foot;
acfm	=	actual cubic feet per minute;
mmcf	=	million cubic feet;
Mgal	=	thousands of gallons.

If you have any questions on this permit, please call Jim Ross at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JRR:jar

cc: IEPA, FOS Region 3

COPY
Original Signed by
Donald E. Sutton, P.E.

Permit Application #95010001

TABLE 1

BLAST FURNACE OPERATIONS

Maximum Hot Metal Production = 3,165,000 net tons per year

1. Casthouse Baghouse (furnace tapping)- captured emissions ducted to baghouse, uncaptured emissions emitted through roof, other openings, etc.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0703	111.19
PM-10	0.0703	111.19
SO_2	0.2006	422.0
NO_x	0.0144	22.79
VOM	0.0946	149.68

2. Blast Furnace - uncaptured fugitives

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.031	49.06
PM-10	0.0155	24.53
SO_2	0.0104	21.94
NO_x	0.0007	1.14
VOM	0.0047	7.42

3. Blast Furnace Charging
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0024	5.17
PM-10	0.0024	5.17

4. Slag Pits

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00417	6.60
PM-10	0.00417	6.60
SO_2	0.0100	15.83

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TABLE 1 (cont.)

5. Iron Spout Baghouse- captured emissions controlled by iron spout baghouse.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.02548	40.32
PM-10	0.02548	40.32
SO_2	0.0073	13.89

6. Iron Pellet Screen
Maximum pellets charged = 4,308,581 tons/yr

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00279	6.01
PM-10	0.00279	6.01

Permit Application #95010001

TABLE 2

BOF SHOP

Maximum Liquid Steel Production = 3,580,000 net tons per year

1. BOF ESP Stack (charge, refine, tap)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.16	262.80
PM-10	0.16	262.80
NO_x	0.0389	69.63
VOM	0.0060	10.74
CO	8.993	16,097.47
Lead	0.1934 lbs/hr	1.26 tons/yr

2. BOF Roof Monitor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0987	176.71
PM-10	0.06614	118.40
Lead	0.0129 lbs/hr	0.08 tons/yr

3. Desulfurization and Reladling - Hot Metal Transfer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.03721	58.88
PM-10	0.03721	58.88
VOM	0.0010	1.58
Lead	0.0133 lbs/hr	0.09 tons/yr

4. BOF Additive System (i.e., fluxes) with Baghouse, a.k.a., BOF hopper baghouse

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00032	0.57
PM-10	0.00032	0.57

Permit Application #95010001

TABLE 2 (cont.)

5. Flux conveyor & transfer pits, bin floor

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0016	2.86
PM-10	0.0016	2.86

6. Hot metal charging ladle slag skimmer

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0050	7.94
PM-10	0.0050	7.94

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TABLE 3

CONTINUOUS CASTING OPERATIONS

Maximum Liquid Steel Throughput = 3,580,000 net tons per year

1. Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00715	12.80
PM-10	0.00715	12.80

2. Deslagging Station and Material HS.

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00355	6.35
PM-10	0.00355	6.35

3. Caster Molds - Casting

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.006	10.74
PM-10	0.006	10.74
NO_x	0.050	89.50

4. Casters Spray Chambers

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00852	15.25
PM-10	0.00852	15.25

5. Slab Cut-off

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.0071	12.71
PM-10	0.0071	12.71

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TABLE 3 (cont.)

6. Slab Ripping

Pollutant	Emission Factor (Lbs/Ton)	Maximum Emissions (Tons/Yr)
PM	0.00722	12.92
PM-10	0.00722	12.92

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TABLE 4

CERTAIN FUEL COMBUSTION UNITS

1. 10 boilers (#'s 1 - 10)
2. 2 boilers (#'s 11 - 12)
3. Blast Furnace Stoves A & B.
4. BFG Flares
5. Ladle Drying Preheaters (5 heaters).

Total combined fuel usage from affected units (i.e., Boilers, BF stoves, BF Flares, ladle drying preheaters)

	Maximum Usage ($mmft^3$/Yr)
NATURAL Gas (Total)	1,145
BFG	185,030

Fuel Oil 365 thousand gallons/yr

1. Natural Gas

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	5.1	2.92
PM-10	5.1	2.92
SO_2	0.6	0.34
NO_x	306	175.19
VOM	2.8	1.60
CO	40	22.90

2. BFG

Pollutant	Emission Factor (Lbs/mmcf)	Maximum Emissions (Tons/Yr)
PM	2.9	268.29
PM-10	2.9	268.29
SO_2	6.65	615.22
NO_x	5.28	488.48
CO	13.7	1,267.46

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TABLE 4 (cont.)

3. Fuel Oil

Pollutant	Emission Factor (Lbs/Mgal)	Maximum Emissions (Tons/Yr)
PM	9.72	1.77
PM-10	9.72	1.77
SO_2	141.3	25.79
NO_x	55	10.04
VOM	0.28	0.05
CO	5.0	0.91
Lead	0.336	0.06 (waste oil)

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TABLE 5

LIMITS ON EMISSIONS FROM MAJOR PROCESSES AND ACTIVITIES

Units = tons/year

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
Blast Furnace Operations	218	194	474	24	157	--	--
BOF Shop	510	451	--	70	12	16,097	1.43
Continuous Casting Operations	71	71	--	90	--	--	--
Certain Fuel Combustion Units[A]	273	273	641	674	2	1,291	0.06
Roadways	27	27	--	--	--	--	--
Material Handling	2	2	--	--	--	--	--

	PM	PM-10	SO_2	NO_x	VOM	CO	Lead
TOTAL	1,101	1,018	1,115	858	171	17,388	1.49

[A] Blast furnace stoves (A and B), boiler house boilers (1-10), blast furnace boilers (11 and 12), ladle drying preheaters and blast furnace gas flares.

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TABLE 6

EMISSIONS SUMMARY

Units = tons/year

- Emission increases which could occur from the project:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
51.6	-52.0	238.8	476.0	5,685	59.3	0.54

- Creditable contemporaneous actual emission decreases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
58.0	58.0	226.5	0.38	23.31	32.8	0.0

- Other contemporaneous emission increases:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
20.7	20.3	26.0	0.25	11.8	1.6	0.0

- Net emission changes:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
+14.3	-89.2	+38.3	+475.9	+5,673	+28.1	+0.54

- Significant Levels:

PM-10	PM	NO_x	SO_2	CO	VOM	Lead
15	25	40	40	100	40	0.6

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ATTACHMENT A

PROCEDURES TO ENSURE PROPER OPERATION
OF BOF ESP CONTROL SYSTEM

1. The emissions control operator shall:

   a. Check on a regular basis and report to the emissions control foreman or melter:

      i. Any ESP fields down;

      ii. Any ESP fields in which the meter readings are showing no current or a fault;

   b. Check on a regular basis that doors on all hopper screws are closed;

   c. Inspect on a regular basis the fans and motors for unusual sounds and/or visual problems. Any abnormalities will be immediately reported to the melter or maintenance foreman for investigation.

2. The melter shall:

   a. Check on a regular basis and report to the emissions control foreman or the area electrician any fields which the pulpit precipitator field short indicators shows as having a short and is able to reset;

   b. Check on a regular basis and report to the emissions control foreman or the maintenance foreman any draft or fan problems;

   c. Check the ESP stack opacity monitor on a regular basis and initiate the following in the event that the stack opacity level, as determined by the opacity monitor, exceeds 30% opacity on a six minute average:

      i. Check the pulpit indicators for proper operation of the steam and spray water system. Report any problems to emission control foreman or maintenance foreman;

      ii. Check the stack gas pulpit set point for proper setting;

      iii. Call the emissions control operator who shall perform the following steps;

         A. Check the AVC operation and power level. Report any problems to electrical maintenance foreman or area electrician;

         B. Check to ensure that doors on all hopper screws are closed;

   d. Check oxygen blow rates and adjust, if necessary;

   e. Check hot metal chemistry;

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ATTACHMENT A (cont.)

f. A log shall be maintained of the above checks and any actions taken as a result.

3. The emission control foreman shall:

   a. Check on a regular basis the opacity monitor exceedances and trends. The control specialist shall be contacted to correct any problems;

   b. Check on a regular basis the draft rate set points;

   c. Check on a regular basis primary and secondary damper settings;

   d. Check on a regular basis ESP operation, including the following:

      i. Fields down;

      ii. Fields indicating shorts and unable to reset;

      iii. Hopper screw doors are closed;

   e. Check on a regular basis blow rates;

   f. Check on a regular basis spray water system operation;

   g. Check on a regular basis steam injection rate;

   h. Contact the area manager regarding electrical maintenance and to schedule the ESP repair work;

   i. Contact the area manger for mechanical maintenance to schedule the isolation of the ESP channel by closing the inlet and outlet gates of that chamber and opening the top hatches for entry into the chamber;

   j. Notify the emissions control operator and melter when isolation work begins;

   k. A log shall be maintained of the above checks and any actions taken as a result.

4. The crane operator shall use the following procedures, as appropriate, to minimize emissions and maximize emissions capture by the hoods:

   a. Use controlled pouring of the hot metal into the BOF vessel;

   b. Use careful positioning of the hot metal ladle with respect to the hood face and furnace mouth;

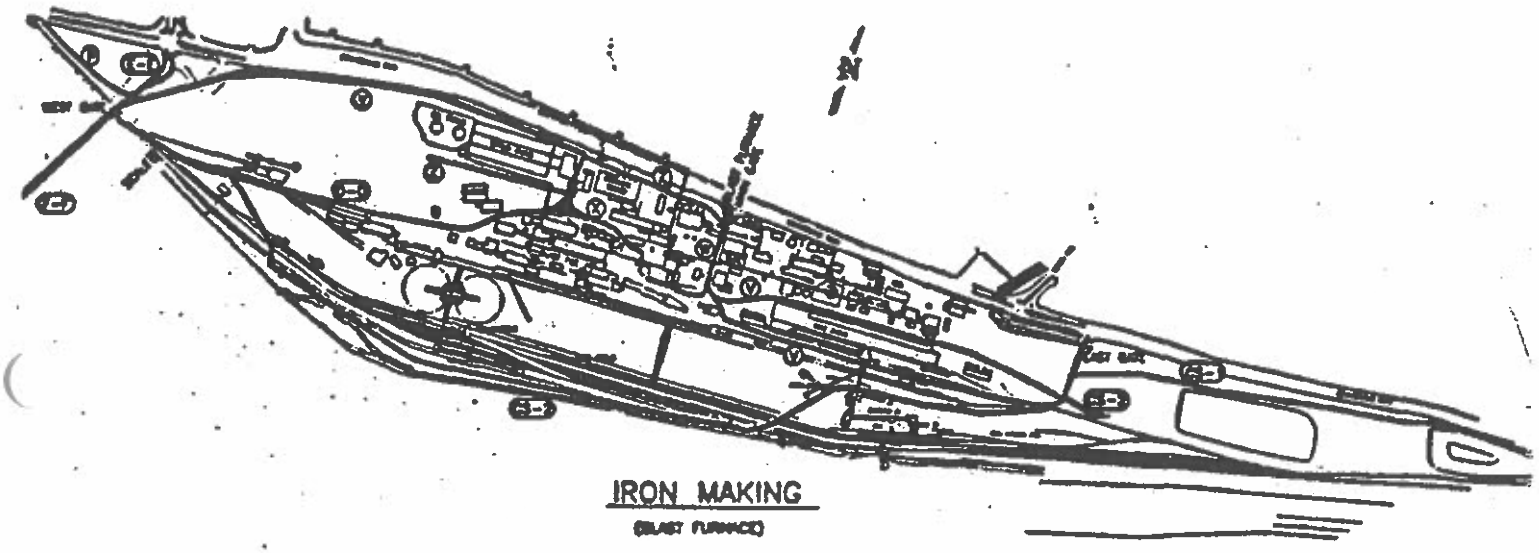
   c. Use the most beneficial furnace tilt angle;

   d. These procedures shall be posted in the crane operator booth.

Permit Application #95010001

ATTACHMENT B

ON-SITE FUGITIVE DUST ROADWAY CONTROL MEASURES AND
MAPS SHOWING THE ROAD SEGMENTS



GRANITE CITY STEEL
GRANITE CITY, ILLINOIS

PROJECT NO.

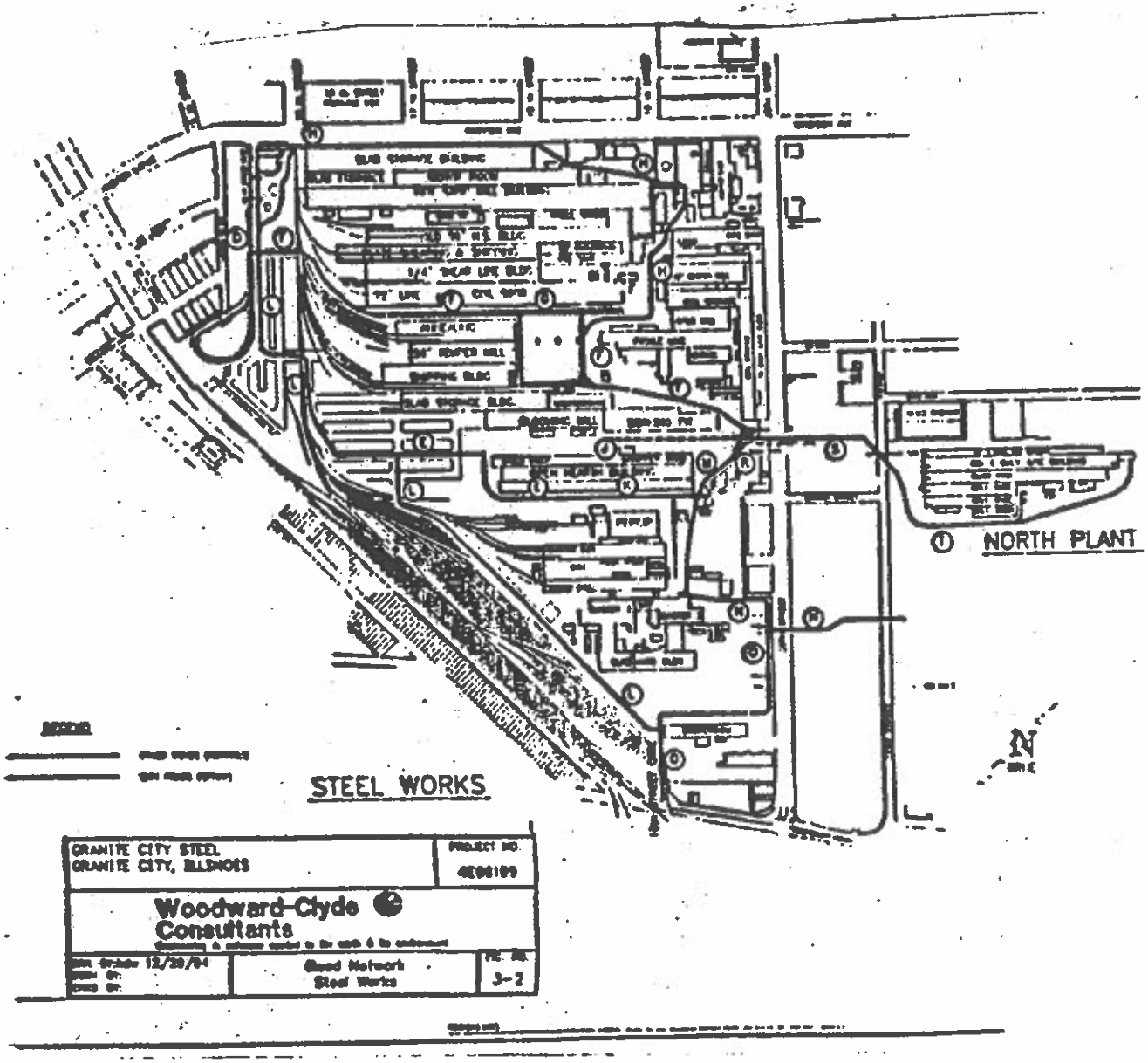
Woodward-Clyde Consultants

Road Network
Iron Making Area

FIG. NO.
3-3

Permit Application #95010001

ATTACHMENT B (cont.)



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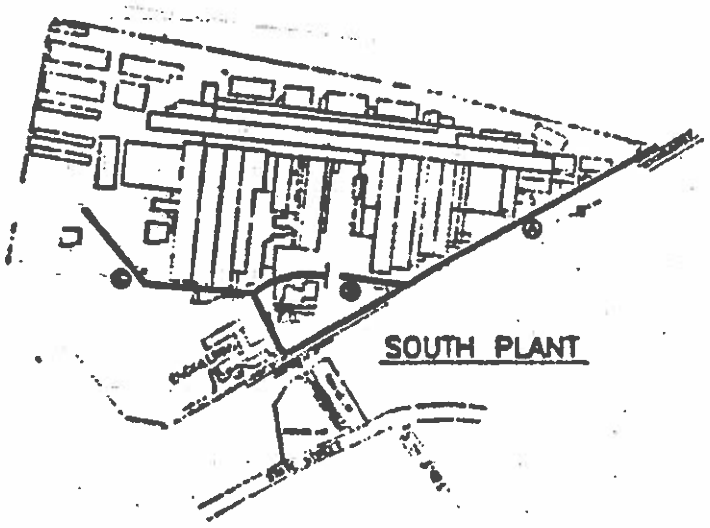
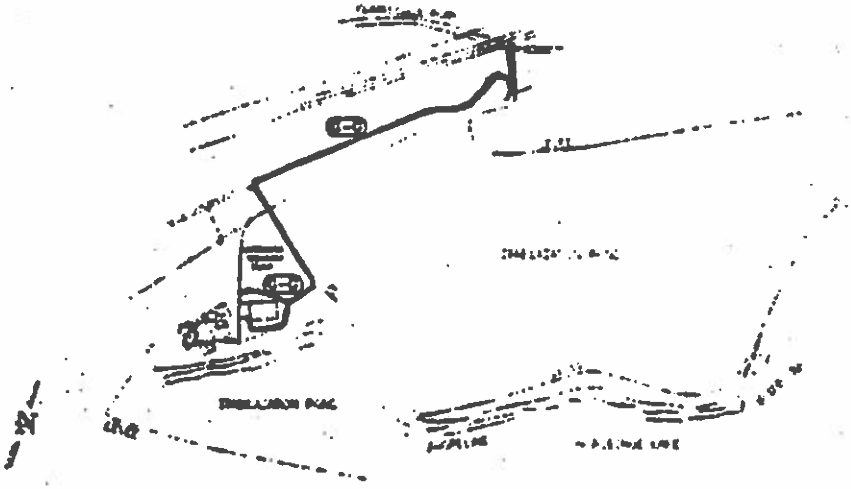
ATTACHMENT B (cont.)





WASTEWATER TREATMENT FACILITY

LEGEND

GRANITE CITY STEEL GRANITE CITY, ILLINOIS	PROJECT NO. 4E88109
Woodward-Clyde Consultants	
DRN. BY: Mike 12/29/94 DSGN BY: CHKD BY:	Road Network South Plant & WWTP
FIG. NO. 3-4	

Permit Application #95010001

ATTACHMENT C

CONTEMPORANEOUS REDUCTIONS IN THE
EMISSIONS OF PM-10

- Historic roadway emissions of 428 tons/yr, minus future potential roadway emissions of 27 tons/yr, equals a resulting reduction in roadway emissions of 401 tons/yr
- Historic material handling emissions of 17 tons/yr minus future potential material handling emissions of 2 tons/yr, equals a resulting reduction in material handling emissions of 15 tons/yr.
- Emission reductions resulting from the sweeping of city streets = 52 tons/yr*
- Emission reductions resulting from sweeping and housekeeping of areas below and around BOF ESP = 12 tons/yr*

Total reductions in the emissions of PM-10 as a result of the additional dust control measures required by Illinois' SIP and the special conditions of this permit = 480 tons/yr

* These are considered reasonable estimates of reductions and are subject to change upon further investigation of the actual reductions which will occur as a result of the control measures required by this permit.

JRR:jar

Appendix E – Copies of EPA Determinations

IN RE SHELL OFFSHORE, INC.

OCS Appeal Nos. 11-05, 11-06 & 11-07

ORDER DENYING PETITIONS FOR REVIEW

Decided March 30, 2012

Syllabus

This decision addresses petitions for review that challenge an Outer Continental Shelf ("OCS") Permit to Construct and Title V Air Quality Operating Permit ("Permit") Region 10 ("Region") of the U.S. Environmental Protection Agency ("EPA" or "Agency") issued to Shell Offshore, Inc. ("Shell"). The Region issued the Permit on October 21, 2011, pursuant to Clean Air Act ("CAA or "Act") section 328, 42 U.S.C. § 7627, and applicable regulations governing air emissions from OCS sources at 40 C.F.R. part 55, and pursuant to Title V of the CAA, 42 U.S.C. § 7661, and implementing regulations at 40 C.F.R. part 71, as well as applicable Alaska code and regulatory provisions. The Permit authorizes Shell to "construct and operate the Conical Drilling Unit *Kulluk* and associated air emission units and to conduct other air pollutant emitting activities" within Shell's lease blocks in the Beaufort Sea off the North Slope of Alaska. The Permit also provides for the use of an associated fleet of support ships, including icebreakers, supply ships, and oil spill response vessels in addition to the *Kulluk*.

The Board received three petitions for review of the Permit. One petition was filed by Resisting Environmental Destruction of Indigenous Lands ("REDOIL"), Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council, Northern Alaska Environmental Center, Oceana, Pacific Environment, Sierra Club, and the Wilderness Society (collectively, "REDOIL Petitioners"). A second petition was filed by the Inupiat Community of the Arctic Slope ("ICAS"). The third petition was filed by Mr. Daniel Lum.

The three petitions collectively raise seven issues for review: (1) Have Petitioners demonstrated that the Region clearly erred in establishing limitations to restrict the *Kulluk* drilling unit's potential to emit? (2) Have REDOIL Petitioners demonstrated that the Region clearly erred in declining to require prevention of significant deterioration ("PSD") increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process? (3) Did REDOIL Petitioners raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance? (4) Have REDOIL Petitioners demonstrated that the Region clearly erred in its ambient air exemption determination? (5) Have Petitioners demonstrated that the Region failed to satisfy its obligation to consider environmental justice under Executive Order 12898 and comply with applicable Board precedent? (6) Has ICAS demonstrated that the Region clearly erred or abused its discretion in providing forty-six days to comment on the draft permit and in denying ICAS's request for non-overlapping comment periods? (7) Has ICAS demonstrated that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review?

Held: The Board denies review of the Permit. Petitioners have not met their burden of demonstrating that review is warranted on any of the grounds presented.

(1) Limitations on Potential to Emit. The Board concludes that Petitioners have failed to demonstrate that the Region erred in establishing limitations to restrict the potential to emit nitrogen dioxide ("NO_2"), carbon monoxide ("CO"), sulfur dioxide ("SO_2"), and greenhouse gases ("GHGs") for emission units located on the *Kulluk* and on the Associated Fleet when operating within twenty-five miles of the *Kulluk* while it is an OCS source. The Region exercised its discretion and applied its technical expertise to establish practically enforceable source-wide emission limits that accommodate the substantial and unpredictable variations in emissions based on the atypical nature of Shell's operations. The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or emission factors derived from source test data Shell submitted to the Region in support of two separate, previously issued OCS PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discoverer* drillship.

(2) PSD Increment Consumption Analyses. The Board concludes that REDOIL Petitioners failed to demonstrate clear error in the Region's decision not to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process. The Board holds that the Region provided a reasonable interpretation of CAA section 504(e), which imposes permitting requirements on "temporary" stationary sources, in its Response to Comments document. The Region determined that "PSD major sources are subject to NAAQS and increment in the permitting process, whereas non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the [PSD] increment[s]." The Region concluded that the State of Alaska's minor source preconstruction program does not require permanent minor sources to demonstrate compliance with PSD increments as a condition of construction, so neither would it require such compliance of temporary minor sources. The Board finds REDOIL Petitioners' series of challenges to this basic analysis to be deficient in a variety of ways and therefore upholds the Region's decision.

(3) Ambient Air Quality Analysis. REDOIL Petitioners contend that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance. Upon examination of the administrative record, the Board concludes that REDOIL Petitioners failed to raise this issue during the comment period. This issue, therefore, was not preserved for review.

(4) Ambient Air Exemption Determination. The Board concludes that REDOIL Petitioners have not shown that the Region clearly erred in its decision to exempt the area within a 500 meter radius from the *Kulluk* – the area within the U.S. Coast Guard safety zone – from the definition of "ambient air." The Region, in its Response to Comments, provided a reasonable interpretation of the ambient air regulation and the Agency's longstanding interpretation of that regulation as applied in the OCS context.

(5) Environmental Justice Analysis. The Board concludes that ICAS and Mr. Lum have not demonstrated that the Region failed to satisfy its obligations to comply with Executive Order 12898 and applicable Board precedent. The Region conducted an environmental justice analysis that demonstrated compliance with the NAAQS and endeavored to include and analyze data that is germane to the environmental justice issues raised during the comment period. The Region appropriately determined that it was not required to analyze the mobile source emissions from vessels that operate outside of twenty-five miles from the *Kulluk* while it is an OCS source where, as here, the Title V permit did not address these

mobile source emissions, and the record lacked sufficient data for such an analysis. In addition, in the remaining arguments they put forth in their petitions, ICAS and Mr. Lum do not demonstrate how the Region's responses to comments are inadequate, overcome the particularly heavy burden a petitioner must meet to demonstrate that review of the Region's technical decisions is warranted, or raise issues within the Board's jurisdiction.

(6) Public Comment Period. The Board concludes that ICAS has failed to show that the Region clearly erred or abused its discretion in either selecting a 46-day comment period or in denying ICAS's request for nonconcurrent comment periods. The length of time the Region provided for comment on this permit was 16 days more than the 30-day regulatory minimum and 1 day more than the amount of time ICAS had specifically requested. ICAS's attempt to recalculate the length of the comment period based on an unexplained mathematical formula involving the number and lengths of other comment periods is unconvincing. Furthermore, ICAS has not pointed to any regulations that prohibit the Agency from issuing concurrent permits or that require – or even specify – a different comment period length when the Agency does issue concurrent permits. Finally, it is clear from the administrative record that the Region appropriately balanced conflicting considerations in deciding on the length of the comment period for this permit and in denying the request for nonoverlapping periods, and ICAS has failed to demonstrate otherwise.

(7) Public Hearing. The Board concludes that ICAS has failed to demonstrate that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review. ICAS has not shown that the Region violated any part 71 or 124 procedural regulation. Moreover, the alleged problems ICAS has identified do not, even if the Board were to find them to constitute a deficiency in some way, warrant Board review.

Before Environmental Appeals Judges Charles J. Sheehan, Kathie A. Stein, and Anna L. Wolgast.

Opinion of the Board by Judge Stein:

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I. *STATEMENT OF THE CASE*

A group of conservation petitioners ("REDOIL Petitioners"),[1] the Inupiat Community of the Arctic Slope ("ICAS"), and Mr. Daniel Lum each petitioned[2] the Environmental Appeals Board ("Board") to review an Outer Continental Shelf ("OCS") Permit to Construct and Title V Air Quality Operating Permit ("Permit") that U.S. Environmental Protection Agency ("EPA" or "Agency") Region 10 ("Region") had issued to Shell Offshore, Inc. ("Shell"). *See generally* OCS Permit to Construct and Title V Air Quality Operating Permit, Permit No. R10 OCS030000 (Oct. 21, 2011) (Administrative Record ("A.R.") J-2). The Region issued the Permit pursuant to Clean Air Act ("CAA" or "Act") section 328, 42 U.S.C. § 7627, and applicable regulations governing air emissions from OCS sources at 40 C.F.R. part 55, and pursuant to Title V of the CAA, 42 U.S.C. § 7661, and implementing regulations at 40 C.F.R. part 71, as well as applicable Alaska code and regulatory provisions.[3] *See* Permit at 6 (citing all relevant provisions).

The Permit authorizes Shell to construct and operate the *Kulluk* drilling unit and associated air emission drilling units in certain lease blocks within the Beaufort Sea. *Id.* at 1. The Region and Shell each filed a response to the petitions. Thereafter, both REDOIL Petitioners and ICAS filed motions requesting leave to file reply briefs. These motions are currently pending before the Board and are addressed below in Part V. The Board did not hold oral argument in this case. For the reasons discussed below, the Board denies review of the Permit.

---

[1] REDOIL Petitioners include Resisting Environmental Destruction of Indigenous Lands ("REDOIL"), Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council, Northern Alaska Environmental Center, Oceana, Pacific Environment, Sierra Club, and The Wilderness Society.

[2] Mr. Lum's petition was designated as OCS Appeal No. 11-05, REDOIL Petitioners' petition was designated as OCS Appeal No. 11-06, and ICAS's petition was designated as OCS Appeal No. 11-07.

[3] The Permit was issued under multiple CAA and Alaska air pollution provisions because it is a consolidation of three air permits. According to the Region, it consolidated "an OCS/Title V permit under 40 CFR Parts 55 and 71 for operations beyond 25 miles of Alaska's seaward boundary; an OCS/minor permit for air quality protection under 40 CFR Part 55 and 18 Alaska Administrative Code (AAC) 50.502 and for owner requested limitations under 40 CFR Part 55 and 18 AAC 50.508 for operations within 25 miles of Alaska's seaward boundary; and an OCS/Title V permit under 40 CFR Part 55 and 18 AAC 50.326 for operations within 25 miles of Alaska's seaward boundary." Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk at 1 (A.R. J-3).

II. *ISSUES*

The Board has determined that the three petitions filed in this case, collectively, present the following seven issues for review:

A. Have Petitioners demonstrated that the Region clearly erred in establishing limitations to restrict the *Kulluk* drilling unit's potential to emit?

B. Have REDOIL Petitioners demonstrated that the Region clearly erred in declining to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process?

C. Did REDOIL Petitioners raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance?

D. Have REDOIL Petitioners demonstrated that the Region clearly erred in its ambient air exemption determination?

E. Have Petitioners demonstrated that the Region failed to satisfy its obligation to consider environmental justice under Executive Order 12898 and comply with applicable Board precedent?

F. Has ICAS demonstrated that the Region clearly erred or abused its discretion in providing 46 days to comment on the draft permit and in denying ICAS's request for nonoverlapping comment periods?

G. Has ICAS demonstrated that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review?

III. *STANDARD OF REVIEW*

Under the part 124 procedural regulations, which apply to OCS permits,[4] the Board will not ordinarily review a permit unless it is based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review. 40 C.F.R. § 124.19(a); Consolidated Per-

[4] The OCS regulations direct the Agency to follow the applicable part 124 permit regulations in processing OCS permits. 40 C.F.R. § 55.6(a)(3). Accordingly, the part 124 permit appeal provision, 40 C.F.R. § 124.19, applies here. *See In re Shell Gulf of Mex., Inc.*, 15 E.A.D. 470, 476 (EAD 2012) [hereinafter *Shell Discoverer 2012*].

mit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980). The Board also applies this standard in reviewing Title V permits issued under part 71.[5] *See* 40 C.F.R. § 71.11(*l*)(1); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 32-33 (EAB 2005). When analyzing permits, the Board is cognizant of the preamble to section 124.19, in which the Agency states that the Board's power of review "should be only sparingly exercised" and that "most permit conditions should be finally determined at the [permit issuer's] level." Consolidated Permit Regulations, 45 Fed. Reg. at 33,412; *accord In re Cardinal FG Co.*, 12 E.A.D. 153, 160 (EAB 2005); *see also Peabody*, 12 E.A.D. at 33 (applying these same principles in the context of a part 71 permit appeal).

The petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19; *id.* § 71.11(l)(1). To meet this burden, the petitioner must satisfy threshold pleading requirements including timeliness, standing, and issue preservation. *See* 40 C.F.R. § 124.19; *id.* § 71.11(l)(1); *In re Russell City Energy Ctr., LLC* ("*Russell City II*"), 15 E.A.D. 1, 10 (EAB 2010), *appeal docketed sub nom. Chabot-Las Positas Cmty. Coll. Dist. v. EPA*, No. 10-73870 (9th Cir. Dec. 20, 2010); *In re BP Cherry Point*, 12 E.A.D. 209, 216 (EAB 2005). For example, a petitioner seeking review must file an appeal of the permit decision within 30 days of service of the decision, and must have filed comments on the draft permit or participated in the public hearing. 40 C.F.R. § 124.19(a); *accord Russell City II*, 15 E.A.D. at 10. In addition, a petitioner must not only specify objections to the permit, but also explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. *See* 40 C.F.R. § 124.13 (requiring that all persons who believe a condition of a draft permit is inappropriate "must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period"); *id.* § 124.19(a) (stating that a petition for review to the Board "shall include * * * a demonstration that any issues being raised were raised during the public comment period"); *see also In re Avenal Power Ctr., LLC*, 15 E.A.D. 384, 387 (EAB 2011), *appeals docketed sub nom. Sierra Club v. EPA*, No. 11-73342 (9th Cir. Nov. 3, 2011), *El Pueblo Para el Aire y Agua Limpio v. EPA*, No. 11-73356 (9th Cir. Nov. 4, 2011); *BP Cherry Point*, 12 E.A.D. at 216-17. The petitioner's burden is particularly heavy in cases where a petitioner seeks review of an issue that is fundamentally technical or scientific in nature, as the Board will typically defer to a permit issuer's technical expertise and experience on such matters if the permit issuer adequately explains its rationale and supports its reasoning in the administrative record. *See, e.g., In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 510 (EAB 2006); *Peabody*, 12 E.A.D. at 33-34; *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB

[5] The part 71 regulatory language governing Title V permit appeals is nearly identical to the part 124 regulatory language governing review of other types of permits. *Compare* 40 C.F.R. § 71.11(l)(1) *with* 40 C.F.R. § 124.19; *see also Peabody*, 12 E.A.D. at 33 n.26.

1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3rd Cir. 1999); *see also In re Ash Grove Cement Co.*, 7 E.A.D. 387, 404 (EAB 1997).

When evaluating a permit appeal, the Board examines the administrative record prepared in support of the permit to determine whether the permit issuer exercised his or her "considered judgment." *Ash Grove Cement*, 7 E.A.D. at 417-18; *accord In re Cape Wind Assocs., LLC*, 15 E.A.D. 327, 330 (EAB 2011); *In re GSX Servs. of S.C., Inc.*, 4 E.A.D. 451, 454 (EAB 1992). The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion. *E.g.*, *In re Shell Offshore, Inc. ("Shell 2007")*, 13 E.A.D. 357, 386 (EAB 2007) (citing *In re Carolina Light & Power Co.*, 1 E.A.D. 448, 451 (Act'g Adm'r 1978)); *Ash Grove Cement*, 7 E.A.D. at 417 (same). As a whole, the record must demonstrate that the permit issuer "duly considered the issues raised in the comments and [that] the approach ultimately adopted by the [permit issuer] is rational in light of all information in the record." *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2005); *accord In re City of Moscow*, 10 E.A.D. 135, 142 (EAB 2001); *NE Hub*, 7 E.A.D. at 568.

Finally, the Board endeavors to construe liberally objections raised by parties unrepresented by counsel (i.e., those proceeding pro se), so as to fairly identify the substance of the arguments being raised. *In re Sutter Power Plant*, 8 E.A.D. 680, 687 & n.9 (EAB 1999); *accord In re Shell Gulf of Mex., Inc. ("Shell Discoverer 2012")*, 15 E.A.D. 470, 478 (EAB 2012); *Russell City II*, 15 E.A.D. at 12. While the Board does not expect such petitions to contain sophisticated legal arguments or to utilize precise technical or legal terms, the Board nonetheless expects such petitions "to articulate some supportable reason or reasons as to why the permitting authority erred or why review is otherwise warranted." *Sutter*, 8 E.A.D. at 687-88 (citing *In re Beckman Prod. Servs.*, 5 E.A.D. 10, 19 (EAB 1994)).

IV. *SUMMARY OF DECISION*

For all of the reasons stated below, the Board concludes that: (a) Petitioners failed to demonstrate that the Region clearly erred in establishing limits to restrict the *Kulluk's* potential to emit; (b) REDOIL Petitioners failed to demonstrate that the Region clearly erred in declining to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process; (c) REDOIL Petitioners failed to raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance; (d) REDOIL Petitioners failed to demonstrate that the Region clearly erred in its ambient air exemption determination; (e) Petitioners have not demonstrated that the Region's environmental justice analysis and related conclusions

failed to satisfy its obligation to comply with Executive Order 12898 and applicable Board precedent; (f) ICAS failed to demonstrate that the Region clearly erred or abused its discretion in providing 46 days to comment on the draft permit and in denying ICAS's request for nonoverlapping comment periods; and (g) ICAS failed to demonstrate that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review. Accordingly, the Board denies review of the Permit.

V. *RELEVANT PROCEDURAL AND FACTUAL HISTORY*

On July 22, 2011, the Region issued a draft permit consolidating three permits that regulated air pollution from Shell's proposed exploratory drilling operations on OCS lease blocks in the Beaufort Sea off the North Slope of Alaska, as authorized by the United States Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE").[6] The Region solicited public comment on the draft permit from July 22, 2011, through September 6, 2011. *See* Statement of Basis for Draft OCS Permit to Construct and Title V Air Quality Operating Permit ("Statement of Basis") at 10 (A.R. H-4). In addition, the Region held an informational meeting and public hearing on the draft permit on August 23, 2011, in Barrow, Alaska, and a separate public hearing on August 26, 2011, in Anchorage, Alaska. *Id.* at 11. All of the petitioners submitted comments on the draft permit. *See* E-mail from Daniel Lum to EPA Region 10 (Aug. 10, 2011) (A.R. I-31) [hereinafter Lum Comments]; E-mail from Alaska Wilderness League, Audubon Alaska, Center for Biological Diversity, Defenders of Wildlife, Earthjustice, Eyak Preservation Council, Greenpeace, National Wildlife Federation, Natural Resources Defense Council, Northern Alaska Environmental Center, Ocean Conservancy, Oceana, Pacific Environment, REDOIL, Sierra Club, The Wilderness Society, and World Wildlife Fund to EPA Region 10 (Sept. 6, 2011) (A.R. I-53) [hereinafter REDOIL Comments]; Letter from North Slope Borough, AEWC, and ICAS to Doug Hardesty, Air Permits Project Manager, EPA Region 10 (Sept. 6, 2011) (A.R. I-54) [hereinafter ICAS Comments]; *see also* Lum Petition at 1 (noting that he also provided comments at the public hearing).

On October 21, 2011, the Region issued the Permit. *See* Permit at 1. At the same time, the Region issued a response to both the written comments it had received on the draft permit and the oral comments that had been presented at the public hearings. *See generally* Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk ("RTC") (A.R. J-3); *see id.* at 2 (describing comments to which the document responded). The Permit authorizes Shell to conduct air pollutant emitting activities for the purpose of oil exploration with the conical drilling unit *Kulluk* on lease

[6] For a description of the three permits, *see supra* note 3.

blocks in the Beaufort Sea. The Permit provides for the use of an associated fleet of support vessels ("Associated Fleet"), such as icebreakers, oil spill response vessels ("OSRVs"), and a supply ship, in addition to the *Kulluk*.

The Board received three timely petitions for review of the Permit: one from Mr. Lum, one from REDOIL Petitioners, and one from ICAS. The Region and Shell each filed a single response to those petitions. ICAS and REDOIL Petitioners each filed motions requesting leave to file reply briefs and attached their proposed reply briefs. Shell filed an opposition to the motions for leave to file replies. Before addressing the issues raised by the petitions, the Board first considers whether it is appropriate to grant Petitioners' motions.

A petitioner seeking leave to file a reply brief in an appeal of a new source review ("NSR") permit issued pursuant to the CAA, such as the OCS Permit at issue here, must state "with particularity the arguments to which the Petitioner seeks to respond and the reasons the Petitioner believes it is both necessary to file a reply to those arguments * * * and how those reasons overcome the presumption in the Standing Order."[7] *Shell Discoverer 2012*, 15 E.A.D. at 481 (citing Order Governing Petitions for Review of Clean Air Act New Source Review Permits 3 (Apr. 19, 2011) ("Standing Order"), *available at* http://www.epa.gov/eab (click on Standing Orders)).

Upon consideration of Petitioners' motions to file reply briefs and proposed reply briefs, the Board finds that only two select issues within REDOIL Petitioners' and ICAS's reply briefs meet the high threshold required to overcome the presumption against reply briefs that the Board applies in NSR appeals. *See* Standing Order at 3. In particular, in its reply brief, ICAS responds to arguments concerning ICAS's challenge to the public hearing procedures that the Region advances for the first time in the response brief. ICAS could not have responded to these particular arguments prior to the Region's response because a portion of the Region's rationale in its response brief does not appear in the administrative record. In addition, both ICAS and REDOIL Petitioners assert that the Region referenced for the first time in its response a decision by the Administrator as support for the Region's rationale that the Agency has previously concluded that rolling emission limits accompanied by prescribed emission factors and appropriate monitoring and recordkeeping sufficiently restrict a source's potential to emit. *See* Region Response at 17 (citing *In re Pope & Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007) (A.R. B-24)). ICAS and REDOIL Petitioners did not have an op-

[7] In April 2011, the Board issued a standing order in which it adopted certain procedures intended to facilitate expeditious resolution of petitions requesting review of permits issued under the CAA NSR program, including OCS permits. *See* Standing Order at 1 n.2; *see also* 40 C.F.R. § 124.19. Among other things, the Board will apply a presumption against the filing of reply briefs and sur-replies in NSR appeals. *See* Standing Order at 3. However, the Board maintains discretion to modify these procedures as appropriate on a case-specific basis. *Id.* at 6.

portunity to review the Administrator's decision in the context of this appeal or to analyze its relevance to the Region's stated rationale until the Region cited it for support in its response brief. Accordingly, the Board grants, in part, ICAS's and REDOIL Petitioners' motions for leave to file a reply brief. Thus the Board, in reaching its conclusions set forth in this order, has considered the portions of ICAS's reply brief and REDOIL Petitioners' reply brief that address the public process for the permit and the Region's inclusion of the *Pope & Talbot* decision as support for the Region's PTE decisions. *See* ICAS Reply at 3, 6-7; REDOIL Petition at 9-10. The Board denies REDOIL Petitioners' and ICAS's motions for leave to file a reply brief with respect to all other issues.[8]

The Board analyzes the parties' arguments and sets forth its determinations below.

VI. *ANALYSIS*

A. *ICAS and REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Establishing Limitations to Restrict the Kulluk Drilling Unit's PTE*

ICAS and REDOIL Petitioners both challenge the Region's determination of the *Kulluk's* potential to emit ("PTE") and argue that the Region should require Shell to obtain a preconstruction prevention of significant deterioration ("PSD") permit. They complain that the PTE restrictions Shell requested and the Region included in the permit to ensure that the *Kulluk* remains a synthetic minor source for nitrogen oxides ("NO_x"), carbon monoxide ("CO"), greenhouse gases ("GHGs"), and sulfur dioxide ("SO_2") are practically unenforceable.[9] The Region counters that the restrictions it imposed in the permit that reduce Shell's emissions below the PSD threshold levels for all criteria pollutants are practically enforceable and constitute fundamentally technical decisions that are consistent with CAA statutory and regulatory authority as well as Agency guidance and past practice. This PTE question is central to the Board's analysis because the Region uses the potential to emit to determine which provisions of the CAA, including both the Title V permit requirements and the PSD preconstruction permit requirements, apply to the *Kulluk*. The question the Board must resolve, then, is whether the restrictions the Region included in the permit to limit the *Kulluk's* PTE are both

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[8] The Board notes that Mr. Lum attempted to file by e-mail a request to file a reply brief and a request for oral argument. *See* E-mail from Daniel Lum to Eurika Durr, Clerk of the Board, Environmental Appeals Board, U.S. EPA (Nov. 4, 2011 6:18 pm EDT). The Board denies Mr. Lum's requests.

[9] While ICAS challenges the Region's PTE limitations for all of these pollutants, REDOIL Petitioners only challenge the Region's PTE limitations with respect to NO_x and CO. *See* ICAS Petition at 10-28; REDOIL Petition at 9-14.

practically enforceable and reasonable in light of the applicable statutory and regulatory authorities as well as Agency guidance and practice, and whether the Region provided adequate support for its decisions in the administrative record.

Before addressing the parties' arguments, a brief review of the relevant statutory and regulatory authorities is warranted.

1. *Statutory and Regulatory Context*

a. *CAA Section 328 and OCS Air Regulations*

Section 328 of the CAA, 42 U.S.C. § 7627, establishes air pollution controls for OCS sources[10] and requires OCS sources to "attain and maintain Federal and State ambient air quality standards" and to comply with the PSD provisions contained in CAA Title I, part C. EPA promulgated the Outer Continental Shelf Air Regulations, 40 C.F.R. part 55, to implement CAA section 328 and established within part 55 "the air pollution control requirements for OCS sources and the procedures for implementation and enforcement of the requirements." 40 C.F.R. § 55.1.

Section 328(a)(1), 42 U.S.C. § 7627(a)(1), also requires that, for OCS sources located within 25 miles of a state's seaward boundary, the requirements shall be the same as would apply if the source were located in the corresponding onshore area ("COA"), including, but not limited to, state and local requirements for emission controls, emission limitations, offsets, permitting, monitoring, testing, and reporting. As the Board has explained before, "OCS sources must obtain

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[10] Section 328 defines an OCS source as follows:

> The terms "Outer Continental Shelf source" and "OCS source" include any equipment, activity, or facility which –
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> (i) emits or has the potential to emit any air pollutant,
>
> (ii) is regulated or authorized under the Outer Continental Shelf Lands Act [43 U.S.C. § 1331 et seq.], and
>
> (iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf.
>
> Such activities include, but are not limited to, platform and drill ship exploration, construction, development, production, processing, and transportation. For purposes of this subsection, emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source.

CAA § 328(a)(4)(C), 42 U.S.C. § 7627(a)(4)(c).

a preconstruction permit from either EPA or an EPA-delegated agency if the OCS source is located within twenty-five miles of a state's seaward boundary and is subject to either federal or state requirements listed in 40 C.F.R. §§ 55.13 or 55.14."[11] *Shell 2007*, 13 E.A.D. at 365 (citing 40 C.F.R. §§ 55.6(b)(1), 55.11 and CAA § 328(a)(3), 42 U.S.C. § 7627(a)(3)). The Agency has retained the authority to implement and enforce section 328 in the OCS off the coast of Alaska as opposed to delegating that authority to the state. Accordingly, as mentioned above, Shell submitted its permit applications to the Region, and the procedural rules contained at 40 C.F.R. part 124 apply. 40 C.F.R. § 55.6(a)(3).

Because requirements for these OCS sources are based on onshore requirements, which may change, section 328(a)(1) and the corresponding regulations in part 55 require EPA to update the OCS requirements as necessary to maintain consistency with onshore requirements. *See* CAA § 328(a)(1), 42 U.S.C. § 7627(a)(1); 40 C.F.R. §§ 55.6(b)(2), 55.12; *see also Shell 2007*, 13 E.A.D. at 364 & n.6. In response to Shell's December 10, 2010, notice of intent submitted to the Agency pursuant to 40 C.F.R. § 55.4, the Agency first proposed in the Federal Register a consistency update on February 10, 2011, and later published the final consistency update on June 27, 2011, subsequent to a public notice and comment period. *See* Outer Continental Shelf Air Regulations Consistency Update for Alaska, 76 Fed. Reg. 37,274 (June 27, 2011) (codified at 40 C.F.R. § 55.14(e) & appx. A); Statement of Basis at 17. This most recent consistency update incorporated, except where specifically noted, Alaska Administrative Code title 18, articles 1 through 5 and article 9, into part 55. 76 Fed. Reg. at 37,279-80; Statement of Basis at 17. In particular, articles 3 and 5 establish the minor source and major source permitting requirements with which the *Kulluk* must comply. *See Shell 2007*, 13 E.A.D. at 364 & n.6.

In addition, because the permit authorizes the *Kulluk* to operate on a group of lease blocks located both within 25 miles and beyond 25 miles of the state's seaward boundary, the permit conditions that refer to lease blocks wholly or partially located beyond 25 miles of the seaward boundary are designated as "outer

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[11] Section 55.13 states, among other things, that the PSD program applies to OCS sources located within 25 miles of a state's seaward boundary whenever the OCS source requires construction of a new major stationary source or a modification at an existing major source and the COA is classified under the PSD program as in attainment or unclassifiable. 40 C.F.R. § 55.13(d)(1) ("40 C.F.R. [§] 52.21 shall apply to OCS sources [l]ocated within 25 miles of a state's seaward boundary if the requirements of 40 C.F.R. [§] 52.21 are in effect in the COA."); *see also Shell 2007*, 13 E.A.D. at 364.

Section 55.14 incorporates by reference regulatory requirements that states which border the OCS in the Pacific, Atlantic, and Arctic Oceans and the Gulf of Mexico have promulgated to meet the national ambient air quality standards ("NAAQS"). 40 C.F.R. § 55.14(d); CAA § 328(a)(1), 42 U.S.C. § 7627(a)(1) (defining the geographic scope of EPA authority to regulate air pollution from OCS sources). These state regulations are known as state implementation plans ("SIPs") and are created pursuant to CAA § 110, 42 U.S.C. § 7410.

OCS," and conditions that refer to lease blocks wholly or partially located within 25 miles of the seaward boundary are designated as "COA." Permit at 9 (noting that conditions identified with "COA" are those that apply on the "inner OCS," within 25 miles of the state's seaward boundary, and that all other conditions not identified as "COA" or "outer OCS" apply to lease blocks on both the inner and outer OCS); *see also* Statement of Basis at 7.

b. *The PSD Program and PTE*

The PSD program is a preconstruction NSR program that applies to areas designated as either in attainment with the national ambient air quality standards ("NAAQS")[12] or unclassifiable and requires new major stationary sources[13] to limit their impact on ambient air quality by obtaining a PSD permit before construction begins. CAA §§ 160-169, 42 U.S.C. §§ 7470-7479; 40 C.F.R. § 52.21(a)(2).

A source's PTE relates to its inherent ability to emit air pollutants. *Shell 2007*, 13 E.A.D. at 365; *Peabody*, 12 E.A.D. at 30. Under the PSD program, a permitting authority must determine a source's PTE to identify which sources are "major sources" subject to regulation under the applicable PSD requirements, making PTE a technical determination that "is jurisdictional in nature." *Ala. Power Co. v. Costle*, 636 F.3d 323, 352 (D.C. Cir. 1979), *quoted in Peabody*, 12 E.A.D. at 30; *see also* CAA § 165(a), 42 U.S.C. § 7475(a) (requiring a PSD permit for any "major emitting facility"); *Shell Discoverer 2012*, 15 E.A.D. at 515 n.58. The regulations that implement the PSD program define PTE as:

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[12] The NAAQS are maximum ambient air concentrations for specific pollutants that EPA has determined are necessary to protect public health and welfare. *See* CAA §§ 108(a)(1)(A), 109, 42 U.S.C. §§ 7408(a)(1)(A), 7409; 40 C.F.R. § 50.4-.12.

[13] EPA regulations define a major stationary source as any of certain specifically listed stationary sources that emit or have a potential to emit 100 tons per year ("tpy") or more of any regulated NSR pollutant, *see* 40 C.F.R. § 52.21(b)(50), or any other stationary source that emits, or has the potential to emit, 250 tpy or more of a regulated NSR pollutant, 40 C.F.R. § 52.21(b)(1)(i)(a)-(b); *accord* CAA § 169(1), 42 U.S.C. § 7479(1) (defining a "major emitting facility" in the same way).

Alaska regulations, which incorporate large parts of the federal PSD regulations into title 18 of the Alaska Administrative Code, provide that a new PSD permit is required prior to actual construction of a new major stationary source. Alaska Admin. Code tit. 18, § 50.040 (adopting federal standards by reference); *id.* §§ 50.302(a)(1), 50.306. The Alaska regulations also define a major stationary source as any of certain specifically listed stationary sources that emit or have a potential to emit 100 tpy or more of any regulated NSR pollutant, or any other stationary source that emits, or has the potential to emit, 250 tpy or more of a regulated NSR pollutant. *Id.* § 50.990(52) (incorporating by reference definition of major stationary source from 40 C.F.R. § 51.166(b)(1)); *accord* Alaska Stat. § 46.14.990 (same).

> [T]he maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

40 C.F.R. § 52.21(b)(4).[14] In sum, PTE reflects a source's maximum emissions capacity considering the application of any emission control equipment, or other capacity-limiting restrictions, that effectively and enforceably limit emissions capacity. *Shell 2007*, 13 E.A.D. at 366; *Peabody*, 12 E.A.D. at 31 (citing Part 71 Rulemaking, 61 Fed.Reg. 34,202, 34,212 (July 1, 1996)).

Alaska regulations require that, under certain circumstances, a stationary source with a PTE of less than 250 tons per year ("tpy") obtain a minor source permit. Alaska Admin. Code tit. 18, § 50.502. Specifically in terms of the *Kulluk's* operations, Alaska regulations require a minor source permit prior to the construction of a new stationary source with the potential to emit more than 40 tpy of NO_x. *Id.* § 50.502(c)(1)(B). Thus, as the Board noted in *Shell 2007*, under the Alaska PSD program, a new stationary source that has a PTE between 40 and 250 tpy of NO_x must obtain a minor source permit before commencing construction, and a stationary source with a PTE greater than 250 tpy of NO_x must obtain a major source permit. 13 E.A.D. at 366.

A source that would otherwise exceed the applicable PSD major source threshold of 250 tpy of any regulated NSR pollutant may, as in this instance, seek to avoid regulation as a major source under the PSD program by requesting that the permitting authority impose enforceable permit restrictions on the source's PTE. *Shell* 2007, 13 E.A.D. at 366, *cited in* RTC at 20; *see also Peabody*, 12 E.A.D. at 26 & n.11, 31. A Title V permit may function as a vehicle for a permitting authority to establish enforceable permit limits that restrict the source's potential to emit air pollutants to a level below the PSD major source threshold, in this instance 250 tpy, allowing the source to qualify instead as a "synthetic minor" source.[15] *Peabody*, 12 E.A.D. at 31 & n.21.

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[14] The OCS regulations define the term "potential emissions" almost identically to the PTE definition in part 52, with the exception of first sentence, which instead states that "[p]otential emissions means the maximum emissions of a pollutant from an OCS source." 40 C.F.R. § 55.2.

[15] EPA guidance defines the term "synthetic minor" as "air pollution sources whose maximum capacity to emit air pollution under their physical and operational design is large enough to exceed the

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If a source accepts limitations that restrict its potential to emit air pollutants to a level below the PSD threshold, that source will be a synthetic minor source for purposes of the PSD program and will therefore not be subject to PSD permitting requirements "unless future facility modifications increase emission capacity enough to exceed the PSD major source threshold." *Id.* at 31-32. As the Board noted in *Peabody*, in order for a capacity restriction to be cognizable as a PTE limit, it must be practically enforceable, which Agency guidance has interpreted to mean that:

> [T]he permit's provisions must specify: (1) a technically accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, and annual limits such as rolling annual limits); and (3) the method to determine compliance including appropriate monitoring, recordkeeping, and reporting.

12 E.A.D. at 32 (quoting Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, to EPA Reg'l Air Div. Dirs., *Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act* 5-6 (Jan. 25, 1995) [hereinafter *Options for Limiting PTE*] (A.R. B-9)).

In this instance, the pre-permit PTE for units located on the *Kulluk*, and on the Associated Fleet when operating within 25 miles of the *Kulluk* while it is an OCS source,[16] exceeded applicable PSD thresholds for NO_x, CO, SO_2, and GHGs. Statement of Basis at 24-25 & tbl. 2-1.[17] To avoid exceeding the PSD major

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(continued)
major source threshold but [is] limited by an enforceable emissions restriction that prevents this physical potential from being realized." Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, & Eric Schaeffer, Dir., Office of Regulatory Enforcement, U.S. EPA, *Potential to Emit Transition Policy for Part 71 Implementation in Indian Country* 2 n.2 (Mar. 7, 1999), *quoted in Shell Discoverer 2012*, 15 E.A.D. at 515-16 n.59, and *Peabody*, 12 E.A.D. at 31 n.21.

Alaska regulations refer to such a limitation as an owner requested limit ("ORL"), which can be used to "avoid one or more permit classifications * * * at a stationary source that will still be subject to at least one permit classification; a limitation approved under an ORL is an enforceable limitation for the purpose of determining * * * a stationary source's potential to emit." Alaska Admin. Code tit. 18, § 50.508(5).

[16] The permit states that the *Kulluk* will be an OCS source at any time it is attached to the seabed at a drill site by at least one anchor. Permit at 8; Statement of Basis at 17, 19-20 (A.R. H-4).

[17] The primary emission sources on the *Kulluk* and the Associated Fleet are internal combustion engines that consume diesel fuel. Statement of Basis at 9, 12-14. Incinerators, heaters, boilers, and seldom used sources on the *Kulluk* and the Associated Fleet also emit pollution but to a far lesser extent. *Id.*

source thresholds, Shell requested that the Region include in the permit practically enforceable restrictions that will reduce the *Kulluk's* PTE below PSD threshold levels for each of the four pollutants. *See* Letter from Susan Childs, Alaska Venture Support Integrator Manager, Shell Offshore Inc., to Doug Hardesty, EPA Region 10, attach. 2 (Apr. 29, 2011) (describing Shell's proposed restrictions and how they would affect emissions) (A.R. E-17). The final permit authorizing the *Kulluk* to operate within the Beaufort Sea contains source-wide emission limits, operational restrictions, and monitoring, recordkeeping and reporting requirements intended to ensure that the *Kulluk* can operate as a synthetic minor source. Permit Conditions D.1-D.4.

With this framework in mind, the Board now turns its attention to Petitioners' arguments presented in these appeals.

2. *The Region Did Not Clearly Err in Establishing Source-Wide Emission Limits to Restrict PTE for NO_x and CO*

The Permit restricts emissions from the *Kulluk* and the Associated Fleet to no more than 240 tpy of NO_x and no more than 200 tpy of CO.[18] Permit Conditions D.4.1, D.4.2. For both pollutants, the PTE limits are determined on a rolling 365-day basis by calculating emissions for each day and adding the emissions calculated for the previous 364 days. *Id.* For both NO_x and CO, daily emissions from each emission unit or group of emission units "shall be determined by multiplying the appropriate emission factor (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Permit Condition E.2) by the recorded daily operation rate (units/day) and dividing by 2000 lb/ton." *Id.* The Region further explained that "[c]ompliance with the emissions limits for NO_x and CO is determined by applying the relevant emission factor to the amount of fuel combusted by each emission unit (or hours of operation for incinerators)." RTC at 29. The Permit also includes conditions that require source-wide recordkeeping and monitoring to ensure that Shell complies with the source-wide limits. Permit at 56-61 (including operations and fuel monitoring in Permit Condition F.2 as well as selective catalytic reduction ("SCR") and oxida-

[18] ICAS asserts that the Region should include a 5-10% buffer zone between the PSD threshold emissions level of 250 tpy and the *Kulluk's* restricted PTE, and that the NO_x emission limit of 240 tpy does not provide this. ICAS Petition at 15 (citing a comment letter from Region 9 to the Nevada Division of Environmental Protection in which Region 9 "encourage[d] a 5-10% buffer between the permitted emission limits and the federal threshold" for a permit that established a CO synthetic minor limit of 249 tpy). However, the 240 tpy emission limit for NO_x contained in the current Permit represents a 4% buffer between the synthetic minor limit and the PSD threshold emission level of 250 tpy, which is ten times larger than the 0.4% buffer between a 249 tpy emission limit and the PSD threshold of 250 tpy contained in the Nevada permit. The Board agrees with the Region that Congress established specific thresholds to determine when a source would be considered major for purposes of PSD review. *See* RTC at 30. The buffer that ICAS requests is neither a legal requirement nor an established Agency policy, and thus the Region appropriately declined ICAS's request.

tion catalyst ("OxyCat") control device monitoring in Permit Conditions F.3 – F.4).

REDOIL Petitioners and ICAS make several challenges to the Region's decision to restrict the *Kulluk's* PTE for NO_x and CO using source-wide emission limits. Both petitioners assert that the Region's decision to limit CO and NO_x emissions using source-wide limits in effect applies blanket emission limits, which Agency guidance expressly prohibits because they are practically unenforceable, and that the limited exception in the Agency guidance that allows for source-wide limits is inapplicable to the *Kulluk's* operations. REDOIL Petition at 10-11; ICAS Petition at 11. Both petitioners also object to the Region's use of generic emission factors[19] to calculate source-wide emission limits. In particular, both petitioners assert that (1) the Region should have developed source-specific emission factors for all units of the OCS source; (2) the AP-42 emission factors applied to the emergency generator, the OSRVs, and heaters and boilers lead to inaccurate and underestimated emissions for those sources; and (3) the Region did not require Shell to conduct enough stack tests to accurately calculate source-specific emission factors. ICAS Petition at 15-20; REDOIL Petition at 11-14.

The Region responds that Agency guidance documents generally "illustrate that the Clean Air Act and the implementing regulations allow for a flexible, case-by-case evaluation of appropriate methods for ensuring practical enforceability of PTE limits." Region Response at 14-15 (quoting *In re Orange Recycling & Ethanol Prod. Facility*, Pet. No. II-2001-05, at 5 (Adm'r Apr. 8, 2002) (A.R. B-17)). Specifically, the Region asserts that source-wide emission limits for NO_x and CO are indeed practically enforceable and are most appropriate given the uncertainty of a number of factors that otherwise preclude the Region from establishing PTE restrictions based on operational limits. *Id.* at 18; RTC at 26-27, 29-30. In addition, the Region asserts that the emission factors used to calculate NO_x and CO emissions provide reliable emission calculations. Region Response at 19-23. In particular, the Region asserts that it made an appropriate technical determination to apply AP-42 emission factors or emission factors derived from *Discoverer*[20] data rather than source-specific emission factors for certain emission units. *Id.* The Region adds that the permit conditions that apply to source-specific

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[19] *See infra* Part VI.A.2.b.

[20] The Region issued Shell two OCS PSD permits to conduct exploratory drilling activities in the Chukchi and Beaufort Seas utilizing the drillship *Discoverer* that were twice appealed to the Board, first in 2010, and then again in 2011 subsequent to a Board remand of the permits to the Region. *See Shell Discoverer 2012*, 15 E.A.D. at 474-75 (describing history of *Discoverer* permit proceedings). In preparing the permit applications for the *Discoverer*'s operations, Shell conducted source-specific emission tests for various emission units on the *Discoverer* and an associated fleet of support ships, including icebreakers, supply ships, and oil spill response vessels. *See id.*, 15 E.A.D. at 479-80 (describing associated fleet).

emission factors require source tests that are inadequate in frequency and unrepresentative of the variation in Shell's proposed operations to allow the Region to derive accurate emission factors. *Id.*

a. *Blanket Emission Limits and Practical Enforceability*

ICAS and REDOIL Petitioners correctly assert that the use of blanket emission limits alone, essentially statements that actual emissions of a pollutant will not exceed a particular quantity, is generally prohibited to restrict PTE because such limits are not enforceable as a practical matter. *See United States v. La.-Pac. Corp.*, 682 F. Supp. 1122, 1133 (D. Colo. 1987) ("[C]ompliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce."), *quoted in* REDOIL Petition at 11; *see also* Office of Air Quality Planning & Standards, U.S. EPA, *New Source Review Workshop Manual* at C.4 (draft Oct. 1990) [hereinafter *NSR Manual*] ("Blanket emissions limits alone (e.g., tons/[year], lb/[hour]) are virtually impossible to verify or enforce, and are therefore not enforceable as a practical matter."), *quoted in* ICAS Petition at 13; Memorandum from Terrell Hunt, Assoc. Enforcement Counsel, U.S. EPA, & John Seitz, Dir., Stationary Source Compliance Div., U.S. EPA, *Guidance on Limiting Potential to Emit in New Source Permitting* 7 (June 13, 1989) (A.R. B-4) [hereinafter *1989 Guidance on Limiting PTE*].[21] However, the Petitioners' characterization of the source-wide emission limits for NO_x and CO contained in the Permit as blanket emission limits must fail. ICAS and REDOIL Petitioners do not acknowledge the Region's explanation in the Response to Comments for why it chose to apply source-wide emission limits in the Permit, nor do they establish that the Region's fundamentally technical determinations contravene Agency guidance.

The Region made clear in the Response to Comments that its decision to employ source-wide emission limits calculated as rolling 365-day limits to restrict NO_x and CO was based in large part on the substantial and unpredictable variations in emissions based on the atypical nature of Shell's operations. RTC at 26-27; Region Response at 18. Variability in Shell's exploratory operations, multiple engines and generators located on both the *Kulluk* and numerous vessels in the Associated Fleet, the state of the weather and the sea, ice thickness, and the changing nature of the activities that Shell may need to conduct all influenced the Region's conclusion that the need for operational flexibility made it impractical to establish unit-specific limits or operating parameters for some pollutants, such as NO_x and CO, that might typically be applied to limit a stationary source's PTE. RTC at 27; *see* Statement of Basis at 38. The Region continued that, in its judgment, the choice to restrict the *Kulluk*'s PTE for NO_x and CO using source-wide emissions limits "accounts for variability in operations and emissions, yet still

[21] Appendix C of the NSR Manual is based largely on the 1989 Guidance on Limiting PTE. *NSR Manual* at C.1 n.1.

provides assurance that limits on potential to emit can be enforced as a practical matter." RTC at 28.

Although the restrictions to limit the PTE of emission units located on the *Kulluk* and the Associated Fleet utilize a rolling 365-day limit, a longer time period than generally recommended in Agency guidance,[22] as the Region points out, the continuous monitoring and recording of fuel usage and the application of source-test derived or specified emission factors have the practical effect of constraining Shell's fuel use, thus ensuring compliance with the PTE limits. Region Response at 15, 17 (citing *In re Pope & Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007) (A.R. B-24), in which rolling emission limits in addition to prescribed emission factors and appropriate monitoring and recordkeeping were sufficient to restrict PTE).[23] In essence, although the Region could not incorporate more traditional operational limits into the Permit based on the atypical nature of the permitted activities, the daily calculation of NO_x and CO emissions in conjunction with continuous monitoring and recording of fuel usage ensure that the NO_x and CO PTE restrictions can be practically enforced.

Despite the Region's explanation in the Response to Comments regarding the need to consider the facts unique to this Permit, neither ICAS nor REDOIL Petitioners explain why, especially in light of the *Kulluk*'s atypical operations as

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[22] The 1989 Guidance on Limiting PTE recommends that the time limit over which production or operational limits extend should be "as short term as possible" in order for such limitations to be enforceable as a practical matter, and generally not exceeding one month, but the Guidance also recognizes that in rare circumstances a limit spanning a longer time may be appropriate. *1989 Guidance on Limiting PTE* at 9. The Guidance specifies that a limit spanning a longer time is appropriate if it is rolling and that it should not exceed an annual limit rolled on a monthly basis. *Id.* The Guidance also notes that:

> [P]ermits where longer rolling limits are used to restrict production should be issued only to sources with substantial and unpredictable annual variation in production[] * * * Rolling limits could be used as well for sources which shut down or curtail operation during part of a year on a regular seasonal cycle, but the permitting authority should first explore the possibility of imposing a month-by-month limit.

Id. at 9-10. In this instance, although the Guidance was written prior to Congress authorizing EPA to regulate air emissions from sources located on certain areas of the OCS, *see* Region Response at 17, including the Arctic, the circumstances the Guidance anticipates that would make a longer time limit appropriate apply in this instance to the *Kulluk* permit, where the operations are seasonal and thus variation in production would be substantial. *See 1989 Guidance on Limiting PTE* at 9-10.

[23] Although the Board agrees with Petitioners that the Region did not cite this decision until it submitted its response to the petitions for review, and thus accepts their reply briefs with respect to this point, *see supra* Part V, the Board nonetheless disagrees that this publicly available decision of the Administrator is inapposite to the current appeal. The *Pope & Talbot* decision underscores the Agency's ability to exercise its discretion and its technical expertise in order to craft practically enforceable synthetic minor limits.

compared to other stationary sources, the Permit's PTE limits are not practically enforceable. *See* Region Response at 17. Rather, Petitioners hew closely to the language in the 1989 Guidance on Limiting PTE prohibiting blanket emissions, asserting instead that because the Permit does not contain production or operational limits to restrict PTE, the NO_x and CO emission limits constitute blanket emission limits that contravene Agency guidance. ICAS Petition at 11-14; REDOIL Petition at 9-11. The 1989 Guidance on Limiting PTE sets forth the types of limitations that will restrict a source's PTE and states in relevant part:

> To appropriately limit potential to emit * * * permits * * * must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment. Restrictions on production or operation that will limit potential to emit include limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level.

1989 Guidance on Limiting PTE at 5-6.[24] In addition, neither ICAS nor REDOIL Petitioners address the operational limits included in the Permit and discussed in

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[24] The Guidance also acknowledges that the "particular circumstances of some individual sources make it difficult to state operating parameters for control equipment limits in a manner that is easily enforceable as a practical matter" and lists two exceptions. *1989 Guidance on Limiting PTE* at 7. Although the Guidance preceded EPA's authority to regulate air emissions on parts of the OCS, *see* Region Response at 17, and thus could not have anticipated the circumstances of the permit at issue in these appeals, the Region nonetheless asserts that the circumstances surrounding the current permit are sufficiently analogous to the second exception for volatile organic compound ("VOC") surface coating operations, which contemplates no add-on controls but allows for the restriction of PTE by limiting the VOC contents and quantities of coatings used. *Id.* at 17-19 (referring to *1989 Guidance on Limiting PTE* at 8).

The VOC exception focuses on circumstances where operating and production parameters could not be readily set due to the wide variety of coatings and products and due to the unpredictable nature of the operations. *1989 Guidance on Limiting PTE* at 8. The Region asserted that the rationale informing the VOC surface coating operation exception is sufficiently similar to the present circumstances and analogized that an effective way to restrict NO_x and CO was through source-wide emissions limits supported by test-derived or specified emission factors, similar to the VOC content of coatings, continuous monitoring and recording of operational parameters, and tracking the quantity of VOC coating used. RTC at 30; Region Response at 18. REDOIL Petitioners and ICAS assert that the VOC exception should be construed quite narrowly and that the VOC surface coating operation exception within the 1989 Guidance on Limiting PTE could not apply to the *Kulluk* and the Associated Fleet. *See* ICAS Petition at 20; REDOIL Petition at 13-14. Petitioners do not state more than a differ-
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the Response to Comments. *See* RTC at 29 (discussing hourly operational limits on mudline cellar drilling and overall drilling activity and the installation of SCR and OcyCat controls to limit NO_x emissions).

Finally, ICAS challenges the Region's inclusion of requirements in the Permit to calculate daily emissions for NO_x and CO on a weekly basis, arguing that it is a "critical flaw to enforceability of the permit because it means that Shell will only know where it stands vis-a-vie [sic] its NO_x and CO permit limits once a week." ICAS Petition at 14 (citing Permit Conditions D.1.1, D.1.2). The Board finds ICAS's argument here unavailing in light of the Region's thorough explanation in the Response to Comments. *See* RTC at 44; Region Response at 19, 23. The Region explained that although the calculations of emission limits will be conducted weekly, data is continuously collected and recorded and will eventually be generated in the same terms as the emission limits. *See* RTC at 44; Region Response at 23. Moreover, the Region points out that Shell is required to process data from numerous emission units across multiple vessels for 168 individual hours (24 hours x 7 days). RTC at 44. The permit requirements to continuously monitor and record data necessary to conduct daily emissions calculations ensures, as ICAS raises, the ability to assess and verify compliance immediately should an inspector, the Region, or Shell require it. RTC at 44; Region Response at 23. In this instance, ICAS does not acknowledge the Region's response or address why that response is inadequate and thus warrants review. As this Board has previously stated, "[p]etitions for review may not simply repeat objections made during the comment period; instead they must demonstrate why the permitting authority's response to those objections warrants review." *Peabody*, 12 E.A.D. at 46 n.58; *accord In re Knauf Fiber Glass GmbH, ("Knauf II")*, 9 E.A.D. 1, 5 (EAB 2000); *see also* standard of review discussion *supra* Part III.

In addition, as the Board noted above in Part VI.A.1.b, the determination of a source's PTE is inherently an exercise that requires technical expertise. Neither REDOIL Petitioners nor ICAS have met the particularly heavy burden of demonstrating that review of the Region's decisions to employ source-wide emission limits to restrict the *Kulluk*'s PTE is warranted. *See, e.g.*, *Peabody*, 12 E.A.D. at 33; *NE Hub*, 7 E.A.D. at 567 ("When issues raised on appeal challenge a Region's technical judgments, clear error or a reviewable exercise of discretion is not

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ence of opinion or alternative view on a technical issue. *See NE Hub*, 7 E.A.D. at 567. Without more, petitioners cannot sustain the burden of demonstrating that review of the Region's exercise of its technical judgment is warranted. *See Peabody*, 12 E.A.D. at 33; *In re Teck Cominco Alaska Inc.*, 11 E.A.D. 457, 473 (EAB 2004).

established simply because petitioners document a difference in opinion or an alternative theory regarding a technical matter.").

b. *Emission Factors*

An emission factor is a representative value used to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. U.S. EPA, AP-42, *Compilation of Air Pollutant Emission Factors*, Volume 1: Stationary Point and Area Sources 1 (Jan. 1995) (5th ed.) ("AP-42 Guidance"). Emission factors essentially represent an average of a range of emission rates of the subject sources. *Id.* at 2. As stated above in Part VI.A.2, in this instance compliance with the PTE restrictions for NO_x and CO are determined by calculating daily emissions of each pollutant, which requires multiplying the appropriate emission factor by the recorded daily operation rate and dividing by 2000 lb/ton. Permit Conditions D.4.1, D.4.2.

REDOIL Petitioners and ICAS challenge several aspects of the Region's use of emission factors to assist in calculating compliance with the restricted PTE for both NO_x and CO. Both petitioners challenge the Region's decision to forgo source-specific emission testing to establish emission factors for all emission units on the *Kulluk* and the Associated Fleet and further assert that this will cause the Region and Shell to underestimate the quantities of NO_x and CO emitted by the OCS source. ICAS Petition at 15-19; REDOIL Petition at 11-13. REDOIL Petitioners and ICAS assert that the use of AP-42 emission factors and emission factors derived from *Discoverer* test results for those emission units that will not undergo source-specific testing constitutes clear error because these more generic emission factors will likely lead to an underestimation of emissions from the units to which they are applied. ICAS Petition at 16-18; REDOIL Petition at 11-12 (referring to AP-42 emission factors as "notoriously inaccurate default factors"). Finally, ICAS challenges the frequency and number of stack tests used to develop source-specific emission factors for emission units and further asserts that by Shell's own admission there is a 15% variability in stack test data that results in a less conservative emission factor than the Region claims. ICAS Petition at 16-17.

The Board notes at the outset that the development of emission factors for use in calculating daily emissions to determine compliance with PTE restrictions requires the sort of quintessential technical expertise the permit issuer possesses, here the Region, to which the Board will defer if "the record demonstrates that the Region duly considered the issues raised in the comments and if the approach ultimately selected by the Region is rational in light all of the information in the record." *NE Hub*, 7 E.A.D. at 567-68, *quoted in Peabody*, 12 E.A.D. at 34; *see also Avenal Energy Ctr.*, 15 E.A.D. at 387. As explained more fully below, for each challenge regarding the derivation and use of emission factors set forth in the Permit, REDOIL Petitioners and ICAS have failed to sustain the particularly heavy burden petitioners must overcome to demonstrate that review of a funda-

mentally technical decision is warranted. *See, e.g.*, *Peabody*, 12 E.A.D. at 33; *NE Hub*, 7 E.A.D. at 567-68.

The Region fully explained in the Response to Comments its rationale for supplementing source-specific emission factors derived for most of the emission units or groups of emission units located on the *Kulluk* or the Associated Fleet with either AP-42 emission factors[25] or emission factors derived from *Discoverer* source test data for a minority of units. RTC at 32-33; *see also* Region Response at 20-21. In support of its decision to utilize a mix of source-specific testing for emission factors in addition to using AP-42 and *Discoverer* test data emission factors, the Region stated that it "believes the permit strikes an appropriate balance between the need for accurate emission factors to reliably calculate emis-

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[25] ICAS's attempt to analogize the situation the Board confronted in *Peabody* to the current permit appeal falls short. Although *Peabody* discusses the use of AP-42 emission factors in a PTE calculation where the source was seeking synthetic minor status, ICAS fails to acknowledge critical factual elements that distinguish *Peabody* from the current appeal.

In *Peabody*, the permittee was a large coal-processing plant built prior to the effective date of the PSD program that requested a PTE limit for particulate matter with a diameter of 10 microns or less ("PM_{10}") in the permittee's Title V permit so that the facility could remain a synthetic minor source for PM_{10} emissions should it conduct any major modifications in the future. *See Peabody*, 12 E.A.D. at 24-34. Of critical importance, the facility's emissions were primarily fugitive, and thus, emission testing to directly measure PM_{10} emissions was not feasible. *Id.* at 34. The permittee consequently submitted a request for a PTE limit based on a quantitative estimate of the facility's capacity to emit PM_{10}, which in turn relied on estimates of uncontrolled emissions from each unit based on the application of AP-42 emission factors that were then used to estimate net emissions by applying assumed emission control efficiencies for the emission control equipment in use. *Id.* at 34-35 & n.31. Peabody's proposed compliance regimen did not include direct measurement of PM_{10} emissions. As the Board stated, "[b]ecause Peabody's approach would rely entirely on the application of emission factors and assumed control efficiencies, for purposes of both estimating maximum emissions capacity and monitoring ongoing compliance, the accuracy and appropriateness of the emission factors and the control efficiency assumptions were the focal point of Region IX's analysis of Peabody's proposal." *Id.* at 35-36.

Contrary to the facility in *Peabody*, in this instance the use of AP-42 factors to calculate compliance with restricted PTE for NO_x and CO was essentially a last resort method for calculating compliance, whereas the emission units that accounted for at least 90% of the NO_x and CO emissions were subject to source-specific emission testing. *See id.* at 32-33. The Region made clear that in the relatively small number of instances where an AP-42 emission factor was employed to calculate compliance with PTE, the Region chose conservatively higher emission factors. In *Peabody*, the Region made a technical determination and "concluded that Peabody had not sufficiently demonstrated that it met the central criteria for establishing [PTE] – technical accuracy and a reliable method of determining compliance." *Id.* at 39. In this instance, the Region made a technical determination that Shell has sufficiently demonstrated that the *Kulluk* could demonstrate compliance with the NO_x and CO PTE limits included in the permit in a manner that is technically accurate, and that the compliance of the emission units can be verified based on source-specific testing. The Region's exercise of its technical expertise to conclude that in limited circumstances AP-42 emission factors were appropriate to demonstrate compliance with the restricted PTE is rational in light of all of the information in the record. Thus, ICAS's contention that *Peabody* governs the appeal currently before the Board is unpersuasive.

sions for comparison to permit limits and the complexity of testing numerous emission units in a short period of time." RTC at 33. The Region also noted that, in response to comments received, it decided to require source-specific emission testing for incinerators and that, after that change, the permit will require source testing of emission units that constitute 91% of NO_x and 97% of CO emissions. *Id.* at 32. Of the remaining units that were not required to undergo source testing to develop an emission factor, the Region set forth in detail why it had chosen emission factors derived from *Discoverer* source test data or the AP-42 emission factors, in many instances raising the value of an emission factor to provide a more conservative estimate of emissions.[26] *Id.* at 32-33; *see also* Region Response at 20; Statement of Basis at 38 (noting that testing for source-specific emission factors (Permit Condition E.2) uses a protocol that results in conservatively high unit-specific emission factors that in turn help to ensure compliance with PTE).

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[26] The Region explained in the Statement of Basis that an important element of Permit Condition E.2, which catalogues the procedures for conducting tests to determine equipment-specific emission factors, "is the selection of worst[-]case emission factors for each emission unit or group of emission units tested." Statement of Basis at 43; *see also* Permit at 52-56. The record demonstrates that the Region thoughtfully and judiciously employed emission factors derived from *Discoverer* test data and AP-42 emission factors, and consistently chose higher, more conservative emission factors when there was any question or discrepancy. For example, for those NO_x emission units for which the Permit does not require source testing and that rely on emission factors based on *Discoverer* test data, the Region adjusted the emission factor to reflect the conservative 90th percentile (or higher) values from the test data. RTC at 32. The Region further explained that for heaters and boilers – the only remaining group of NO_x emission units that rely on AP-42 for emission factors – the Region expects the AP-42 emission factor to be a conservative representation of actual emissions. *Id.* (noting that while AP-42 predicted an NO_x emission factor for heaters and boilers of 0.02 lb/gal, Shell testing of *Discoverer* boilers shows a range of values between 0.011 lb/gal and 0.015 lb/gal); *see also* RTC at 46 (noting that the boiler and heater NO_x emission factor used in the *Kulluk* permit is "lower than the *Discoverer* BACT limit for similar equipment, but is higher than available test data for a similar source"). ICAS challenged the Region's use of an NO_x emission factor in the Permit that is lower than the one in the *Discoverer* permits, *see* ICAS Petition at 18-19, but ICAS failed in its petition to even acknowledge the Region's response to its comment regarding the NO_x emission factor for heaters and boilers, let alone "substantively confront the permit issuer's subsequent explanation." *Peabody*, 12 E.A.D. at 33 (citing *In re Zion Energy, LLC*, 9 E.A.D. 701, 705 (EAB 2011)).

With respect to emission units that will not undergo source testing to verify CO emission factors, the Region similarly explained that it believed emission factors are reasonable for use in the permit given that AP-42 emission factors will represent only 3% of the total CO emissions. RTC at 32. In addition, the Region notes that the CO emissions from tests conducted for two boilers on the *Discoverer* were nearly identical to the AP-42 emission factor. *Id.* at 33 (explaining that the Region chose the highest, most conservative emission factor of the three). Finally, the Region notes that one of the potential oil spill and response boats has an actual CO emission factor for its propulsion engine that is based on the manufacturer's data and is one tenth of what the AP-42 factor predicts. *Id.*; *see also* Permit Table D.2.2 (demonstrating that the Region chose to include the much higher AP-42 emission factor for the OSRV propulsion engine).

While REDOIL Petitioners[27] and ICAS may disagree with the Region's approach, Petitioners do not demonstrate that the Region's choices in deriving emission factors for emission units will result in an underestimation of pollutants emitted by the *Kulluk* and the Associated Fleet. The Region has demonstrated that it balanced its primary task of accurately calculating NO_x and CO emission factors to ensure that the *Kulluk* and the Associated Fleet will not exceed the restricted PTE with the practical need to calculate emission factors for numerous and varied emission units aboard both the *Kulluk* and the Associated Fleet. The Board has frequently stated that it will not grant review where, as here, the record demonstrates a bona fide difference of opinion or alternative theory regarding a technical matter but the approach the Region ultimately selected is rational in light of all the information in the record. *Peabody*, 12 E.A.D. at 34 (quoting *NE Hub*, 7 E.A.D. at 567).

Finally, ICAS asserts that the *Discoverer* source test data is not sufficient to accurately generate worst-case scenario emission factors for *Kulluk* emission units because similar sources tested on the *Discoverer* were subject to BACT, and further, that in using stack test results from the *Discoverer* to develop emission factors for the *Kulluk* permit, the Region never accounted for "15% variability in Shell's stack tests," resulting in inadequate emission factors. ICAS Petition at 17-19. The Region points out, however, that the *Discoverer* stack tests on which the Region relied to calculate the 90th percentile value and assess the appropriateness of AP-42 factors were not subject to post-combustion controls limiting NO_x or CO and thus provided an appropriate comparison for purposes of deriving emission factors for the *Kulluk*. Region Response at 21 (citing *Discoverer* stack test results and communications discussing them in the administrative record, specifically A.R. B-55, B-63, C-406, and C-489). With respect to the 15% variability in stack test results[28] that ICAS alleges, the Region points to the technical litera-

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[27] REDOIL Petitioners contend that the Region's recognition that Shell's approach involves "inherent uncertainty" regarding what equipment will be aboard the *Kulluk* and the Associated Fleet, which in turn requires "thorough source testing," coupled with the Region's refusal to require source testing for all equipment, is "internally inconsistent and thus arbitrary and unlawful." REDOIL Petition at 12. However, the Region responded that it used its technical expertise to determine that in this instance, a mix of both source-specific testing to derive emission factors, in addition to using AP-42 factors and emission factors derived from *Discoverer* test data where appropriate, was reasonable and not inconsistent. Region Response at 20-21. The Board agrees with the Region that the decision to use source-specific testing to derive emission factors, in conjunction with the emission factors developed from *Discoverer* data and from AP-42, is inherently technical. In order to effectively exercise its expertise, the Region should not, as REDOIL Petitioners suggest, be cabined by a rigid interpretation of how emission factors should be determined. REDOIL Petitioners have failed to meet the particularly high threshold for demonstrating that Board review of the Region's fundamentally technical decision is warranted. *Peabody*, 12 E.A.D. at 33-34.

[28] ICAS also asserts that stack tests are "conducted once a year for one or two years depending on the source," at three different loads, and even when the worst-case emissions are used, the stack tests fail to account for Shell's varying emissions. ICAS Petition at 16. The Region explained in re-
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ture Shell referenced in Shell's comments, which addresses "uncertainty in determining front-half PM [particulate matter] emission rates" and does not directly address procedures for deriving NO_X and CO emission factors. *Id.* at 22-23; *see also* Permit Conditions E.1.2, E.1.7, E.1.14 (requiring Shell to submit a testing plan and follow EPA-approved test methods, and establishing Region's authority to require additional stack tests if necessary). As the Region correctly points out, ICAS has not demonstrated that the worst-case stack test results, which embody the Region's fundamentally technical determinations, will be biased low and underreport emissions. Region Response at 22-23; *see, e.g., Teck Cominco*, 11 E.A.D. at 473 (discussing heavy burden assigned to petitioners seeking review of issues that are essentially technical in nature).

3. *ICAS Has Failed to Demonstrate That the Region Clearly Erred in Restricting the Kulluk and the Associated Fleet's Potential to Emit GHGs*

ICAS also challenges the Permit's GHG emission limit, which restricts Shell's annual GHG emissions to 80,000 tpy of carbon dioxide equivalent ("CO_2e").[29] *See* ICAS Petition at 21-26; *see also* Permit Condition D.4.4; RTC at 28. EPA promulgated regulations, commonly referred to as the "Tailoring Rule," that set forth applicability criteria to determine which GHG emission sources become subject to the PSD and Title V programs under the Act.[30] Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31,516 (June 3, 2010). In this instance, despite the fact that

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sponse that Permit Condition E.2.1 requires each source-tested unit to be tested prior to each of the first two drilling seasons and subsequently every two or five years depending on any variability observed in the results of the two initial tests. Region Response at 22; *see also* Statement of Basis at 44 (frequency of source-specific emission factor testing after first two years based on variability of results). Further, each test requires three 1-hour runs at each of the three tested operating loads, which results in nine results total for each aggregate source test. Region Response at 22. Without more than its bare assertion that the current source tests do not adequately address Shell's varying emissions when the data is used to derive emission factors, ICAS cannot demonstrate that the permit conditions that dictate the frequency and parameters of source tests warrant Board review.

[29] GHGs are defined as "the aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydroflourocarbons, perflourocarbons, and sulfur hexaflouride." 40 C.F.R. § 52.21(b)(49)(i). CO_2e represents the amount of GHGs emitted and is computed by "[m]ultiplying the mass amount of emissions (tpy), for each of the six greenhouse gases in the pollutant GHGs, by the gas's associated global warming potential published at Table A-1 subpart A of [40 C.F.R.] part 98 of this chapter – Global Warming Potentials." *Id.* § 52.21(b)(49)(ii)(a).

[30] The regulations provide that any source that is considered a new major source for a regulated NSR pollutant other than GHGs will also be subject to regulation for GHGs if it emits or has the potential to emit 75,000 tpy or more of CO_2e. 40 C.F.R. § 52.21(b)(49)(iv). New stationary sources that emit or have the potential to emit more than 100,000 tpy or more of CO_2e are also subject to regulation for GHGs. *Id.* § 52.21(b)(49)(v).

the OCS source's pre-permitted potential to emit exceeded 100,000 tpy of CO_2e, *see* Statement of Basis at 24, the Permit restricts the potential to emit GHGs to 80,000 tpy of CO_2e and thus prevents Shell from being subject to regulation for GHGs under the PSD program. *See* RTC at 24.

As noted previously, the vast majority of emissions, including GHG emissions, from both the *Kulluk* and the Associated Fleet result from internal combustion sources such as engines and boilers, along with incinerators. Statement of Basis at 12, 14, 39; RTC at 35. The Permit contains operational restrictions on the amount of time a source can operate, the amount of fuel and waste combusted, and the type of fuel combusted to ensure compliance with the Permit's GHG emission limit.[31] *See* Statement of Basis at 37-39; RTC at 33-36; *id.* at 34-35 (noting that in response to comments the Region adjusted the methane emission factor upward by a factor of four to represent a reasonable upper-bound estimate of the number of wells that could be drilled in a single season, which in turn required a small reduction to the total amount of fuel that may be combusted in engines and boilers during any rolling 12-month period). In addition to the combustion sources and the incinerators, a relatively small amount of GHG emissions in the form of methane results from the drilling mud system ("DMS").[32] *See* RTC at 35. GHG emissions from the DMS, calculated at 85 tpy of CO_2e, represent only 0.11% of the total GHG emissions allowed under the permit, 80,000 tpy of CO_2e. *Id.* The Region calculated an unrestricted PTE for methane emissions of 1,596 lbs/month,

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[31] The Permit imposes annual limits of 120 days of operation as an OCS source during a drilling season, which spans from July 1 through November 30, and 1,632 hours of total drilling activity in a drilling season, of which only 480 hours may be used to conduct mudline cellar drilling activity, which is expected to generate the most air pollution. *See* Permit Conditions D.3.1-D.3.5. The Permit also limits the total aggregate combustion of fuel over a 12-month rolling period, the type of fuel combusted, and the total aggregate daily waste-combusting capacity of incinerators. *See* Permit Conditions D.4.6-.7, .9; *see also* RTC at 34-35. In addition, the Permit includes various monitoring and recordkeeping requirements to document when emissions should be counted toward emission limits, testing requirements for the derivation of source-specific emission factors, tracking and documentation requirements for the fuel and waste combusted, and maintenance requirements to ensure that emission units are properly operated and maintained. *See* Permit Conditions D.1-.4, D.8, F.2.1-.7; *see also* RTC at 36-37, 43.

[32] The Region explained methane emissions from the DMS as follows:

> When wells are drilled through porous, hydrocarbon[-]bearing rock, drilling fluids (mud) circulated through the drill bit can carry gaseous hydrocarbons from the well back to [the] Kulluk. These gases are typically released as fugitive emissions when the mud is processed for reuse on the Kulluk or stored and shipped away; however, some of the emissions pass through a vent.

Statement of Basis at 38.

the equivalent of 17 tons per month ("tpm") of CO_2e.[33] *Id.* The Permit accounts in Condition 4.4.2 for methane emissions encompassing the source's full unrestricted PTE of 17 tpm of CO_2e, which are added to GHG emissions from combustion sources when calculating total GHG emissions. *See* Statement of Basis at 39; *Shell Discoverer 2012*, 15 E.A.D. at 516.

ICAS raises several challenges to the Permit's GHG emission limit. Similar to its challenges of the Permit's synthetic minor limits for NO_x, CO, and SO_2, ICAS contends that the Permit contains a blanket emission limit for GHGs that is practically unenforceable and further asserts that the requirement that GHG emissions only be calculated monthly to determine compliance with the established rolling 12-month limit is inadequate to verify compliance "in a given moment." ICAS Petition at 21-22 (citing *NSR Manual* at C.3, C.5, H.5); *see* Permit Conditions D.1.3-.4. In addition, ICAS asserts that the Region clearly erred by accepting an owner-requested limit for methane attributable to mud off-gassing from the DMS that is not only unenforceable, but also less than the "maximum expected capacity" or "upper-bound projection" ConocoPhillips submitted in another Arctic OCS permit proceeding. *Id.* at 22-26.

Based on the foregoing information, ICAS's general assertion that the GHG emission limit is practically unenforceable must fail. The Region has demonstrated in both the Permit and the documentation in the record supporting the Permit that it crafted a synthetic minor limit that would not only prevent Shell from being subject to regulation under the PSD program for GHG emissions, but also

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[33] In calculating the unrestricted PTE for DMS methane emissions, the Region included several conservative assumptions to ensure a wide margin of safety for total methane emissions over Shell's five-month period of operation. *See* RTC at 34; *Options for Limiting PTE* at 8 (noting that for sources with inherent physical limitations that restrict the potential emissions of an emissions unit, if such limitations can be documented and confirmed, the permitting authority may factor them into estimates of a stationary source's PTE). For example, the Region assumed that the total unrestricted PTE for DMS methane emissions for the entire five months of drilling operations would be emitted during each of the five months. RTC at 35.

In addition, despite much of the methane emissions being fugitive emissions that are not counted towards PSD applicability for exploratory drill rigs, *see* 40 C.F.R. § 52.21(b)(1)(iii), Shell agreed to consider all of the methane emissions from the DMS as point source emissions that would count towards Shell's potential to emit GHGs. *See* RTC at 35; *see also* Statement of Basis at 38-39. In its petition, ICAS disputes the Region's claim that counting such fugitive emissions towards PTE represents a conservative approach that lends a "measure of safety" and asserts that the part 71 regulations governing Title V permits require such fugitive emissions to be included. ICAS Petition at 24 (citing 40 C.F.R. § 71.3(d), which states that fugitive emissions from a part 71 source "shall be included in the permit application and the part 71 permit in the same manner as stack emissions"). However, as the Region correctly points out in its response, the definitions of major source in both 40 C.F.R. § 52.21(b)(1)(iii) and 40 C.F.R. § 71.2 make clear that fugitive emissions are not considered when determining whether a source is a major source. Region's Response at 26 n.21 (citing the Tailoring Rule and noting that it retained this approach of determining whether a source becomes subject to regulation for GHGs).

would be practically enforceable as a result of the numerous operational restrictions in combination with monitoring, recordkeeping, and reporting requirements contained in the Permit. While ICAS acknowledges the operational limits contained in the Permit, ICAS simultaneously disputes their efficacy without explaining why such operational limits will not have their intended effect of restricting Shell's potential to emit GHGs.[34] *See* ICAS Petition at 21-22. Without stating more than mere disagreement, ICAS cannot meet the especially high threshold of demonstrating that the Region's inherently technical decisions regarding the GHG emission limit warrant Board review. *See, e.g.*, *NE Hub Partners*, 7 E.A.D. at 567; *Shell Discoverer 2012*, 15 E.A.D. at 501.

ICAS's more specific contention that the Region clearly erred by accepting an owner requested restriction for methane from mud off-gassing that is practically unenforceable is unavailing. *See* ICAS Petition at 22-26. ICAS raised this same argument in previous appeals of two OCS PSD permits the Region issued to Shell for operations in the Chukchi Sea of the Arctic OCS. *See Shell Discoverer 2012*, 15 E.A.D. at 514-19; *see also supra* note 20. In brief, the monthly calculation of methane to be released in mud off-gassing in both *Shell Discoverer 2012* and the current appeal are not only the same amount, 17 tpm, they also both reflect the unrestricted PTE for methane emissions from DMS operations. *See* RTC at 34-35; *Shell Discoverer 2012*, 15 E.A.D. at 517-18. The Board rejects ICAS's assertion in this instance, relying on the same reasons it gave in *Shell Discoverer 2012*:

> [T]he Permit[] in this case do[es] not include owner requested limits on PTE for methane emissions. Rather, * * * methane emissions were assumed to occur at the source['s] full PTE for the five-month drilling season

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[34] Similarly, ICAS's contention that the Region clearly erred by not requiring more frequent calculations of GHG emissions than the monthly calculations the Permit requires, *see* Conditions D.1.3-.4, falls short. The Region explained that its decision to calculate emissions on a monthly basis stemmed from "good confidence in the overall [GHG emission] compliance technique and therefore 'yearly' emissions are required to be summed only monthly." Statement of Basis at 38. Although GHG emission calculations will be calculated once a month based on the Region's stated confidence in its compliance method, the data required to make such calculations is collected continuously through fuel usage monitoring. RTC at 43-44 ("Shell is generally required to continuously measure and record, on an hourly basis, the fuel consumed by each emission unit or group of emission units."); *see also* Region Response at 24 (citing *1989 Guidance on Limiting PTE* and noting that "in light of annual variations in operations and the fact that the source operates during only part of the year" the Region determined that a 12-month rolling limit for CO_2e was appropriate as stated). Again, ICAS has failed to meet its burden of demonstrating that review is warranted, where, as here, it has not addressed the Region's stated rationale for requiring only monthly calculation of GHG emissions and has not demonstrated that monthly calculation of GHG emission would inhibit verification of compliance with the GHG emission limit. *See supra* Part III.

> (0.798 tons per month),[35] and the Permit[] count[s] these emissions towards the total GHG limitation * * * . The Region determined that because these unrestricted emissions of methane (when combined with GHG emissions from combustion sources) would not result in an exceedance of the Permit['s] total GHG emissions limit, additional permitting restriction limits were not required.
>
> Under these circumstances, ICAS's reliance on the requirement that permits include conditions ensuring the enforceability of limitations on a source's PTE is misplaced, as the Permits do not contain owner requested limits on methane emissions or otherwise limit the source['s] PTE from DMS operations.

Shell Discoverer 2012, 15 E.A.D. at 517-18 (citations omitted).

In addition, ICAS has not demonstrated that the Region's calculation of methane emissions from the DMS underestimated the "upper-limit" projection that is in turn used to identify the "maximum capacity" of a source based on an "inherent physical limitation." RTC at 34 (citing *Options for Limiting PTE* at 8 and Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, to Reg'l Air Dirs., U.S. EPA, *Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities* at 4-5 (Nov. 14, 1995) (A.R. B-10) [hereinafter *Grain Handling Guidance*]). ICAS's assertion is premised on ConocoPhillips' higher estimate of DMS methane emissions submitted to the Region in another permit proceeding concerning exploratory drilling in the Arctic OCS. ICAS Petition at 23-26. However, ICAS simply states that the discrepancy between Shell's and ConocoPhillips' calculations of DMS methane emissions means that the Region clearly erred in accepting Shell's methane calculations, but it does not acknowledge or evaluate the record information Shell submitted that explains in depth the causes for the divergent methane calculations.[36] Upon considering this

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[35] This is the same unrestricted PTE for methane emissions as in the *Kulluk* permit (1596 lb / 2000 lb = 0.798 tons).

[36] In *Shell Discoverer 2012*, ICAS asserted that it was unable to evaluate the basis for Shell's estimates of DMS methane emissions that the Region had relied on to calculate PTE because Shell did not release its estimates until after the close of the comment period. 15 E.A.D. at 517 n.63. In that instance, the Board concluded that the Region was authorized to supplement the record with previously unavailable information confirming that Shell's estimate of methane PTE was a reasonable upper-bound estimation, and "[t]hus, ICAS had the opportunity to evaluate the basis for Shell's PTE estimates and the Region's assessment of those estimates in preparing its appeal to this Board." *Id.* (citing *In re Cape Wind Assoc., LLC*, 15 E.A.D. 327, 332-33, 335 (EAB 2011), and 40 C.F.R. §§ 124.17(a)-(b), .18(b)).

Continued

information, the Region exercised its technical expertise in concluding that Shell's estimates of methane emissions from the DMS were permissible, especially given the conservative assumptions the Region incorporated when calculating PTE. ICAS does not address either the record information that supports the Region's decision to accept Shell's methane estimate or the Region's stated rationale for concluding that methane monitoring is not required. *See* RTC at 35-36 (explaining that, based on the inherent limitations that exist and the relatively small contribution of the DMS to overall GHG emissions, the Region does not believe monitoring of DMS emissions or operations is necessary in addition to the monitoring already required in the permit). As this Board has often stated, a petitioner cannot demonstrate that review is warranted if the petitioner fails to substantively confront a permit issuer's response. *Peabody*, 12 E.A.D. at 33 (noting that to obtain review a petitioner must "explain why, in light of the permit issuer's rationale, the permit is clearly erroneous or otherwise deserving of review"); *see also In re BP Cherry Point*, 12 E.A.D. 209, 217 (EAB 2005). Moreover, as stated above, the Region's decision regarding the GHG emission limit is inherently technical in nature, and ICAS has fallen short of the particularly high threshold it must meet to demonstrate that review of the Region's technical determination is warranted. *See Peabody*, 12 E.A.D. at 33-34; *see also NE Hub*, 7 E.A.D. at 567-68.

4. *The Region Did Not Clearly Err in Restricting OCS Source's Potential to Emit SO_2*

The Permit restricts SO_2 emissions from the *Kulluk* and the Associated Fleet to no more than 10 tpy, well below the 250 tpy PSD threshold level. *See* Permit Condition D.4.3. Compliance with this limit is determined on a rolling 12-month basis and is achieved by requiring that Shell not combust any liquid fuel with sulfur content greater than 0.01 percent by weight in any emission unit on the *Kulluk* or the Associated Fleet and that all fuel purchased for use in emission units on the *Kulluk* and Associated Fleet have a maximum sulfur content of 0.0015 percent by weight. Permit Conditions D.4.5, D.4.9. Shell is required to keep diesel

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(continued)

The material in question is not only in the record submitted with the *Discoverer* appeals, it also appears in the record for the instant appeal. *See* E-mail from Susan Childs, Shell, to Doug Hardesty, EPA Region 10 (Sept. 16, 2011 14:31 pm PDT) (A.R. CCC-438 in *Shell Discoverer 2012* and A.R. C-575 in the current appeal). Thus in the current appeal there is no question that the information from Shell clarifying and explaining its estimate of DMS methane emissions, including the highly conservative assumptions Shell included in its estimate, was at ICAS's disposal. In addition, Shell submitted further clarification of its DMS methane estimates as compared to ConocoPhillips' in order to "explain how different assumptions led to different results, and why Shell believes that ConocoPhillips' estimate is unrealistically high." E-mail from Susan Childs, Shell, to EPA Region 10 (Sept. 20, 2011 17:57 pm PDT) (A.R. C-577). ICAS's petition does not address either of these record submissions or the Region's reliance on this information to determine that the Region's calculation of methane emissions from the DMS represents "a reasonable upper-bound projection for Shell's operations [that] is not expected to be exceeded under any reasonably anticipated operating scenario." RTC at 35.

fuel purchase records documenting sulfur content for each batch of fuel purchased. Permit Condition D.4.9.2. In addition, the total amount of fuel combusted in engines and boilers must not exceed 7,004,428 gallons during any rolling 12-month period. Permit Condition D.4.6; *see also* Permit Condition F.2.4 (requiring Shell to (1) obtain representative fuel samples and determine fuel sulfur content in parts per million from fuel storage tanks on the *Kulluk* and the Associated Fleet prior to their mobilization, (2) determine the sulfur content of each delivery of fuel to the *Kulluk* and the Associated Fleet once the vessels are mobilized, and (3) maintain records of all sampling and analysis).

ICAS asserts that the Region justifies its blanket SO_2 emissions limits by including "purported 'operational limits'" that restrict fuel content and usage and concludes that compliance with the restricted PTE for SO_2 is practically unenforceable because these operational limits are not unit-specific and because the overall limit is based on a 12-month rolling limit. ICAS Petition at 26-27. ICAS offers no explanation as to why the operational limits and averaging time the Region chose to include in the Permit, both of which are clearly considered legitimate in Agency guidance, nonetheless constitute clear error. *See* Region Response at 28; *Options on Limiting PTE* attach. 1 at 5 ("[L]imitations on sulfur dioxide emissions could be based on specified sulfur content of fuel and the source's obligation to limit usage to certain maximum amounts."); *1989 Guidance on Limiting PTE* at 9-10 (noting that in certain situations a rolling limit of up to a year may be appropriate for sources with "substantial and unpredictable annual variation in production," including "source which shut down or curtail operation during part of the year on a regular seasonal cycle").

ICAS also challenges the monitoring provisions for small and/or infrequently used emission units that are not required to have fuel flow monitors. ICAS Petition at 27. As the Region correctly points out, however, ICAS makes no attempt to explain why the specified fuel measurement alternatives, together with the requirement to measure and record fuel usage before and after operation, do not allow for a reliable and accurate assessment of fuel usage. Region Response at 28 (citing Permit Condition F.2.2.2). Here again, ICAS offers nothing more than a bald assertion of clear error without any analysis of why the Region erred. Where, as here, the Region's decision was technical in nature, ICAS has failed to meet the particularly high threshold for establishing that review of the Region's technical determination is warranted.

5. *Shell's Minor Source Permit Is Not a "Sham" Permit*

ICAS asserts that in order to ensure the *Kulluk*'s status as a minor source, Shell has agreed to operational limitations in its OCS/Title V permit that are not represented in other authorizations and permit applications for Shell's exploratory activities in the Beaufort Sea. ICAS Petition at 28. ICAS alleges that Shell's incidental hazard assessment, required under the Marine Mammal Protection Act,

16 U.S.C. § 1371(a)(5)(A), (D), authorizes 78 days of drilling whereas the OCS/Title V permit only authorizes 68 days of drilling. *Id.* Based on this single discrepancy, ICAS categorically concludes that "Shell is submitting permit applications and seeking authorization from other agencies with different plans than are provided for in its air permit." ICAS Petition at 28-29. ICAS also asserts that the Region did not adequately respond to its concern that Shell's application for a minor source permit is a sham.[37] *Id.*

At the outset, the Board notes that ICAS's assertion that Shell has secured a sham minor source permit with the intention to avoid preconstruction review as a major source under the PSD program is wholly unsupported in the record.[38] As the Region noted in the Response to Comments, there is nothing to indicate that Shell intends to later apply to the Region to remove the synthetic limits contained in the Permit. RTC at 22. The Region continued that, regardless of what the incidental hazard assessment says regarding the number of days Shell may drill, Shell nonetheless "must comply with all requirements of the Kulluk Permit and failure to do so is a violation of the CAA." *Id.* (citing Permit Condition A.3). Finally, the Region made clear that whether an original request for a minor source permit is a "sham" may be evaluated when the Region receives a request to remove the synthetic limits. *Id.*

ICAS rejects the Region's statement that there is nothing to suggest that Shell intends to obtain a minor source permit now and then apply for a major source permit down the road, and baldly asserts that "this is not the proper test." ICAS Petition at 28. ICAS ignores the element of intent to obtain a minor source

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[37] The NSR Manual defines a sham permit as follows:

> A sham permit is a federally enforceable permit with operating restrictions limiting a source's potential to emit such that potential emissions do not exceed the major or de minimis levels for the purpose of allowing construction to commence prior to applying for a major source permit. Permits with conditions that do not reflect a source's *planned* mode of operation may be considered void and cannot shield the source from the requirement to undergo major source preconstruction review. In other words, if a source accepts operational limits to obtain a minor source construction permit but intends to operate the source in excess of those limitations once the unit is built, the permit is considered a sham.

NSR Manual at C.6.

[38] ICAS asserts that its concern with the potential for Shell to obtain a minor source sham permit arose because "Region 10 has provided no assurance that reporting mechanisms in the permit will provide sufficient time for Shell to halt drilling with enough of an emissions buffer remaining to secure a partially drilled well for the entire winter season * * *." ICAS Petition at 29. ICAS also acknowledges that any exceedance of an emission limit would allow the Agency to exercise its enforcement powers. *Id.* Without more, ICAS cannot demonstrate that the Region clearly erred in determining that Shell's minor source permit is not a sham.

sham permit that both the Region in the Response to Comments and the 1989 Guidance on Limiting PTE discuss and instead quotes the NSR Manual language for the proposition that the "proper test" is a permit that does not reflect a source's "*planned* mode of operation." ICAS Petition at 28 (citing *NSR Manual* at C.6) (emphasis in original); *see also 1989 Guidance on Limiting PTE* at 12. However, the 1989 Guidance on Limiting PTE contains guidelines for determining, based on an evaluation of specific facts and evidence in each individual case, when minor source construction permits are shams and includes two of four criteria that discuss the intent of the source to circumvent the PSD preconstruction review process. *1989 Guidance on Limiting PTE* at 14-15.[39]

ICAS has not identified any information in the record that supports its assertion that Shell is seeking to avoid preconstruction review. Moreover, minor source sham permits are generally discovered when a source seeks another air emissions permit that requests the permit issuer to relax the synthetic limits in the minor permit, *see 1989 Guidance on Limiting PTE* at 12-14, rather than when the source seeks another authorization under a different statute such as the Marine Mammals Protection Act. Finally, ICAS has not demonstrated any deficiency in the Region's response to its comment regarding sham permits. *See, e.g., Russell City II*, 15 E.A.D. at 24 (noting that the part 124 regulations require a response to comments document to "demonstrate that all significant comments were considered but does not require a permit issuer to respond to each comment in an individualized manner or require the permit issuer's response to be of the same length or level of detail as comment") (citation omitted).

For all of the reasons stated above, the Board denies review of this issue.

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[39] Specifically, the guidelines for determining when minor source construction permits are shams state in relevant part:

> 1. Filing a PSD or nonattainment NSR permit application
>
> If a major source or major modification permit application is filed simultaneously with or at the same time as the minor source construction permit, this is strong evidence of *an intent to circumvent the requirements of preconstruction review*.
>
> * * *
>
> 4. Statement of authorized representatives of the source regarding plans for operation
>
> Statements by representatives of the source to EPA or to state or local permitting agencies about the source's plans for operation can be evidence *to show intent to circumvent preconstruction review requirements*.

1989 Guidance on Limiting PTE at 14-15 (emphasis added).

B. *REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Declining to Require PSD Increment Consumption Analyses for the Kulluk's Proposed Emissions as Part of the Title V Permitting Process*

1. *Section 504(e) of CAA Title V Imposes Permitting Requirements on "Temporary" Stationary Sources*

The CAA's PSD program requires permit applicants to demonstrate compliance with ambient air quality "increments" (also called "PSD increments") for specific air pollutants. *See* CAA §§ 161, 163, 165(a)(3)(A), 42 U.S.C. §§ 7471, 7473, 7475(a)(3)(A); 40 C.F.R. § 52.21(c), (k). Such increments are maximum allowable increases in pollutant concentrations that may occur in particular areas.[40] They are designed to "prevent significant deterioration" of air quality in locations that already have relatively clean air by ensuring that contaminants contributed by proposed new sources, combined with levels of contamination already present in the ambient air as of a specific baseline date, fall within bounds established by the Agency. *See generally NSR Manual* ch. C.

As noted in Part VI.A.1.b above, Congress designed the PSD program to regulate "major" sources of air pollution, which have potential to emit certain specific pollutants in amounts exceeding major source threshold levels. "Minor" sources, which have projected emissions that fall below the PSD major source thresholds, generally are not regulated under the PSD program. The Board determined above that the *Kulluk* qualifies as a minor source for PSD purposes, and so it is not required to obtain a PSD permit. The *Kulluk* nonetheless is still subject to permitting under the CAA's Title V program. The question presented is whether section 504(e) of Title V imposes PSD increment requirements in this circumstance.

In section 504(e) of Title V Congress set out permitting requirements for "temporary" stationary sources of air pollution as follows:

> The permitting authority may issue a single [Title V] permit authorizing emissions from similar operations at multiple temporary locations. No such permit shall be issued unless it includes conditions that will assure compliance with all the requirements of this chapter [i.e., the CAA] at

[40] To date, EPA has established PSD increments for four pollutants – SO_2, NO_2, PM_{10}, and $PM_{2.5}$. The increments consist of numeric concentrations, measured in micrograms of pollutant per cubic meter of air, that vary according to averaging period (3-hour, 24-hour, or annual averages) and geographic location (areas designated as "Class I," "Class II," or "Class III"). *See* 40 C.F.R. § 52.21(c) (table of increment levels).

> all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under part C of subchapter I of this chapter [i.e., the PSD program].

CAA § 504(e), 42 U.S.C. § 7661c(e). In allowing for a streamlined permitting process in which a single permit could authorize emissions at multiple temporary locations, Congress explained:

> Some sources requiring [Title V] permits do not operate at fixed locations. These might include asbestos demolition contractors and certain asphalt plants. Subsection (e) allows the permittee to receive a permit allowing operations, after notification to the permitting authority, at numerous fixed locations without requiring a new permit at each site. Any such permit must assure compliance at all locations of operation with all applicable requirements of the Act, including visibility protection and PSD requirements and ambient standards.

H.R. Rep. No. 101-490, pt. 1, at 350 (1990).

The parties' dispute centers on competing interpretations of section 504(e) and whether, in providing for a streamlined permitting process for temporary sources, Congress intended temporary minor sources to have increment provisions in their Title V permits where the state implementation plans do not otherwise impose increment provisions on such sources.

Section 504(e) is an unusual provision, not only because it addresses temporary rather than permanent stationary sources of air pollution (which comprise the majority of Title V sources), but also because it imposes substantive air requirements on temporary sources. As a general matter, Title V is a procedural rather than a substantive statute. It serves as a vehicle for collecting diverse CAA requirements otherwise applicable to a source into one all-encompassing air permit for that source. *See, e.g., Ohio Pub. Interest Research Grp., Inc. v. Whitman*, 386 F.3d 792, 794 (6th Cir. 2004) ("Title V does not impose new obligations; rather, it consolidates pre-existing requirements into a single, comprehensive document for each source"); Operating Permit Program, 57 Fed. Reg. 32,250, 32,251 (July 21, 1992) (explaining that Title V "generally does not impose substantive new requirements" on sources but instead attempts to "clarify, in a single document, which requirements apply to a source," thereby enabling all parties to better understand and track that source's CAA compliance). For the most part, requirements that are "applicable" to a source's emissions units under a Title V permit are directly imposed not by Title V itself but, rather, by state or federal implementation plans, preconstruction permits, the air toxics or acid rain programs, and other

substantive CAA provisions. *See* 40 C.F.R. §§ 70.2, 71.2 (definitions of "applicable requirements" under state and federal operating permit program regulations, respectively).

To ensure adequate regulation of temporary sources, Congress directed that Title V permits for such sources must include, as noted above, "conditions that will assure compliance with all the requirements of [the CAA] at all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under [the PSD program]." CAA § 504(e), 42 U.S.C. § 7661c(e). The parties do not dispute that this language serves to impose, through Title V itself, substantive CAA requirements on temporary sources. *See* REDOIL Petition at 19-25; Region Response at 5-6. Indeed, they agree that, because of section 504(e), the *Kulluk*'s Title V permit "must contain terms and conditions that ensure compliance with the NAAQS at all relevant locations." Statement of Basis at 26, *quoted in* Region Response at 5; *see* REDOIL Petition at 21. The parties strongly dispute, however, whether PSD increments should also be included in the complement of substantive requirements for the *Kulluk*.

2. *Under the Region's Interpretation, PSD Increment Compliance Demonstrations Are Not Mandatory for Temporary Minor Sources but May Be Required by States*

The Region's basic position is that section 504(e) uniformly imposes ambient standards (i.e., NAAQS) compliance requirements on all temporary sources, but that it does not uniformly so impose PSD increment requirements. The Region initially based this distinction on the language of section 504(e) and the implementing regulations, as well as on a prior Agency interpretation of these authorities. *See* Statement of Basis at 25-27. The distinction hinged primarily on Congress' insertion of the adjective "applicable" in section 504(e) to modify not "ambient standards" but only "increment or visibility requirements under [the PSD program]." *Id.* at 26; *see* CAA § 504(e), 42 U.S.C. § 7661c(e). PSD increments are only "applicable" to a temporary source, the Region reasoned, if the source also qualifies as a PSD major source, obligated to obtain a PSD permit. Statement of Basis at 26 ("applicable" increment requirements are those applicable "under [the PSD program]" (i.e., part C of subchapter I of the CAA), which covers only PSD major sources). By this logic, the *Kulluk*, a PSD minor source, would not have to demonstrate compliance with PSD increments at any of its authorized locations. *Id.*

Commentors on the *Kulluk*'s draft permit pressed the Region on this point, which prompted it to take a closer look at the entire issue. The Region prepared a lengthy, detailed Response to Comments document, in which it repeated the above points, but also added a far more robust discussion of the preconstruction permitting programs for major and minor sources. The Region explained that,

under the statute and implementing regulations, states have discretion to impose PSD increment requirements on PSD minor sources as part of their minor source construction permitting programs, if the states deem such requirements necessary to prevent significant deterioration of air quality. *See* RTC at 102-09 (citing and discussing, e.g., CAA §§ 110(a)(2)(C), 161, 163, 165(a)(3)(A), 504(e), 42 U.S.C. §§ 7410(a)(2)(C), 7471, 7473, 7475(a)(3)(A), 7661c(e); 40 C.F.R. §§ 51.160(a)(2), (b)(2), .166(a)(1), (3), 70.2, 71.2, 71.6(e)). The Region emphasized that states are not *obliged* to do this but have discretionary authority to pursue this course if they deem it necessary to fulfill their obligations under CAA sections 161 and 163(a). *See id.* at 103-06.

These clarifications led the Region to encapsulate its understanding of section 504(e) and the preconstruction programs in the following way: "PSD major sources are subject to NAAQS and increment in the permitting process, whereas non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the [PSD] increment[s]." *Id.* at 107. The Region concluded that the State of Alaska's minor source preconstruction program does not require permanent minor sources to demonstrate compliance with PSD increments as a condition of construction, so neither would it require such compliance of temporary minor sources. *See id.* at 103-04, 107-08; *see also* Region Response at 12, 11 n.7. For this reason, the Region declined to require that Shell conduct PSD increment compliance analyses for *Kulluk* emissions at any of its authorized locations in the Beaufort Sea.

The Region's statutory and regulatory interpretation of the Title V temporary source program finds support in Board case law that recognizes the states' primary role in using PSD increments to manage economic growth. In *In re West Suburban Recycling & Energy Center, LP*, 8 E.A.D. 192 (EAB 1999), the Board observed the following:

> From the beginning of the PSD program, EPA has acknowledged that decisions about how increment should be used or allocated are primarily within the province of the states. For example, in the preamble to the original PSD regulations, EPA noted that allocation of PSD increment could affect economic development and that EPA should endeavor to preserve the states' authority on issues of economic development and growth:
>
> > "EPA should not make decisions [that] would have a significant impact upon future growth options of the [s]tates."

8 E.A.D. at 196 (quoting Approval and Promulgation of State Implementation Plans, 43 Fed. Reg. 26,388, 26,401 (June 19, 1978)); *accord In re Commonwealth*

Chesapeake Corp., 6 E.A.D. 764, 768 (EAB 1997) ("'The PSD requirements provide for a system of area classifications [that] affords [s]tates an opportunity to identify local land use goals. * * * Each classification differs in terms of the amount of [industrial or other] growth it will permit before significant air quality deterioration would be deemed to occur.'" (quoting *NSR Manual* at C.4-.5)).

3. *REDOIL Petitioners Have Not Demonstrated That the Region's Interpretation Is Clearly Erroneous*

On appeal, REDOIL Petitioners claim on a number of grounds that the Region's interpretation is clearly erroneous and thus a basis for remand of this permit. REDOIL Petition at 19-37. REDOIL Petitioners' central contention is that the plain language, structure, and purpose of section 504(e) reveal Congress' "unambiguously expressed intent" to tie increment requirement applicability to the increment status of the geographic area or areas in which a temporary source will emit pollutants. *See id.* at 20-32. REDOIL Petitioners also contend that the Agency's implementing regulations confirm the plain meaning of the statutory language and, additionally, contain provisions that "at least imply" independent obligations to ensure PSD increment compliance. *Id.* at 33-35.

REDOIL Petitioners observe that section 504(e) distinguishes between ambient standards (i.e., NAAQS), which apply to all temporary sources "at all times and in all locations," *id.* at 21, and PSD increment standards, which do not apply at all times and in all locations because they "are not universally applicable to all areas." *Id.* Rather, as designed by Congress, PSD increments "apply" only in areas where they specifically have been triggered, by means of the submission of an initial, complete PSD permit application to emit in a particular area. *Id.*; *see* CAA §§ 163, 169(4), 42 U.S.C. §§ 7473, 7479(4); 40 C.F.R. § 52.21(b)(14)(ii), (15)(i). The concentration of pollutants in such an area's ambient air is measured at the time the initial application is submitted (the "baseline date") and then fixed as the "baseline concentration" for that area. *See NSR Manual* at C.6-.8, .12-.15. From that point forward, PSD increments serve as the maximum allowable increases that pollutant concentrations may rise above the established baseline levels. CAA § 163, 42 U.S.C. § 7473; 40 C.F.R. § 52.21(c).

REDOIL Petitioners reason from this basic design that Congress intended "applicable increment * * * requirements" in section 504(e) to be area-dependent rather than source-dependent. *See* REDOIL Petition at 21-22, 25-27, 29. By this logic, any new source, including any new temporary minor source, that proposes to emit in geographic areas where increments previously have been triggered would be obligated to demonstrate compliance with such increments as "applicable" requirements under section 504(e). Only in areas where increments have not yet been triggered would PSD increments be inapplicable to temporary minor sources. *See id.* REDOIL Petitioners claim the Agency's implementing regula-

tions are fully in accord with this interpretation and thus do not bar increment compliance demonstrations prior to issuance of Title V permits. *Id.* at 33-35.

As described below, the Region did not clearly err in its own interpretation of these authorities. The Board agrees with the Region that its interpretation more fully comports with the structure and language of the CAA and the implementing regulations, and rejects REDOIL Petitioners' assertion that the statutory language is so plain that there is no ambiguity about whether Congress intended to impose increment provisions on temporary minor sources where the state implementation plan does not otherwise impose increment requirements on such sources. REDOIL Petitioners misapprehend or fail to grapple with several key points that formed the basis for the Region's interpretation in its final permitting decision and Response to Comments.

a. *REDOIL Petitioners Misunderstand Portions of the Region's Response to Comments*

In several of its points of advocacy before this Board, REDOIL Petitioners reveal a misunderstanding of the explanations the Region set forth in the Response to Comments. In the most significant example, REDOIL Petitioners argue that the Region erroneously construes "any applicable increment * * * requirements under Part C" in section 504(e) to mean that only those temporary sources that are also PSD major sources must demonstrate PSD increment compliance. REDOIL Petition at 29, 33-34. While this description reflects the position the Region advanced in the Statement of Basis,[41] it fails to acknowledge the very substantial further interpretive exegesis the Region developed and presented in its Response to Comments on the draft permitting record (which included the Statement of Basis). In that later and more comprehensive analysis, the Region made clear that, in its view, states have discretionary authority in their minor source preconstruction programs to impose PSD increment requirements on temporary minor sources, either as implementation plan requirements or on a case-by-case basis, as they deem necessary to protect the NAAQS. *See* RTC at 103-06. REDOIL Petitioners fail to address or demonstrate why the Region's position, as more fully articulated in the Response to Comments, is clearly erroneous. Because REDOIL Petitioners have failed to substantively confront the Region's Response to Comments, they cannot prevail on this ground. *See, e.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 450 (EAB 2011) (petitioners "must substantively confront the permit issuer's explanations in its response to comments document"); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005) (same).

[41] The Region acknowledges that statements in the Statement of Basis could be read to suggest such an approach. Region Response at 8.

REDOIL Petitioners also misunderstand the interplay of sections 161, 165, and 504(e) of the Act, as those provisions are discussed by the Region in the Response to Comments. *See* RTC at 103-06. REDOIL Petitioners point out that section 163, not section 165, is the source of increment requirements within the PSD program and contends that the Region "ignore[d]" this provision in interpreting section 504(e). REDOIL Petition at 30. In so arguing, REDOIL Petitioners take the position that section 504(e) makes the section 163 increments directly applicable to temporary sources. *See id.* at 30-31. The plain language of section 163, however, is to the contrary. It provides that "each applicable implementation plan shall contain measures assuring that maximum allowable increases over baseline concentrations [i.e., increments] * * * shall not be exceeded." CAA § 163(a), 42 U.S.C. § 7473(a). Moreover, the text of section 161, which establishes implementation plan requirements, provides that such plans "shall contain emission limitations and such other measures as may be necessary * * * to prevent significant deterioration of air quality." CAA § 161, 42 U.S.C. § 7471.

Increments, in other words, are not directly imposed by section 504(e). Instead, they must be implemented (i.e., applied to a source) through either of two means: (1) a state implementation plan, per section 161 and 40 C.F.R. § 51.166(a)(1); or (2) the PSD major source permitting program, per section 165(a)(3)(A) and 40 C.F.R. § 52.21. *See* RTC at 103-04. Thus, while section 504(e) can serve as the direct source of NAAQS compliance requirements and other CAA requirements for temporary sources (*see infra* note 44 and accompanying text), it only imposes PSD increment requirements to the extent such requirements are "applicable" to the source.

Finally, REDOIL Petitioners also suggest that the State of Alaska's operating permit regulations are "more lenient" than the federal regulations because they do not require PSD minor sources to demonstrate compliance with PSD increments as a preconstruction condition. REDOIL Petition at 27-28. Noting that the Alaska rules apply to sources on the inner OCS only, and not on the outer OCS, REDOIL Petitioners suggest that the purportedly more stringent federal operating permit rules in effect on the outer OCS require temporary sources situated on the outer OCS to demonstrate compliance with PSD increments. *Id.* at 28 (citing 40 C.F.R. §§ 71.2, 71.6(e)). REDOIL Petitioners claim, therefore, that Shell must conduct, at the very least, a PSD increment analysis for the *Kulluk*'s authorized locations on the outer OCS. *Id.*

This argument reveals a misunderstanding of the Region's discussion of relevant legal requirements on the inner versus outer OCS. In the Response to Comments, the Region explained:

> In this case, the requirements for Title V temporary sources in the inner OCS and outer OCS off of Alaska are the same because Alaska has adopted EPA's Part 71 rules

> with respect to Title V temporary sources by reference for application onshore and Region 10 has in turn adopted these requirements into the [Corresponding Onshore Area] regulations for application in the inner OCS.

RTC at 109. As the Region explained, PSD increments are not applicable to any temporary minor sources, wherever they might be located on the OCS, *unless* a state exercises its discretion to require minor source compliance with such increments. A state, of course, has limited jurisdiction, and its authority does not extend beyond its borders. *E.g.*, CAA § 107(a), 42 U.S.C. § 7407(a) ("[e]ach [s]tate shall have the primary responsibility for assuring air quality within the entire geographic area comprising such [s]tate"). That would mean, therefore, that in the outer OCS or other places where only federal operating permit rules apply, PSD increments would not be applicable to temporary minor sources, *unless* federal OCS regulations required it or EPA chose to add increment compliance obligations under 40 C.F.R. § 55.13(h)[42] once the source becomes operational. *See* RTC at 109. REDOIL Petitioners fail to squarely confront this legal landscape, which results in a failure to demonstrate how the Region's interpretation is clearly erroneous. *See, e.g., In re Teck Cominco Alaska, Inc.*, 11 E.A.D. 457, 494-95 (EAB 2004) (burden of demonstrating review is warranted rests with the petitioner, who must raise objections to the permit and explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review); *In re Westborough*, 10 E.A.D. 297, 305, 311-12 (EAB 2002) (same).

b. *REDOIL Petitioners Mischaracterize the Title V Regulatory Scheme*

REDOIL Petitioners' notion that "applicable increment requirements" in section 504(e) mean "applicable to the *area*" rather than "applicable to the *source*" is not supported by the Title V regulatory model as a whole. A Title V permit for a temporary source to operate at multiple locations must include, among other things, "[c]onditions that will assure compliance with all applicable requirements at all authorized locations." 40 C.F.R. §§ 70.6(e)(1), 71.6(e)(1). Broadly speaking, the Board has recognized that "'[a]pplicable requirement' is a term of art in the Title V program that, in general, refers to any substantive requirement that applies to an *emissions source* under any CAA regulatory provisions." *Peabody*,

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[42] This OCS-specific regulation provides:

> If the Administrator determines that additional requirements are necessary to protect [f]ederal and [s]tate ambient air quality standards or to comply with part C of title I, such requirements will be incorporated in this part.

40 C.F.R. § 55.13(h).

12 E.A.D. at 28 n.14 (emphasis added) (citing 40 C.F.R. § 71.2). Further, the regulations implementing the federal Title V program provide that "[a]pplicable requirement means all of the following as they apply to *emissions units in a part 71 source*." 40 C.F.R. § 71.2 (emphasis added). In turn, the term "emissions unit" means "any part or activity of a *stationary source* that emits or has the potential to emit any regulated air pollutant." *Id.* (emphasis added).

Accordingly, the Region's interpretation of the term "applicable" in section 504(e) as meaning "applicable to the source" is consistent with the Agency's Title V regulations, in which applicability is determined by reference to the *source*, not the *area*. REDOIL Petitioners fail to present legal authorities supporting their own novel view of applicability in a way sufficient to demonstrate that the Region's different approach is clearly erroneous.

c. *REDOIL Petitioners Confuse Air Quality Management Obligations with Permitting Obligations*

REDOIL Petitioners argue that the Region's interpretation of section 504(e) should be rejected because it is inherently inconsistent. REDOIL Petition at 31-32. On the one hand, REDOIL Petitioners note, the Region explicitly recognized that the *Kulluk* will consume a portion of the available PSD increments in its authorized drilling areas, but the Region nonetheless refused to impose preconstruction increment compliance requirements in the Title V permit, finding them "inapplicable." RTC at 102, 105-06. On the other hand, the Region acknowledged that after the *Kulluk* becomes operational, it might be necessary to impose increment-related restrictions; i.e., increments would be "applicable." In the Response to Comments, the Region stated:

> If, at any time after the *Kulluk* begins operation under its Title V/OCS permit, Region 10 determines that the actual emissions increases from the permitted OCS source cause or contribute to an increment violation, Region 10 has authority to adopt additional requirements to ensure that increments are not violated.

Id. at 106 (footnote omitted). REDOIL Petitioners argue that the Region cannot have it both ways, contending on this basis that the Region's interpretation should not be sustained. REDOIL Petition at 32.

The Board perceives no conflict between the Region's purportedly "inconsistent" positions on increment applicability. As the Region noted in its Response to Comments, EPA has authority, separate and apart from section 504(e) and the preconstruction programs, to address violations of increment standards that might arise once sources become operational. *See* RTC at 106 (citing CAA §§ 301, 328, 42 U.S.C. §§ 7601, 7627; 40 C.F.R. § 55.13(h)). Moreover, states have authority

to revise their implementation plans to adopt emission limits and other remedial control measures in cases where existing controls are not adequately protecting air quality increments. 40 C.F.R. § 51.166(a)(3), *cited in* RTC at 106.[43] REDOIL Petitioners confuse permitting obligations with ongoing air quality management obligations, but the two are distinct. *See* RTC at 105-06. Simply positing that the Region's view of "applicable" increments is inconsistent is not sufficient to overcome the specific statutory and regulatory authority the Region references in support of its position. The Board therefore finds no showing of clear error justifying a remand on this ground.

d. *REDOIL Petitioners Misconstrue the Regulations*

The Agency's Title V implementing regulations for state and federal operating permit programs closely parallel the language of section 504(e). *Compare* CAA § 504(e), 42 U.S.C. § 7661c(e), *with* 40 C.F.R. §§ 70.6(e), 71.6(e). The regulations define "applicable requirement" for Title V purposes as (among other things): "(2) [a]ny term or condition of any preconstruction permits" issued under parts C or D of title I; and "(13) [a]ny [NAAQS] or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act." 40 C.F.R. §§ 70.2, 71.2. REDOIL Petitioners argue on appeal, as commentors did on the draft permit, that the Region's interpretation of "applicable requirement" improperly reads the thirteenth requirement out of the regulations by subsuming it within the second requirement. REDOIL Petition at 33-34.

The Region explained in the Response to Comments why this was not so. *See* RTC at 107-08. The Region stated that "the intent of the Title V temporary source provisions is to relieve sources of the burden of applying for Title V permits for each new location, while at the same time[] assuring compliance with all requirements to which the source would be subject if it were a new [permanent] source at each such new location." *Id.* at 108. For a temporary source that is also a PSD major source, this would include ensuring that the NAAQS and increment standards are met at each future location – a requirement that, the Region pointed out, would exceed the requirements otherwise applicable to the source under the

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[43] This state implementation plan regulation provides, in relevant part:

> If the [s]tate or the Administrator determines that a[n implementation] plan is substantially inadequate to prevent significant deterioration or that an applicable increment is being violated, the plan shall be revised to correct the inadequacy or the violation.

40 C.F.R. § 51.166(a)(3). The regulations also provide, in the next subsection, that the state "shall review the adequacy of a[n implementation] plan on a periodic basis and within 60 days of such time as information becomes available that an applicable increment is being violated." *Id.* § 51.166(a)(4).

PSD program alone.[44] *Id.* at 107. For a temporary source that is also a PSD minor source, this would include ensuring that the NAAQS and, if required under the implementation plan for minor permanent sources, PSD increment standards are met at each future location, even if the implementation plan did not require such a demonstration for temporary minor sources. *See id.* at 107-08; Region Response at 12.

REDOIL Petitioners fail to meaningfully confront the Region's reasoning on this issue or demonstrate why it is clearly erroneous. Instead, REDOIL Petitioners reference an irrelevant minor permit modification provision (40 C.F.R. § 71.7(e)(1)(i)(A)(3)), rather than a minor source provision, as support for their position. REDOIL Petition at 34. REDOIL Petitioners also suggest that the Title V permitting regulations in sections 70.6(e) and 71.6(e) establish a more expansive regulatory program than the one the Region finds present in section 504(e); indeed, one that would even be broad enough to require the *Kulluk* to demonstrate PSD increment compliance. *Id.* at 33. The Board finds otherwise, in light of the fact that sections 70.6(e) and 71.6(e) are expressly limited by a reference to section 504(e) itself and therefore cannot expand the meaning of the statute. *See* RTC at 107-08.

4. *Increment Section Conclusion*

The Board has carefully examined each of REDOIL Petitioners' increment-related arguments and determined that none have merit. Petitioners' burden is to show clear error, but REDOIL Petitioners have failed in all instances to achieve this standard. The Board therefore denies review of the Permit on this ground.[45]

C. *REDOIL Petitioners Failed to Raise Below Their Contention That Shell's Ambient Air Quality Analysis Was Flawed in That It Failed to Conform to Applicable Agency Guidance*

On February 9, 2010, EPA published in the Federal Register a final rule (effective April 12, 2010) revising the primary NO_2 NAAQS "in order to provide requisite protection of public health as appropriate under section 109 of the Clean Air Act." Primary NAAQS for NO_2, 75 Fed. Reg. 6474, 6475 (Feb. 9, 2010); *see also Shell 2010*, 15 E.A.D. at 149-50 & n.74. This rule set the new 1-hour NO_2

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[44] As such, the NAAQS and PSD increment requirements for future locations would be "additional" requirements imposed on the temporary source by section 504(e). RTC at 107-08.

[45] In light of the Board's decision to uphold the Region's interpretation of section 504(e) and the implementing regulations, the Board need not reach REDOIL Petitioners' final argument, which challenges the Region's finding that air quality modeling establishes the *Kulluk*'s emissions will not violate the PSD increments.

NAAQS standard (hereinafter "the 1-hour NO_2 NAAQS") at 100 parts per billion ("ppb") to supplement the existing annual standard, set at 53 ppb. 75 Fed. Reg. at 6475. EPA regulations specify how attainment of the standard is to be calculated, providing that the 100 ppb standard is met "when the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb, as determined in accordance with Appendix S of this part for the 1-hour standard." 40 C.F.R. § 50.11(f). This calculation is sometimes referred to as "the form."[46] *See* 75 Fed. Reg. at 6477 n.5, 6492-93. The 100 ppb standard reflects the maximum allowable NO_2 concentrations anywhere in an area. *Id.* at 6493, 6502. EPA has issued guidance clarifying procedures for demonstrating compliance with the new 1-hour NO_2 NAAQS. *See* REDOIL Petition Ex. 16 (Memorandum from Stephen D. Page, Dir., Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Dirs., U.S. EPA, *Guidance Concerning the Implementation of the 1-Hour NO_2 NAAQS for the Prevention of Significant Deterioration* (June 29, 2010) ("Page Memo"));[47] Memorandum from Tyler Fox, Leader, Air Quality Monitoring Grp., Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Dirs., U.S. EPA, *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO_2 National Ambient Air Quality Standard* (Mar. 1, 2011) ("Fox Memo") (A.R. BB-83).

REDOIL Petitioners assert that Shell's ambient air quality analysis was flawed.[48] In particular, REDOIL Petitioners state that in "identifying the Kulluk's

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[46] The 98th percentile form corresponds approximately to the 7th or 8th highest daily maximum concentration in a year. 75 Fed. Reg. at 6492.

[47] According to the Page Memo, the guidance was issued in response to reports that sources were modeling potential violations of the 1-hour NO_2 NAAQS. Page Memo at 1. The Memo states that "[t]o respond to these reports and facilitate the PSD permitting of new and modified major stationary sources, we are issuing the attached guidance in the form of two memoranda." *Id.* The attached memoranda are titled "General Guidance for Implementing the 1-hour NO_2 National Ambient Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" and "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard." *Id.* at 1-2. Although the Page Memo attaches these two memoranda, the Memo is consecutively numbered as a single document.

[48] In order to establish compliance with the NAAQS and PSD increments, permit applicants must conduct an "ambient air quality analysis," which applicants must prepare under the permitting rules for each regulated pollutant their proposed facilities will emit in "significant" amounts. 40 C.F.R. § 52.21(b)(23)(i), (m)(1)(i). This analysis predicts a pollutant's future concentration in the ambient air by modeling a proposed facility's expected emissions of the pollutant against the backdrop of existing ambient conditions. To conduct an air quality analysis, a permit applicant compiles data on the proposed facility's physical specifications and anticipated emission rates, local topography, existing ambient air quality, meteorology, and related factors. *See, e.g., id.* § 52.21(l), (m); *id.* pt. 51 app. W (Guideline on Air Quality Models); *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 145-48 (EAB 1999); *NSR Manual* at C.16-.23, .31-.50. These data are then processed using mathematical models that calculate the rates at which pollutants are likely to disperse into the atmosphere under various climatological conditions, with the goals of determining whether emissions from the proposed source will cause or

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98th percentile cumulative impact – *i.e.*, the Kulluk's impact added to background levels of pollutants – for comparison to the 1-hour NO_2 standard, Shell used an approach that the Region admits is 'less conservative.' More specifically, Shell used background values that were already adjusted to the 98th percentile, instead of basing its calculations on the full distribution of background values." REDOIL Petition at 38 (footnote omitted). According to REDOIL Petitioners, this method for demonstrating compliance with the 1-hour NAAQS was rejected in the Page Memo as "not being protective of the [NAAQS]." *Id.* at 38-39 (quoting Page Memo at 18). REDOIL Petitioners then cite to a portion of the more recent Fox Memo which, according to them, allows for the method Shell used to calculate background values. *Id.* at 39. That is, the Fox Memo states that the approach used in the Page Memo was overly conservative and should not be used in certain cases. *Id.* (citing Fox Memo at 17-20). REDOIL Petitioners assert that the Region allowed Shell to demonstrate compliance with the form of the 1-hour NAAQS using the approach permitted in the Fox Memo without providing an explanation as to why the determination in the Page Memo was incorrect. *Id.* at 40. REDOIL Petitioners argue that "[b]ecause neither EPA nor the Region provided any explanation about whether and, if so, how, its earlier conclusion [in the Page Memo] that the use of the 98th percentile background values is 'not protective' of the national ambient air quality standard was incorrect, EPA's new guidance and the approach taken by the Region here in reliance on it are arbitrary." *Id.* (quoting Page Memo at 17-20). REDOIL Petitioners contend that the Region had an obligation to explain this "departure from its prior analysis." *Id.* at 40-41.

Upon examination of the record, the Board concludes that this issue was not adequately raised during the comment period and was therefore not preserved for review. As stated above, the regulations require any person who believes that a permit condition is inappropriate to raise "all reasonably ascertainable issues and * * * all reasonably available arguments supporting [petitioner's] position" during the comment period on the draft permit. 40 C.F.R. § 124.13. That requirement is made a prerequisite to appeal by 40 C.F.R. § 124.19(a), which requires any petitioner to "demonstrat[e] that any issue[] being raised [was] raised during the public comment period * * * to the extent required[.]". *In re ConocoPhillips Co.*, 13 E.A.D. 768, 800-01 (EAB 2008); *accord In re Christian Cnty. Generation, LLC*, 13 E.A.D. 449, 457 (EAB 2008); *Shell 2007*, 13 E.A.D. at 394 n.55.

The requirement that an issue must have been raised during the public comment period in order to preserve it for review is not an arbitrary hurdle placed in the path of potential petitioners. *Russell City II*, 15 E.A.D. at 10; *In re City of Marlborough*, 12 E.A.D. 235, 244 n.13 (EAB 2005), *appeal dismissed for lack of*

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contribute to a violation of either the NAAQS or the PSD increments. *See* 40 C.F.R. § 52.21(f); *id.* pt. 51 app. W; *NSR Manual* at C.24-.27, .51-.70.

juris., No. 05-2022 (1st Cir. Sept. 30, 2005); *In re BP Cherry Point*, 12 E.A.D. 209, 219 (EAB 2005). Rather, the requirement serves an important function related to the efficiency and integrity of the overall administrative permitting scheme. *Marlborough*, 12 E.A.D. at 244 n.13. The intent of the rule is to ensure that the permitting authority first has the opportunity to address permit objections and to give some finality to the permitting process. *Id.*; *In re Sutter Power Plant,* 8 E.A.D. 680, 687 (EAB 1999). As the Board has explained, "[t]he effective, efficient and predictable administration of the permitting process demands that the permit issuer be given the opportunity to address potential problems with draft permits before they become final." *In re Teck Cominco*, 11 E.A.D. 457, 481 (EAB 2004) (quoting *In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 250 (EAB 1999)). "In this manner, the permit issuer can make timely and appropriate adjustments to the permit determination, or, if no adjustments are made, the permit issuer can include an explanation of why none are necessary." *In re Essex Cnty. (N.J.) Res. Recovery Facility*, 5 E.A.D. 218, 224 (EAB 1994).

Although REDOIL Petitioners' comments on the draft permit asserted that Shell had used background ambient air data in a manner that understated the impact of its operations, *see* REDOIL Comments at 9-11, nowhere in these comments did Petitioners assert that Shell's approach conflicted with the Page Memo or that the Region had any obligation to provide an explanation for its alleged departure from the Page Memo. Indeed, REDOIL Petitioners' comments recognized that, according to the Fox Memo, Shell's approach is appropriate in some circumstances. *Id.* at 11. The comments, however, did not assert any conflict between the Page Memo and the Fox Memo nor is it clear to this Board that any such conflict exists. Thus, this "battle of the memos" issue was not preserved for review.[49] *See Shell Discoverer 2012*, 15 E.A.D. at 507.

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[49] *See Teck Cominco*, 11 E.A.D. at 481-82 (denying review where issue was not specifically raised during the comment period). The Board notes that the issue REDOIL Petitioners did raise during the comment period was fully and adequately addressed in the Region's Response to Comments. Specifically, in commenting on the draft permit, REDOIL Petitioners raised the argument that Shell had failed to demonstrate compliance with the 1-hour NO_2 NAAQS because, according to REDOIL Petitioners, Shell used background ambient air data in a manner that understated the impact of its operations. REDOIL Comments at 10-11. As stated above, REDOIL Petitioners' comments recognized that Shell's approach to analyzing background data was consistent with the Fox Memo, but argued that Shell's approach was inconsistent with the 1-hour NO_2 NAAQS standard itself. *Id.* at 11. The Region provided a detailed response to this assertion in the Response to Comments. RTC at 74-78. Nothing in the REDOIL Petition indicates why the Region's response on this issue was erroneous or otherwise warrants Board review, nor does the Board find anything erroneous in the Region's response. Thus, even if Petitioners had preserved this issue, the Board would deny review. *See, e.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 450 (EAB 2011) (stating that "a petitioner may not simply reiterate comments made during the public comment period, but must substantively confront the permit issuer's explanations in its response to comments document"); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005) (same).

D. *REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Its Ambient Air Exemption Determination*

REDOIL Petitioners allege that the Region clearly erred in exempting the area within a 500 meter radius from the *Kulluk* from the definition of "ambient air."[50] REDOIL Petition at 15. This area is also referred to throughout the record as the United States Coast Guard ("USCG") "safety zone." *See, e.g.*, RTC at 52-54. REDOIL Petitioners claim that the Region's decision "contravenes both EPA's definition of 'ambient air' as well as EPA's longstanding interpretation of that regulation." REDOIL Petition at 16. In particular, they assert that the Region's 500 meter ambient air boundary fails to meet either of the two criteria the Agency has previously used in evaluating the appropriateness of an exemption. *Id.* at 16-18. According to REDOIL Petitioners, the Region's decision essentially allows Shell to emit more pollution, and possibly with fewer controls, than would otherwise be lawful.[51] *Id.* at 15-16.

The CAA regulations define "ambient air" as "that portion of the atmosphere, external to buildings, to which the general public has access." 40 C.F.R. § 50.1(e). Based on this definition, the Agency has, on occasion, exempted certain areas from the definition of ambient air. *E.g.*, Letter from Steven C. Riva, Chief, Permitting Sec., U.S. EPA Region 2, to Leon Sedefian, Air Pollution Meteorologist, N.Y. State Dep't of Env't Conservation, at 1-2 (Oct. 9, 2007) (A.R. BB-19) [hereinafter Broadwater Letter]; Letter from Douglas M. Costle, Adm'r, U.S. EPA, to Sen. Jennings Randolf, Chairman, Env't & Pub. Works Comm., at 1 (Dec. 19, 1980) (A.R. BB-1) [hereinafter Costle Letter]; *see also* Letter from Nancy Helm, Fed. & Delegated Air Programs, U.S. EPA, to John Kuterbach, Alaska Dep't of Envtl. Quality, at 2 (Sept. 11, 2007) (area exempt if certain conditions met) [hereinafter Helm Letter]. The parties agree that the Agency's "longstanding interpretation" of this exemption is set forth in a letter signed by former EPA Administrator Douglas Costle, which states that "the exemption from ambi-

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[50] For an area that is not considered within the definition of "ambient air," Shell would not have to demonstrate compliance with the NAAQS. *See* CAA §§ 109(b), 160, 163, 42 U.S.C. §§ 7409(b), 7470,7473 (NAAQS apply to areas meeting the definition of ambient air); 40 C.F.R. § 50.1(e) (definition of "ambient air"); *In re Hibbing Taconite Co.*, 2 E.A.D. 838, 848 & nn.23-24 (Adm'r 1989); RTC at 53.

[51] REDOIL Petitioners additionally argue that, should the Region's response contain a "natural physical feature" argument similar to an argument the Region raised in its response brief in *Shell Discoverer 2012*, the Board should consider such an argument a "*post hoc* rationalization" and should disallow it. REDOIL Petition at 19; *see also Shell Discoverer 2012*, 15 E.A.D. at 510 n.52 (discussing this issue). REDOIL Petitioners also reserve the right to request leave to file a reply brief addressing this issue. REDOIL Petition at 19. Unlike the situation in *Shell Discoverer 2012*, the Board does not find that the Region's response brief contains an explanation that is clearly different than the rationale set forth in the Response to Comments. Moreover, REDOIL Petitioners do not raise this particular issue in their reply brief. Consequently, the Board does not consider REDOIL Petitioners' "post hoc rationalization" argument further.

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ent air is available only for the atmosphere over land owned or controlled by the source and to which the public access is precluded by a fence or other physical barriers." Costle Letter at 1; REDOIL Petition at 16 (quoting same letter); Region Response at 29-30 (referring to same letter); Shell Response at 26-27 & n.27 (same); *see also* RTC at 51 (same). The Costle Letter also indicates that, in determining whether the exemption applies, the Agency reviews "individual situations on a case-by-case basis." Costle Letter at 1; *see also* Approval and Promulgation of State Implementation Plans, 50 Fed. Reg. 7056, 7057 (Feb. 20, 1985) (noting that, in considering ambient air exemptions, "individual variations in the type of land and nature of the limitation on access necessitate a case-by-case evaluation of the facts, and application of the principles involved in this determination").

Here, in its permitting decisions, the Region determined that, as long as certain permit conditions were being met, it was appropriate to set the ambient air boundary at a 500 meter radius from the *Kulluk*, or, in other words, the 500 meter radius "safety zone" was exempt from the ambient air definition. RTC at 51-52; *see also* Statement of Basis at 40. The terms and conditions upon which the Region relied to exempt this area prohibit the operation of vessels and emissions units unless (1) the USCG establishes a safety zone within at least 500 meters from the center of the *Kulluk*, (2) members of the public are precluded from entering the safety zone, and (3) Shell develops and implements a "public access control program."[52] Permit at 42-43. The Region determined that, as long as these safety zone and public access restriction permit conditions are complied with, ex-

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[52] The precise terms and conditions of the Permit are as follows:

The permit does not authorize operation unless:

> 5.1.1. The Kulluk is subject to a currently effective safety zone established by the [USCG] which encompasses an area within at least 500 meters from the hull of the Kulluk and which prohibits members of the public from entering this area except for attending vessels or vessels authorized by the USCG (such area shall be referred to as the "Safety Zone"); and
>
> 5.1.2. The permittee has developed in writing and is implementing a public access control program to:
>
> 5.1.2.1. Locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the Safety Zone; and
>
> 5.1.2.2. Communicate to the North Slope communities on the Beaufort Sea on a periodic basis when exploration activities are expected to begin and end at a drill site, the location of the drill site, and any restrictions on activities in the vicinity of the Kulluk's exploration operations.

Permit at 42-43.

empting the area within the safety zone from the ambient air definition would generally be consistent with previous Agency interpretations. RTC at 51-52. In so finding, the Region noted that "[g]iven that the permitted activities occur over open water in the Arctic, the[] criteria [for exemption included in the Costle Letter] must be adapted to some extent when applied to this environment." *Id.* In specifically considering the applicability of the two exemption criteria, the Region stated:

> Region 10 recognizes that Shell does not "own" the areas of the Beaufort Sea on which the Kulluk will be operating as might be the case for a stationary source on land. Shell has a lease authorizing the company to use these areas for the activities covered by the permits. A Coast Guard safety zone establishes legal authority for excluding the general public from the area inside the zone. EPA has previously recognized a safety zone established by the Coast Guard as evidence of sufficient ownership or control by a source over areas over water so as to qualify as a boundary for defining ambient air where that safety zone is monitored to pose a barrier to public access. Letter from Steven C. Riva, EPA Region 2, to Leon Sedefian, New York State Department of Conservation, re: Ambient Air for the Offshore LNG Broadwater Project, dated October 9, 2007 (Broadwater Letter).
>
> To meet the second of the criteria applied by EPA and ensure the source actually takes steps to preclude public access, Shell proposed and Region 10 required as a condition of operation under the permits that Shell develop in writing and implement a public access control program to locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the area within 500 meters of the hull of the Kulluk. Region 10 believes that, for the overwater locations in the arctic environment at issue in these permitting actions, such a program of monitoring and notification is sufficiently similar to a fence or physical barrier on land such that the area within the Coast Guard safety zone qualifies for exclusion from ambient air. *See* Broadwater Letter at 2.

RTC at 52.[53]

Upon consideration of the administrative record and the parties' arguments, the Board concludes that Petitioners have not shown that the Region clearly erred in its decision to exempt the area within the USCG safety zone from the definition of "ambient air." The Region, in its Response to Comments, provided a reasonable interpretation of the ambient air regulation and the Agency's "longstanding interpretation" of that regulation as applied in the OCS context.[54] Furthermore, the Region's analysis was entirely consistent with a similar analysis undertaken by Region 2 in which that Region determined that it was appropriate for a permittee to use the USCG safety zone to define an ambient air boundary around a proposed offshore liquefied natural gas facility. *See* Broadwater Letter at 2. The Broadwater Letter, moreover, suggests that Region 2's analysis, as well as Region 10's, is not unique, stating that "*[i]n previous permitting decisions involving * * * drilling operations, EPA Regional offices have used the USCG's safety zone as the boundary for defining ambient air.*" *Id.* at 2 (emphasis added). The letter explains that the Agency has found that "[t]he 'safety zone' approach represents a reasonable surrogate for a source's fence or physical barrier and thus could act as an ambient air boundary." *Id.*

Thus, while it is true, as Petitioners allege, that the Agency has generally required the source to own or control access over the area in question for that area to meet the first criterion, REDOIL Petition at 16-17, this requirement has been limited to sources located on land.[55] *See, e.g.,* Helm Letter at 1 (referring to possi-

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[53] REDOIL Petitioners also seem to suggest that the Region's approach is flawed because it "is based upon an assumption that Shell will request, and the [USCG] will establish, a safety zone restricting the passage of other vessels." REDOIL Petition at 15 & n.45. This argument is unpersuasive because it fails to recognize that, as the permit conditions quoted in note 52 state, operation is prohibited unless these two conditions are met. *See* Permit at 42-43.

[54] As the Region rightly noted, *see* RTC at 51-52, the regulation and the Costle Letter, by their very terms, were clearly written with overland situations in mind. *See* 40 C.F.R. § 50.1(e) (referring to "buildings"); Costle Letter at 1 (referring to "land" and "fences").

[55] In support of their contention, REDOIL Petitioners rely on a previous Agency determination that leased property could not be exempted from the definition of ambient air because the lessee did not have control over access to its leased property (only the landlord did). REDOIL Petition at 17 & n.52 (citing Helm Letter). Petitioners assert that this onshore interpretation must apply equally to an OCS lease BOEMRE issued. *Id.* As the Petitioners themselves note, federal courts have found agency action to be arbitrary when the agency's "explanation 'runs counter to the evidence,'" *id.* at 17 (quoting *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983)), and "'the agency offer[s] insufficient reasons for treating similar situations differently,'" *id.* (quoting *Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996)); *see also FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-15, 129 S.Ct. 1800, 1810-11 (2009) (discussing standard of review of an agency's policy change). Here, not only are the situations dissimilar enough to arguably not be governed by these cases, but the Agency did offer persuasive reasons for treating the two situations differently.

ble exemption near coal-fired power plant); Memorandum from Steven D. Page, Director, Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Div. Dirs., U.S. EPA, *Interpretation of "Ambient Air" in Situations Involving Leased Land Under the Regulations for the Prevention of Significant Deterioration (PSD)* (June 22, 2007) (A.R. B-26) (discussing the applicability of the exemption where a source is located on "land" leased to them by another source). The Region (and the Agency before it) reasonably determined that application of the regulation and the interpretive letter to an "overwater" situation requires some leeway. REDOIL Petitioners' reliance solely on land-based exemption decisions is thus unpersuasive.[56] Finally, as mentioned above, the Agency has consistently taken the position that ambient air exemption determinations are analyzed on a case-by-case basis.

For all the reasons stated above, REDOIL Petitioners have not shown that the Region clearly erred in its ambient air exemption determination.[57] Consequently, review of the Permit based on this issue is denied.

E. *ICAS and Mr. Lum Have Not Demonstrated That the Region Failed to Satisfy Its Obligation to Comply with Executive Order 12898 and Applicable Board Precedent*

ICAS and Mr. Lum argue that the Region's environmental justice analysis lacked a valid basis on which to conclude that Shell's oil exploration activities in the Beaufort Sea will not have a disproportionately high and adverse effect on the health of the Alaska Native population living on the North Slope. ICAS alleges that the Region's environmental justice analysis fails to account for the impacts of short-term NO_2 and ozone exposures on the Alaska Native population residing on the North Slope, and also asserts that the opportunities for public participation were inadequate. Mr. Lum challenges the lack of analysis regarding the impacts

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[56] REDOIL Petitioners' arguments that the Region's determination fails to meet the second criteria because the safety zone "fails to effectuate a barrier that 'precludes' public access" are equally unpersuasive. REDOIL Petition at 17. REDOIL Petitioners focus on the fact that the USCG will limit access to the area based on safety concerns rather than for air quality considerations. *Id.* at 17-18. The important fact is that access within the zone will be strictly limited, not the reason behind it. Moreover, REDOIL Petitioners do not address the other condition of the permit that the Region relied upon for its ambient air boundary determination: the public access control program Shell is required to implement. The Board does not find clear error in the Region's conclusion that, based on the USCG limiting access to the safety zone and the permittee implementing a public access control program, the latter of which will include notification to the local residents of the location of the drilling and the fact that the public is restricted from the safety zone, the general public will be denied access to the area inside the safety zone.

[57] The Board came to the same conclusion in *Shell Discoverer 2012*. *See* 15 E.A.D. at 513-14. In that case, the Region had adopted and followed the same or a very similar interpretation as described in the text above. *See id.* 15 E.A.D. at 511-13. Nothing REDOIL Petitioners offer in the present case convinces the Board that anything in the prior analysis – and reiterated here – was in error.

emissions from Shell's activities in the Beaufort Sea could have on traditional subsistence food sources and also challenges Shell's oil spill response capabilities. The Region counters that its environmental justice analysis and resulting conclusions comply with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" ("Executive Order"). The issue the Board must resolve is: did the Region satisfy its obligation to comply with the Executive Order and applicable Board precedent?

The Executive Order states in relevant part:

> *Agency Responsibilities.* To the greatest extent practicable and permitted by law, and consistent with principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice a part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations * * * .

Exec. Order 12898, 59 Fed. Reg. 7629, 7629 (Feb. 11, 1994) (A.R. FF-1). Federal agencies are required to implement the Executive Order "consistent with, and to the extent permitted by, existing law." *Id.* at 7632. The Board has held that a permit issuer should exercise its discretion to examine any "superficially plausible" claim that a minority or low-income population[58] may be disproportionately affected by a particular facility seeking a PSD permit. *In re EcoEléctrica, LP*, 7 E.A.D. 56, 69 n.17 (EAB 1997); *accord Shell 2010*, 15 E.A.D. at 148-49 & n.71 (citing PSD cases).

At the outset, the Board notes that both ICAS and Mr. Lum recently challenged the Region's environmental justice analysis in *Shell Discoverer 2012*. *See* 15 E.A.D. at 493-501. In addition, the environmental justice analysis the Region prepared in the current matter is reminiscent of the environmental justice analysis prepared for the *Discoverer* permits that were the subject of the Board's *Shell Discoverer 2012* decision. Moreover, while their petitions for review in *Shell Discoverer 2012* and the current appeal are not identical, both ICAS and Mr. Lum raise substantially similar arguments in their current appeals as they did in their appeals of the *Discoverer* permits.[59] *Compare* Lum Petition *with* Eskimo

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[58] Under the Executive Order, the Alaska Native population residing on the North Slope qualifies as a minority population. *See* Statement of Basis at 55; ICAS Petition at 30.

[59] ICAS's remaining challenges to the amount and quality of public participation opportunities available pertaining to the environmental justice analysis appear to mirror its more general arguments
Continued

Whaler Petition for Review, *Shell Discoverer 2012* (Doc. No. 24), *and* ICAS Petition *with* ICAS and AEWC Petition for Review, *Shell Discoverer 2012* (Doc. No. 7).

1. *Region's Environmental Justice Analysis*

The Region included a fifteen-page environmental justice analysis in the administrative record to accompany the Permit and to allow for public comment on the analysis. Environmental Justice Analysis for Proposed OCS Permit No. R10 OCS030000 Kulluk Drilling Unit (undated) ("EJ Analysis") (A.R. F-1). The Region's analysis begins with a discussion of environmental justice in the permitting context and notes that "[t]he Title V operating permit program does not generally impose new substantive air quality control requirements."[60] EJ Analysis at 2. In addition, the analysis includes a discussion of how the national ambient air quality standards ("NAAQS") are crafted by integrating scientific information and evidence from rigorously reviewed studies, and a summary of the Board's case law stating that the Board views compliance with the NAAQS as "emblematic of achieving a level of public health protection that, based on the level of protection afforded by the NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants." *Id.* (quoting *Shell 2010*, 15 E.A.D. at 156) (citations omitted); *see also* Statement of Basis at 54-55.

(continued)
regarding the public participation process. *See* ICAS Petition at 6-10, 38-39. Accordingly, the Board addresses ICAS's challenges to the adequacy of the public participation process, both generally and with respect to the environmental justice analysis, in Parts VI.F and VI.G below.

[60] The Region further explained that:

> [T]he Title V operating permit program is generally a vehicle for ensuring that existing air quality control requirements are appropriately applied to facility emission units and that compliance with these requirements is assured. Accordingly, the primary means of addressing environmental justice issues in the Title V program is through increased public participation and review by permitting agencies, and conditions to assure compliance with applicable requirements. As discussed above, the Title V permit at issue in this case is unusual in that it requires the source, as a Title V temporary source, to meet the NAAQS and also establishes limits on the potential to emit. Region 10 has considered environmental justice concerns in this permitting action where possible in the context of assuring compliance with applicable requirements for the source, in particular assuring compliance with the NAAQS as a Title V temporary source and establishing PSD avoidance limits.

EJ Analysis at 2; *see also* Statement of Basis at 54.

The analysis goes on to catalogue the distances between Inupiat communities on the coast of the North Slope that are closest to Shell's lease blocks in the Beaufort Sea, and discusses the importance of subsistence foods obtained through hunting, fishing, and whaling to the Inupiat diet, and more generally the nexus between subsistence activities and Inupiat culture. EJ Analysis at 3, 5. The Region also included an illustration that juxtaposes the location of Shell's lease blocks, including proposed exploration sites, with onshore and offshore subsistence use areas for the northern Inupiat communities.[61] *Id.* at 4; *see also* Statement of Basis at 56.

The Region then proceeded to analyze demographic, health-related, and air quality data.[62] The demographic analysis indicates that 68% of residents living in the North Slope Borough classify themselves as Alaska Natives. EJ Analysis at 7. In addition, nearly half of North Slope residents speak a language other than English at home. *Id.* at 8. The analysis of health data revealed, among other things, that from 1990 to 2007 there has been a 158% rate of increase in the prevalence of diabetes for Alaska Natives residing on the Arctic Slope, whereas during the same time period there has been a 117% rate of increase in the prevalence in diabetes for Alaska Natives statewide.[63] *Id.* at 9. In addition, there is a higher incidence of outpatient visits for respiratory problems ranging from the common cold to pneumonia in the Arctic Slope than in the rest of Alaska. *Id.*

In the air impacts analysis, the Region first noted that the North Slope Borough is currently designated as attainment/unclassifiable for all of the NAAQS, meaning that the North Slope has sufficient data to determine that the area is meeting the NAAQS or that, due to no data or insufficient data, EPA cannot make a determination. *Id.* at 11 & n.15 (citing CAA § 107(d), 42 U.S.C. § 7407(d)). The

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[61] The analysis also includes, for some of the northern Inupiat communities, the distances residents have reported traveling offshore to hunt for traditional subsistence food sources. *See* EJ Analysis at 6 (noting that Nuiqsut residents have traveled up to 60 miles offshore to the north and as far east as Camden Bay to hunt for bowhead whale and that Kaktovik residents have traveled as far as 35 miles offshore to hunt for bowhead whale and walrus); Statement of Basis at 55; *see also Shell 2010*, 15 E.A.D. at 155 n.80 (noting that subsistence activities, which can take Inupiat residents living on the North Slope far from their local communities and closer to emissions sources, are a potential environmental justice consideration that may be unique to the OCS PSD permitting context); *Shell Discoverer 2012*, 15 E.A.D. at 496 n.32 (same).

[62] The Region used demographic information gathered from the 2000 U.S. Census to compare the population of the North Slope Borough to the populations of both the State of Alaska and the entire United States, which served as reference populations for the demographic analysis. EJ Analysis at 6-8 & n.6. The North Slope Borough consists of the following eight incorporated villages: Point Hope, Point Lay, Wainwright, Atqasuk, Barrow, Nuiqsut, Kaktovik, and Anaktuvuk Pass. *See* Statement of Basis at 55.

[63] The Region utilized data from the Alaska Native Health Status Report 2009, which the Alaska Native Epidemiology Center and the Alaska Native Tribal Health Consortium had prepared to analyze health conditions in the North Slope Borough. *See* EJ Analysis at 8-10 & n.11.

Region then examined the total modeled concentrations of NO_2, particulate matter with a diameter of 10 micrometers or less ("PM_{10}"), particulate matter with a diameter of 2.5 micrometers or less ("$PM_{2.5}$"), SO_2, and CO,[64] including background concentrations and maximum concentrations from the *Kulluk* and the Associated Fleet.[65] *Id.* at 13-14 & tbl.6. The Region compared the total modeled concentrations for each of the three nearest communities while the source is in operation and found that the total maximum modeled concentrations demonstrate that the NAAQS will be attained at all locations beyond the 500-meter boundary, and that the modeled concentrations in the North Slope communities and in areas where the communities conduct subsistence activities will be below the relevant standard.[66] *Id.* at 14. Finally, the Region noted that a majority of the total impacts result from background concentrations. *Id.*

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[64] The Board notes that the information included in table 5 of the air quality analysis includes modeled impacts in the nearest onshore communities from operation of the *Kulluk* alone, without impacts from the Associated Fleet or background concentrations. EJ Analysis at 12 & tbl.5. The Region explains that the maximum modeled concentrations in Nuiqsut, Deadhorse, and Kaktovik listed in table 5 are all below the significant impact levels ("SILs") established for each criteria pollutant. *Id.* at 12. In the PSD program, SILs function as threshold levels for ambient concentrations of a given pollutant; for a given pollutant and averaging period, any source that has a measured concentration that is below the SIL is considered too small to cause or contribute to a violation of the NAAQS. *Id.*

The Region made clear earlier in the environmental justice analysis that emissions from the Associated Fleet while operating within 25 miles of the *Kulluk*, together with emissions from the *Kulluk*, are considered in conducting an ambient air quality analysis to determine whether emissions from the project will cause or contribute to a violation of the NAAQS. *Id.* at 4. The Region's analysis repeatedly emphasized that compliance with the NAAQS is "emblematic of achieving a level of public health protection" that demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental impacts due to exposure to relevant criteria pollutants. *Id.* at 4-5 (quoting *Shell 2010*, 15 E.A.D. at 156). While the inclusion of information on modeled impacts of emissions from the *Kulluk* alone on the nearest onshore communities is illustrative regarding the *Kulluk*'s contribution to the overall emissions profile, it is the information that encompasses both background concentrations and emissions from the *Kulluk* and the Associated Fleet when it is within 25 miles of the *Kulluk* that establishes the Region has satisfied its obligation to comply with the Executive Order.

[65] Monitoring data from Prudhoe Bay, Deadhorse, and Endicott were used for background values. EJ Analysis at 13. The Region also noted that the modeled impacts are based on conservative assumptions, including that all four wells are drilled at the same location to account for overlapping plumes, even though the drilling of four wells at a fixed location and the overlap of plumes will not occur. *Id.*

[66] Specifically, the Region noted that in Kaktovik, located 8 miles from Shell's closest lease block in the Beaufort Sea, the total maximum modeled concentrations, assuming Shell's *Discoverer* is in operation and considering background concentrations, are measured at the following percentages of the NAAQS: 11% for the 1-hour NO_2 NAAQS; 20% for the 24-hour $PM_{2.5}$ NAAQS; 35% for the 24-hour PM_{10} NAAQS, and; 20% for the annual $PM_{2.5}$ NAAQS. EJ Analysis at 13-14 & tbl.6. Similarly, in Nuiqsut, located 33 miles from Shell's closest lease block in the Beaufort Sea, and applying the same assumptions, the total maximum modeled concentrations are measured at the following percentages of the NAAQS: 50% for the 1-hour NO_2 NAAQS; 48% for the 24-hour $PM_{2.5}$ NAAQS, 35% for the 24-hour PM_{10} NAAQS, and 26% for the annual $PM_{2.5}$ NAAQS. *Id.*

Overall, the Region concluded that Shell's proposed OCS activities in the Beaufort Sea will not result in disproportionately high and adverse human health or environmental effects with respect to Alaska Natives residing on the North Slope, and further, in reaching this conclusion the Region considered the impact on these communities while engaging in subsistence activities in the areas where such activities are regularly conducted. *Id.* at 15. With this background in mind, the Board now turns to the specific assertions both ICAS and Mr. Lum make in support of their arguments that the Region has not complied with its obligation under the Executive Order.

2. *One-Hour NO_2 NAAQS Analysis*

ICAS challenges the Region's consideration of 1-hour NO_2 NAAQS[67] compliance in the environmental justice analysis on several grounds, arguing that it is "insufficient and ignores salient record evidence." ICAS Petition at 34. ICAS asserts that in addition to NO_2 emissions from the *Kulluk* when it is an OCS source and from the Associated Fleet when it is within 25 miles of the *Kulluk*, the Region must also account for mobile source NO_2 emissions that remain unregulated by the Permit when assessing potentially adverse health impacts of NO_2 emissions on North Slope communities. *Id.* at 35-38. In addition, ICAS challenges the Region's "fatal flaw of the environmental justice analysis," namely the failure to *analyze* the impacts of Shell's emissions on residents of the North Slope conducting subsistence activities offshore. *Id.* at 36-37 (emphasis in original). Finally, ICAS challenges the Region's analysis of Shell's 1-hour NO_2 NAAQS compliance based on several technical decisions the Region made. *Id.* at 37-38.

ICAS asserts that the Region's environmental justice analysis is inadequate because it does not account for emissions from mobile sources that are not included in the air quality impact analysis conducted to determine whether emissions from the project will cause or contribute to a violation of the NAAQS. *See id.* at 34 & n.30; EJ Analysis at 4. The Board disagrees.

The Region appropriately determined that it was not required to analyze these mobile source emissions where, as here, the Title V permit did not address mobile source emissions, and the record lacked sufficient data for such an analy-

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[67] NAAQS are health based-standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics. *See In re AES Puerto Rico, L.P.*, 8 E.A.D. 324, 351 (EAB 1999), *aff'd sub nom. Sur Contra La Contaminación v. EPA*, 202 F.3d 443 (1st Cir. 2000), *cited in Shell 2010*, 15 E.A.D. at 149 n.72. The Administrator is required to carry out periodic reviews of the air quality criteria published under section 108 of the CAA, 42 U.S.C. § 7408, as well as the NAAQS, and to revise the criteria and standards as appropriate. CAA § 109(d)(1), 42 U.S.C. § 7409(d)(1). The Board outlined the history of the NO_2 NAAQS reviews in its December 2010 remand order. *See Shell 2010*, 15 E.A.D at 150 nn.73-74.

sis.[68] RTC at 114; Statement of Basis at 54; *see also* EJ Analysis at 2; Region Response at 36 n.34. The Region acknowledged that the Title V permit at issue in this case is unusual in that it requires a temporary Title V source to meet the NAAQS, and the permit also establishes limits on PTE. EJ Analysis at 2; Statement of Basis at 54; RTC at 114. However, the Title V permit does not regulate mobile source emissions.[69]

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[68] ICAS asserts that the Board should remand the *Kulluk* permit so that the Region can assess mobile source emissions included in Shell's emissions inventory submitted to BOEMRE as part of Shell's Exploration Plan, both because it "shows that the additional emissions estimates are not as hard to obtain as Region 10 implies," and because once the Region assesses the accuracy of the inventory it can "use the information to conduct an EJ analysis that accounts *for all* of Shell's emissions." ICAS Petition at 35 (emphasis in original).

Nowhere in its petition does ICAS acknowledge the Region's statement, in the Response to Comments, that "[t]he Exploration Plan * * * does not include estimates of air emissions from these other vessels during the time they are more than 25 miles from the Kulluk or before the Kulluk becomes an OCS source." RTC at 15. The Board has consistently stated that, in order to sustain its burden of demonstrating that review is warranted, the petitioner must address the permit issuer's responses to relevant comments made during the permit proceeding. *See, e.g.*, *Peabody*, 12 E.A.D. at 33 ("[T]he petitioner may not simply reiterate comments made during the public comment period, but must substantively confront the permit issuer's subsequent explanations.").

Furthermore, ICAS's suggestion that the Region should "compile rough estimates" of these mobile source emissions because "[s]ome additional steps are particularly necessary here" is similarly unavailing. ICAS Petition at 36. ICAS has acknowledged its ongoing concern regarding emissions that are not included in the PTE analysis, along with its efforts to compel Region 10 to consider non-PTE emissions as OCS source emissions in prior appeals to this Board. ICAS Petition at 34. Despite its concerns, ICAS cannot demonstrate that review is warranted where, as here, ICAS offers a generalized objection to the Region's consideration of mobile sources in the environmental justice analysis, and the Region has demonstrated that it lacks sufficient data to reach a determinative conclusion regarding these mobile source emissions in the environmental justice context. *See Avenal*, 15 E.A.D. at 401-02; *see also In re Cape Wind Assocs., LLC*, 15 E.A.D. 327, 330 (EAB 2011) (noting that petitioners "must raise specific objections to the permit"); *In re BP Cherry Point*, 12 E.A.D. 209, 217 (EAB 2005) (same).

[69] In a memorandum addressing environmental justice in the permitting context, the Agency stated:

> Unlike PSD/[New Source Review] permitting, Title V generally does not impose substantive emission control requirements, but rather requires all applicable requirements to be included in a Title V operating permit. * * * Because Title V does not directly impose substantive emissions control requirements, it is not clear whether or how EPA could take environmental justice issues into account in Title V permitting – other than to allow public participation to serve as a motivating factor for applying closer scrutiny to a Title V permit's compliance with applicable CAA requirements.

Memorandum from Gary Guzy, General Counsel, U.S. EPA, to Assistant Administrators, U.S. EPA, *EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting* 13 (Dec. 1, 2000) (A.R. FF-7).

Despite the fact that mobile source emissions are not regulated under the Title V permit, the Region did go beyond its required review to consider mobile source emissions with respect to environmental justice in the Response to Comments. *See* RTC at 114-15. The Region was unable to reach a determinative conclusion with respect to these emissions due to insufficient information.

ICAS's attempt to construe the Executive Order and Board precedent to *require* in this instance the analysis of emissions from mobile sources that the Region may not have accurate or sufficient data to complete in the context of a Title V permit is unpersuasive. Notably, the Board has held that it will decline to review a permit issuer's environmental justice analysis that cannot reach a determinative conclusion due to the insufficiency of available valid data. *See* RTC at 115; *Avenal*, 15 E.A.D. at 401-02 (stating that where a permit issuer conducts a substantive environmental justice analysis that endeavors to include and analyze data that is germane to the environmental justice issue raised during the comment period, and the permit issuer demonstrated it exercised its considered judgment when determining that it cannot reach a determinative conclusion due to the insufficiency of available data, the Board will decline to grant review of the environmental justice analysis). Moreover, "[t]he plain language of the Executive Order imparts considerable leeway to federal agencies in determining how to comply with the spirit and letter of the Executive Order." *Avenal*, 15 E.A.D. at 401. ICAS overreads *Avenal* when it suggests that *Avenal* compels the analysis of these mobile source emissions in the context of this permit. *See* ICAS Petition at 35 ("The Agency has considered mobile emissions previously in its EJ analyses and should be required to do so here." (citing *Avenal*, 15 E.A.D. at 399)).[70]

ICAS's challenge also fails because ICAS never responded to the Region's stated rationale in the administrative record that Title V permits generally do not impose new substantive air quality control requirements. A petitioner cannot sim-

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[70] ICAS includes a citation to *Avenal* for the proposition that "motor vehicle emissions are by far the greatest concern," in support of its contention that mobile source emissions should be included in the short-term NO_2 NAAQS assessment included in the environmental justice analysis, but the quote is taken out of context and does not support ICAS's position. *See* ICAS Petition at 35. The circumstances in *Avenal* are markedly different than those in the present case. In *Avenal*, the Agency conducted an environmental justice analysis that focused in particular on short-term NO_2 impacts in support of a PSD permit to build a 600-megawatt power plant. 15 E.A.D. at 399. The Agency noted that in the area surrounding the proposed site for the new source, motor vehicles accounted for 91% of NO_2 emissions locally, as compared to 61% of NO_2 emissions nationwide. *Id.* In addition, the environmental justice analysis in *Avenal* noted that the area surrounding the proposed facility was designated as extreme nonattainment for ozone, and NO_2 is a precursor emission. *Id.* Finally, the Agency further explained that NO_2 concentrations on or near major *roadways* have appreciably higher emissions than those measured at monitors in the Agency-approved network. *Id.* ICAS has not demonstrated that the need to assess NO_2 impacts from mobile sources in *Avenal*, where NO_2 emissions near roadways were known to be much higher, translates into a requirement that the Agency account for these mobile emissions on the Arctic OCS to demonstrate that its environmental justice analysis is sufficient.

ply repeat comments made during the comment period, but must substantively confront the permit issuer's substantive explanations in order to demonstrate that review of a particular issue is warranted. *Peabody*, 12 E.A.D. at 33.

Further, ICAS's assertion that the Region failed "to *analyze* the impacts of Shell's emissions on subsistence hunters and fishers while offshore," is unsupported by the record. ICAS Petition at 36-37 (emphasis in original); *see also Shell Discoverer 2012*, 15 E.A.D. at 500. The environmental justice analysis stated that mobile source emissions will dissipate while vessels are in transit, RTC at 115, and the environmental justice analysis analyzed how the subsistence areas located in close proximity to Shell's lease blocks might be affected by Shell's OCS activities. EJ Analysis at 5; *id.* at 6 (discussing distances subsistence hunters, whalers, and fishermen have traveled offshore in search of subsistence foods); *id.* at 4 (depicting subsistence use areas mapped over Shell exploration plan well sites). In addition to demonstrating compliance with the applicable NAAQS, the Region conducted an environmental justice analysis that included and analyzed data that is germane to the environmental justice issues raised during the comment period. *See Shell 2010*, 15 E.A.D. at 160-61 n.87. Although ICAS may disagree with the contents or conclusions of the Region's environmental justice analysis, ICAS has not demonstrated that this difference in opinion equates to an insufficient effort on the Region's part regarding environmental justice, or that the Region failed to analyze impacts. *See Shell Discoverer 2012*, 15 E.A.D. at 500.

Finally, ICAS enumerates several problems with the Region's environmental justice analysis that amount to challenges to the Region's technical expertise. *See* ICAS Petition at 37; Region Response at 43-44; *see also Shell 2012*, 15 E.A.D. at 500-01. Without elaborating any further, ICAS expresses "significant concerns" with, among other things, installed NO_2 controls and their ability to function properly in cold weather, the use of generic NO_x/NO_2 ratios in lieu of actual source tests, the use of "diurnal pairing" of NO_2 data, and the need for additional "tracer experiments" to supply data for the AERMOD model. ICAS Petition at 37. It is axiomatic that a challenge to the fundamental technical expertise of a permit issuer requires a petitioner to overcome a particularly heavy burden, and that a successful challenge to a permit issuer's technical expertise must consist of more than just a difference of opinion. *Shell 2012*, 15 E.A.D. at 501; *accord In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3rd Cir. 1999). Here, ICAS has failed to overcome this particularly heavy burden because it does nothing more than list its broad objections to the Region's environmental justice analysis.

3. *Ozone NAAQS Analysis*

ICAS also challenges the Region's compliance with its obligation under the Executive Order based on the Region's alleged failure to adequately address both the latest scientific findings regarding ozone and the potential impacts of ozone on

local communities. ICAS Petition at 31. ICAS's assertions focus in large part on the Region's decision to demonstrate compliance with the current 8-hour ozone NAAQS, which is set at 0.75 parts per million ("ppm"), as opposed to the range of 0.60 to 0.70 ppm for the 8-hour ozone NAAQS that EPA's Administrator proposed in January 2010 but never finalized. *See id.* at 30-34; Region Response at 40-42; RTC at 96-98, 119-20. On September 2, 2011, four days before the close of the public comment period and prior to the Region issuing the Permit, the President requested that the Administrator withdraw the proposed 8-hour ozone NAAQS standard and instead enforce the current 8-hour ozone standard of 0.75 ppm until the ozone standard is reconsidered again in 2013. Statement on the Ozone National Ambient Air Quality Standards, 2011 Daily Comp. Pres. Doc. 607, at 1 (Sept. 2, 2011), *available at* http://www.gpo.gov/fdsys/ (click on Compilation of Presidential Documents). ICAS also asserts that the Region's conclusion not to model emissions from ozone precursors based on available background data that does not account for the cumulative impacts of proposed activities on the Arctic OCS was in error, and that the Region's response to its comments regarding ozone were inadequate. ICAS Petition at 33.

The Region responds that ICAS's petition raises issues that are largely technical, and that the Region appropriately relied on the Agency's current legal standard of 0.75 ppm when assessing Shell's compliance with the 8-hour ozone NAAQS. Region Response at 40. The Region further asserts that it exercised its technical expertise to determine that ozone levels in the area were not expected to exceed even the lowest level of 0.60 ppm that EPA included in its proposed 8-hour ozone NAAQS. *Id.* at 42. Finally, the Region asserts that it appropriately responded to comments received, including comments specifically raising concerns about the cumulative impacts of proposed OCS operations with respect to attaining the ozone NAAQS. *Id.*

Although ICAS argues to the contrary, the current, enforceable 8-hour ozone NAAQS that Shell must demonstrate compliance with is 0.75 ppm. As this Board has stated previously, "[a] permit issuer must apply the statutes and implementing regulations in effect at the time the final permit decision is made." *Russell City II*, 15 E.A.D. at 81 n.98 (quoting *In re Phelps Dodge Corp.*, 10 E.A.D. 460, 478 n.10 (EAB 2002)). The Region's decision to require Shell to comply with the 0.75 ppm 8-hour ozone NAAQS is consistent with applicable law and the corresponding regulations in effect at the time the Region issued the Permit.

In addition, ICAS does not demonstrate that the Region's analysis of the impacts the 8-hour ozone NAAQS may have on Alaska Natives residing on the North Slope would result in a disproportionately high or adverse impact on the

health of Alaska Natives.[71] In the Response to Comments supporting the Permit, the Region stated that it "stands by its decision" to forego regional photochemical modeling and further explained that "Region 10 reviewed ozone monitoring data along with existing precursor emissions that will impact ozone formation. Based on this review, Region 10 determined further analysis of ozone was not warranted." RTC at 97. In addition, the Region explained that the most recent ozone data indicates that current ozone levels in the Beaufort Sea are well below 0.60 ppm, which represents the low end of the range of the proposed 8-hour ozone NAAQS.[72] *Id.* at 97-98, 120.

Finally, ICAS's assertion that the Region failed to consider the cumulative impacts of emissions from proposed Arctic OCS operations is unavailing. *See* ICAS Petition at 33. ICAS's petition for review not only lacks any further support for this statement, it also fails to substantively confront the Region's explanation in the Response to Comments. *See Peabody*, 12 E.A.D. at 33 (petitioner must

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[71] ICAS's assertion that in the context of an environmental justice analysis the Region's treatment of the 8-hour ozone standard in the current appeal is analogous to the Region's treatment of the newly promulgated 1-hour NO_2 NAAQS in *Shell 2010* must also fail. *See* ICAS Petition at 32. As the Board recently explained, the context of the challenge to the environmental justice analysis in *Shell 2010* was unusual in that the OCS PSD permits at issue were finalized in the interim between the Administrator's publication of the final rule establishing the hourly NO_2 NAAQS in the Federal Register on February 9, 2010, and the effective date of the new hourly NO_2 standard, April 12, 2010. *Avenal*, 15 E.A.D. at 401. The Board emphasized that the environmental justice aspect of the *Shell 2010* remand order turned on the Region's scant environmental justice analysis, which provided no examination or analysis of short-term NO_2 impacts whatsoever. *Id.*

Here, the Region not only analyzed impacts from ozone emissions, *see* RTC at 96-98, 119-20, it further explained that current levels of ozone in the area are well below the low end of the range EPA had requested comment on in the proposed ozone NAAQS, and that emissions of ozone precursors would also not lead to an exceedance of the low range of the proposed ozone NAAQS. *Id.* at 120; *see also* Region Response at 41 n.37 (noting that the discussion of ozone in the Region's environmental justice analysis was brief, but that both the Response to Comments and the technical support document contained in the administrative record provide more detailed discussions of the Region's determination regarding ozone). Of equal importance, and unlike the events leading up to the Board's remand order in *Shell 2010*, in this instance the Agency has not made a final determination or issued a final rule stating that the current 8-hour ozone standard is inadequate. *See* Region Response at 41. ICAS has not demonstrated that the Region's consideration of the ozone NAAQS in the current appeal warrants Board review based on similarities to the Region's treatment of the hourly NO_2 NAAQS in *Shell 2010*.

[72] ICAS challenges the Region's conclusion not to model emissions of ozone and ozone precursors, and alleges that the "limited background data" that exists does not demonstrate that current ozone levels are well below the proposed ozone NAAQS. ICAS Petition at 33. ICAS does not provide any citation or reference as support for this statement, which amounts to a challenge to the Region's technical expertise. This Board recently stated that "it is axiomatic that a challenge to the fundamental technical expertise of a permit issuer requires a petitioner to overcome a particularly heavy burden, and that a successful challenge to a permit issuer's technical expertise must consist of more than just a difference of opinion." *Shell Discoverer 2012*, 15 E.A.D. at 501 (citing *Shell 2011*, 15 E.A.D. at 203, and *NE Hub*, 7 E.A.D. at 567). ICAS's bald assertion that background ozone data was limited and does not support the Region's conclusions cannot overcome this particularly heavy burden.

demonstrate why a permitting authority's response to objections made during the public comment period warrants review). In this instance, the Region explained:

> [T]he Clean Air Act permitting programs are essentially 'first come, first served' programs and each subsequent permitting action needs to account for all of those that went before but not any actions that will occur subsequent to that action. The permits for the Discoverer drill ship in the Chukchi Sea and Beaufort Sea are the first permits in their respective vicinities and they only need to assess their impacts on the existing air quality situation.
>
> The Kulluk drill rig in the Beaufort Sea is the second permit and EPA has addressed cumulative impacts by including conditions in the permit that prevent Shell from operating the Kulluk drill rig and the Discoverer drill ship in the Beaufort Sea during the same drilling season. Permit Condition D.4.8. As such, only one of the two drill rigs can operate in the Beaufort in any year so there will be no overlapping impacts with respect to compliance with short[]term NAAQS. * * *
>
> As discussed above, ConocoPhillips has withdrawn its permit application for operation of a jack-up drill rig in the Chukchi Sea.

RTC at 101; *see also* EJ Analysis at 14 (reporting total maximum modeled concentrations for criteria pollutants in Kaktovik and Nuiqsut, which account for both the *Discoverer*'s operation and background concentrations); Region Response at 42 n.39 (noting that "[p]otential OCS operations in the Chukchi Sea and the Beaufort Sea are over 200 miles apart at the closest point"). Aside from its plain statement that the Region did not consider the emissions from all proposed OCS operations, ICAS does not address the Region's response to its comment, and thus cannot demonstrate that this issue warrants Board review. *Peabody*, 12 E.A.D. at 33.

4. *Oil Spill Response Capabilities*

Mr. Lum asserts that EPA has failed to require Shell to demonstrate its oil spill response capabilities in "clear, windy, broken ice and sheet ice conditions." Lum Petition at 1-2. The Region responds that this issue is outside the scope of these permit proceedings and thus is not properly subject to review. Region Response at 47.

The Board has previously emphasized that "[t]he PSD review process is not an open forum for consideration of every environmental aspect of a proposed project, or even every issue that bears on air quality."[73] *In re Knauf Fiber Glass GmbH*, 8 E.A.D. 121, 127 (EAB 1999) ("*Knauf I*"), *quoted in In re Sutter Power Plant*, 8 E.A.D. 680, 688 (EAB 1999); *see also In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 259-60 (EAB 1999). The Board has jurisdiction "to review issues directly related to permit conditions that implement the federal PSD program," *Sutter*, 8 E.A.D. at 688, but will deny review of issues not governed by the PSD regulations because it lacks jurisdiction over them. *Id.*; *see also Encogen*, 8 E.A.D. at 259 (noting that petitioners had not shown how the issues they requested the Board to review fell within the Board's PSD jurisdiction). Moreover, there are often other regulatory programs in place that may address environmental concerns that fall outside the Board's scope of review. *Knauf I*, 8 E.A.D. at 162; *see also Shell 2007*, 13 E.A.D. at 405 n.66.

EPA's jurisdiction over portions of the OCS applies to air emissions subject to the CAA and its implementing regulations. In this instance, BOEMRE[74] is responsible for implementing regulations that address oil spill and response capabilities.[75] The Board does not have jurisdiction to consider Shell's oil spill and re-

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[73] As noted above, see Part VI.A.1.a, the OCS air regulations require that OCS permit proceedings follow the procedures used to issue PSD permits contained in 40 C.F.R. part 124. 40 C.F.R. § 55.6(a)(3).

[74] As the Board has noted in previous *Shell* decisions, in May 2010 the Secretary of the Department of the Interior ("DOI") signed a Secretarial Order reorganizing the former Minerals Management Service ("MMS") into three independent entities to better carry out its three missions of: (1) improving the management, oversight, and accountability of activities on the OCS; (2) ensuring a fair return to the taxpayer from offshore royalty and revenue collection and disbursement activities; and (3) providing independent safety and environmental oversight and enforcement of offshore activities. *Shell 2012*, 15 E.A.D. at 492 n.29; *see also Shell 2010*, 15 E.A.D. at 112 n.7; U.S. DOI, Departmental Manual, pts. 118 & 119, ch. 1 (Sept. 30, 2011), *available at* http://elips.doi.gov/app_dm/dm.cfm ("Departmental Manual") (establishing the creation, authorities, objectives, and reporting relationships for the Bureau of Ocean Energy Management ("BOEM") and Bureau of Safety and Environmental Enforcement ("BSEE")). BOEMRE assumed all of MMS's responsibilities in the interim until the full implementation of the reorganization into the three separate entities was complete. *Shell 2012*, 15 E.A.D. at 492 n.29; *see Shell 2010*, 15 E.A.D. at 112 n.7. The transfer of the revenue collection function to the Office of Natural Resources Revenue was completed on October 1, 2010. *See* Secretary of the Interior, U.S. DOI, Order No. 3306, *Organizational Changes Under the Assistant Secretary – Policy, Management and Budget* (Sept. 20, 2010), *available at* http://elips.doi.gov/app_SO/so.cfm; Departmental Manual, pt. 112, ch. 34 (Apr. 15, 2011). One year later, on October 1, 2011, the reorganization was completed when BOEMRE was replaced by BOEM and BSEE. *See* Departmental Manual, pts. 118 & 119. For consistency the Board refers to BOEMRE because the Permit and the supporting documentation refer exclusively to BOEMRE.

[75] On August 4, 2011, BOEMRE (now BOEM, see note 74 above) conditionally approved Shell's exploration plan for the Beaufort Sea. Letter from Jeff Walker, Regional Supervisor, Field Operations, Alaska OCS Region, BOEMRE, U.S. DOI, to Susan Childs, Shell Offshore, Inc. (Aug. 4,

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sponse capabilities in the Arctic OCS, and thus, the Board denies Mr. Lum's petition for review on these grounds.

5. *Impacts of Air Emissions on Traditional Subsistence Food Sources*

Mr. Lum asserts that the *Kulluk*'s operations in the Beaufort Sea will introduce toxins into the ocean "via the exhaust [from the *Kulluk*] that settles down into it," and contaminate the marine mammals and fish the coastal Inupiat consume as part of their indigenous diet. Lum Petition at 2-3. Mr. Lum continues that this will not only contaminate the food supply but also alter traditional Inupiat culture. *Id.* The Region responds that this issue is outside the scope of these permit proceedings and thus is not properly subject to Board review. Region Response at 47. The Board construes Mr. Lum's assertions as a challenge to the adequacy of the Region's compliance with the Executive Order.

Mr. Lum also raised this issue in the appeals that led to the Board's *Shell Discoverer 2012* decision. *See* 15 E.A.D. at 502. In *Shell Discoverer 2012*, the Board denied review on procedural grounds because the impacts of air emissions on traditional subsistence food sources was not raised at the time of the first appeals.[76] *Id.* In the current appeal, Mr. Lum timely submitted comments on this issue and thus his petition for review is procedurally sound. *See* Lum Comments at 1. The Board, however, has previously held that "[i]mpacts on subsistence hunting and fishing are outside the scope of the PSD program and therefore the Board's jurisdiction." *Shell 2007*, 13 E.A.D. at 405 n.66 (citing *Knauf I*, 8 E.A.D. at 161-62), *quoted in* RTC at 125. The Board does not have jurisdiction to consider the impacts of air emissions on traditional subsistence food sources and Inupiat culture, and thus, the Board denies Mr. Lum's petition for review on these grounds.

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2011) [hereinafter Beaufort EP Letter]. The approval of the Beaufort Sea exploration plan was conditioned, among other things, on Shell submitting to BOEMRE prior to the commencement of exploratory drilling operations documentation regarding the subsea well capping and containment system Shell has committed to have at its disposal. *Id.* at 3. Specifically, Shell must "submit documentation on the procedures for deployment, installation, and operation of the system under anticipated environmental conditions, including the potential presence of sea ice for approval by BOEMRE. Shell will also be required to conduct a field exercise to demonstrate Shell's ability to deploy the system." *Id.*

[76] As mentioned above, the Board remanded to the Region two OCS PSD permits in December 2010. *See generally Shell 2010*, 15 E.A.D. at 161-62. In the subsequent appeals of the permits issued upon completion of remand proceedings, the Board unequivocally stated that "in the current appeals, '[n]o new issues may be raised that could have been raised, but were not raised,' in the previous appeals." *Shell Discoverer 2012*, 15 E.A.D. at 477 (quoting *Shell 2010*, 15 E.A.D. at 162).

For all of the foregoing reasons, the Board declines to review the Region's compliance with the Executive Order and applicable Board precedent.

F. *ICAS Has Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Providing 46 Days for Comment on the Draft Permit and in Denying ICAS's Request for Nonoverlapping Comment Periods*

ICAS claims that the Region "committed clear legal error by failing to provide the public an adequate opportunity to comment on" the draft permit.[77] ICAS Petition at 6. More specifically, ICAS alleges that the Region failed to meet the parts 71 and 124 procedural requirements that require permit issuers to "allow *at least* 30 days for public comment" on draft permits. *Id.* at 7 (citing 40 C.F.R. §§ 71.11(d)(2)(i), 124.1) (emphasis added by Petitioners). Although ICAS acknowledges that the comment periods for the Permit ran from July 22, 2011, to September 6, 2011, an interval of 46 days, ICAS contends that, because the Region issued the draft *Kulluk* permit for comment at the same time it issued another draft minor source air permit for comment and in the middle of comment periods for two major source air permits for another Shell drillship,[78] in reality, ICAS only "had 16 days to comment on each of the[] permits," rather than the required minimum of 30. *Id.* at 7. This is because, according to ICAS, it "does not have the resources to comment on more than one air permit at a time." *Id.* ICAS further claims that "the short and overlapping comment periods * * * deprived [them] of a meaningful opportunity to comment on Shell's new air modeling results." *Id.* at 8.

In a related argument, ICAS asserts that the Region clearly erred in denying its request that the Region "hold nonoverlapping comment periods on the OCS permits and [] provide 45 days to comment on each permit." *Id.* at 8-9. ICAS claims that it met the regulatory standard for demonstrating the need for additional time to prepare comments. *Id.* (referring to the standard at 40 C.F.R. § 71.11(g)); *see also id.* attach. 8 (Letter from Harry Brower, Chairman, Alaska Eskimo Whaling Commission ("AEWC"), et al., to Doug Hardesty, Air Permits Project Manager, U.S. EPA Region 10 (June 15, 2011) (A.R. C-487)) (AEWC and ICAS request for nonoverlapping comment periods) [hereinafter ICAS Let-

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[77] The Board also considers ICAS's claim under an abuse of discretion standard. *See infra* note 80.

[78] The Region had issued two draft permits for Shell's *Discoverer* drillship earlier in July of 2011. *See Shell Discoverer 2012*, 15 E.A.D. at 480. The comment period for those two permits ran from July 6 to August 5, 2011. *Id.*; ICAS Petition at 7. In addition, on the same date the Region had issued the *Kulluk* draft permit, it had also issued a draft permit for ConocoPhillips to operate a jackup drill rig in the Chukchi Sea. ICAS Petition at 7. The comment period for this permit originally ended at the same time as the *Kulluk* draft permit, but was later extended to September 21, 2011. ICAS Petition at 8-9; RTC at 7.

ter]; *id.* attach. 9 (Letter from Richard Albright, Director, Office of Air, Waste, & Toxics, U.S. EPA Region 10, to Harry Brower, AEWC Chairman, et al. (July 21, 2011) (A.R. C-532)) (EPA response).

The part 71 procedural regulation governing public notices and public comment periods specifically provides that "[p]ublic notice of the preparation of a draft permit * * * shall allow at least 30 days for public comment." 40 C.F.R. § 71.11(d)(2)(i). The part 124 procedural regulations, which also apply to the Permit,[79] contain the same language. *See* 40 C.F.R. § 124.10(b). The Board has traditionally read these regulations to establish a minimum comment period length of 30 days, recognizing that the regulations clearly allow the permit issuer, in its discretion, to grant a longer comment period. *Shell Discoverer 2012*, 15 E.A.D. at 520-21 (discussing the applicable part 124 regulation); *see also In re Genesee Power Station*, 4 E.A.D. 832, 841 (EAB 1993) (noting that the part 124 regulation governing public comment periods "only require[s them] to last 30 days"). In addition, as ICAS points out, part 71 contains a separate provision specifically authorizing a permit issuer to grant additional time. It states that "[a] comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted to the extent that a commenter who requests additional time demonstrates the need for such time."[80] 40 C.F.R. § 71.11(g)).

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[79] As the Region explained, the Permit is subject to the procedural requirements of both part 55 (and consequently part 124) as well as part 71:

> The portion of this permit that is a Part 71 permit (e.g., the portion of the permit that applies on the Outer OCS) is issued under 40 CFR Part 55 and 40 CFR Part 71 and subject to the procedural requirements of 40 CFR Part 71 as provided in 40 CFR § 71.4(d). The portion of this permit that is a COA Title V permit and a COA minor source permit (e.g., the portion of the permit that applies on the Inner OCS) is issued under 40 CFR Part 55 and, in the absence of other applicable procedures, subject to the permit issuance procedures for PSD permits under 40 CFR Part 124, Subpart A and C. *See* 40 CFR §§ 55.6(a) (3) and 124.1.

RTC at 6 n.3.

[80] Because the regulations authorize the permit issuer to grant a longer comment period upon an adequate showing of need, the Board also considers ICAS's challenge under an abuse of discretion even though ICAS did not clearly present its challenge as such, alleging instead only "clear error." *See Shell Discoverer 2012*, 15 E.A.D. at 521 (considering similar argument as raising an abuse of discretion claim); *In re Guam Waterworks Auth.*, 15 E.A.D. 437, 443 n.7 (EAB 2011) (explaining Board's standard in reviewing claims involving a permit issuer's exercise of discretion); *In re Desert Rock Energy Co.*, 14 E.A.D. 484, 530 (EAB 2009) (using an abuse of discretion standard where the permit issuer had "broad discretion" in making the challenged determination). The Board similarly reads ICAS's challenge to the Region's denial of nonoverlapping comment periods as raising an abuse of discretion claim.

In the present case, the Region provided a 46 day public comment period for the *Kulluk* draft permit, albeit a comment period that partially overlapped with several other comment periods. The Region, in its Response to Comments, provided a lengthy, well-reasoned explanation for its establishment of a 46 day comment period for the *Kulluk* permit and for its denial of ICAS's request for nonconcurrent comment periods. *See* RTC at 5-8. In addressing comments on these topics, the Region pointed out that it had granted a period longer than the regulatory minimum for this permit and had also extended the comment period for one of the other permits, the ConocoPhillips permit. *Id.* at 6; *accord id.* at 7. The Region further noted that the ConocoPhillips permit, for which it had extended the comment period to 60 days, was for a proposed 2013 operation, whereas Shell "intends to begin its exploratory drill operations with the Kulluk in July 2012." *Id.* at 7. The Region also enumerated the many steps it had taken before and during the public comment period "to promote meaningful public involvement." *Id.* at 6.

In addition, the Region observed that, while "it agree[d] with the commenters that some aspects of the Draft Permit are technically and legally complex," on the other hand, "[t]he comments submitted * * * demonstrate[d] that the public was able to review, evaluate, and comment on many complex issues during the comment period provided." RTC at 8. The Region noted that among the more than 14,500 public comments it had received, a number of them had contained "substantive comments on, among other issues, the definition of OCS Source, limits on the source's potential to emit, choice of model, modeling data, ambient air boundary, source testing, emission factors, air quality analysis, applicability of increments and visibility, and cumulative impacts." *Id.* Accordingly, the Region believed that "[t]he volume of comments received and the substantive issues addressing technically and legally complex issues demonstrate[d] that the public was able to meaningfully review and comment on the Draft Permit." *Id.*

The Region also explained that "40 CFR § 71.7(a)(2) requires that it take a final action on a Title V permit application within 18 months of receiving a complete application. In conducting the permitting process, Region 10 must strike a balance between its obligation to provide for meaningful public participation and its responsibility to make a final permitting decision in a timely manner." *Id.* Based on all these factors, the Region had determined that "the commenters have not demonstrated that a period of more than 46 days is necessary to give the public a reasonable opportunity to comment." *Id.* at 7 (citing 40 C.F.R. §§ 71.11(g) and 124.13).

In its petition, ICAS does not explain why the Region's response to these comments is clearly erroneous or an abuse of discretion. In fact, ICAS does not even address the Region's response. ICAS's failure to address the Region's response is, in and of itself, sufficient to deny its claims of procedural error con-

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cerning the comment period.[81]

Nevertheless, even if the Board considered ICAS's claim of procedural error, the Board would deny review of this claim for several reasons. First, the length of time the Region provided for comment on this permit – 46 days – is 16 days more than the regulatory minimum required by 40 C.F.R. §§ 71.11(d)(2)(i) and 124.10(b). It is also one day more than the amount of time ICAS had specifically requested for each permit in its letter.[82] *See* ICAS Letter at 2 (requesting nonconcurrent comment periods of 45 days). ICAS's attempt to recalculate the length of the comment period as "16 days" based on an unexplained mathematical formula involving the number and lengths of other comment periods is unconvincing and does not demonstrate clear error. *See Shell Discoverer 2012*, 15 E.A.D. at 521; *see also Russell City II*, 15 E.A.D. at 95-98 (denying review of a procedural error claim where petitioners fail to point to a part 124 procedural regulation that was violated); *Knauf II*, 9 E.A.D. at 17 (denying review where the permit issuer fulfilled the applicable regulatory obligations, but did not go beyond those requirements).

Furthermore, while it is true that the Region did not grant ICAS's request for nonoverlapping comment periods, ICAS has not pointed to any regulations that prohibit the Agency from issuing concurrent permits or that require – or even specify – a different comment period length when the Agency does issue concurrent permits. To the contrary, the relevant regulations authorize the Agency to issue a single public notice to "describe more than one permit or permit actions," 40 C.F.R. §§ 71.11(d)(1)(iii), 124.10 (a)(3), without mentioning a different time frame for public comment when concurrent permits are issued. While section 71.11(g) authorizes the Agency to extend a particular comment period on a case-by-case basis where a commenter has demonstrated the need for additional time – which would thereby provide an avenue for commenters to obtain longer comment periods in situations where comment periods overlap[83] – the provision does not prohibit, or even mention, overlapping comment periods.

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[81] As the Board discussed above in Part III, a petitioner must explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. "[A] petitioner's failure to address the permit issuer's response is fatal to its request for review." *In re Indeck-Elwood LLC*, 13 E.A.D. 126, 143, 170 (EAB 2006); *accord Russell City II*, 15 E.A.D. at 10.

[82] Notably, therefore, for this permit, by providing a longer comment period, the Region did in essence partially grant ICAS's request.

[83] And, in this case, the Region did, provide additional time for comment on two of the permits whose comment period overlapped. The Region increased the comment period for the Shell *Kulluk* permit to 46 days and the comment period for the ConocoPhillips permit to 60 days. *See supra* note 78.

Finally, it is clear from the administrative record that the Region appropriately balanced conflicting considerations in deciding on the length of the comment period for this permit and in denying the request for nonoverlapping periods. ICAS has not demonstrated otherwise[84] and has therefore failed to show that the Region clearly erred or abused its discretion in either selecting a 46 day comment period or in denying ICAS's request for nonconcurrent comment periods. *See Shell Discoverer 2012*, 15 E.A.D. at 523 (denying review of a similar claim based on similar facts). Review of the Permit is therefore denied on this issue.

G. *ICAS Has Failed to Demonstrate That the Region Clearly Erred in Its Public Hearing Procedures or That Any of the Alleged Procedural Deficiencies Otherwise Warrant Review*

As noted above in Part V, the Region held two public hearings on the draft permit, one in Barrow, and a second in Anchorage. The Region also held an informational meeting prior to the Barrow public hearing. *See* Statement of Basis at 11 (scheduling informational hearing from 5:00-6:30 pm, public hearing from 7:00-9:00 pm); RTC at 6-7.

ICAS claims that the Region "committed clear legal error by failing to provide the public an adequate opportunity" to participate in the Barrow public hearing. ICAS Petition at 6; *see also id.* at 9-10. ICAS alleges three procedural problems with the Barrow hearing. *Id.* at 9-10. ICAS first claims that the Region continued with the hearing despite difficulties with the teleconference phone system that allegedly impaired the ability of the Region to hear all comments. *Id.* at 9. ICAS next alleges that, "for a significant portion of the hearing," the Region discussed a PowerPoint presentation that was not made available to the public attending the hearing. *Id.* at 9-10. Finally, ICAS contends that the Region failed to sufficiently inform those attending the public hearing that it had procured an

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[84] The Board is unpersuaded by ICAS's argument that it had difficulty locating an expert to review the air modeling. *See* ICAS Petition at 8. As the Region indicated in its Response to Comments, RTC at 8, other commenters provided substantive, technical comments on the air modeling, which suggests that the comment period was sufficient to allow opportunity for meaningful comment. *See Fla. Power & Light Co. v. United States*, 846 F.2d 765, 772 (D.C. Cir. 1988) (upholding a short comment period as sufficient where the agency had received numerous comments, some lengthy, and the comments had had a "measurable impact" on the final rule); *Conference of State Bank Supervisors v. Office of Thrift Supervision*, 792 F. Supp. 837, 844 (D.D.C. 1992) (holding length of comment period not unreasonable especially in light of the comments that plaintiffs and other parties submitted). Furthermore, as the Region points out, it notified ICAS in May that the comment periods would begin in July. *See* Letter from Doug Hardesty, EPA, to North Slope Borough et al. (May 25, 2011) (A.R. HH-1). The Region also conducted three separate informational meetings in Barrow and Kaktovik, Alaska, more than a month prior to the start of the public comment period for the Permit "to inform the North Slope community of the draft permit and to describe opportunities for public participation." RTC at 6.

Inupiat interpreter for the hearing.[85] *Id.* at 10. ICAS asserts that making an interpreter "available in this fashion is akin to not having [one] at all." *Id.*

Part 71 and part 124 each contain a provision governing public hearings. *See* 40 C.F.R. §§ 71.11(f), 124.12. Both public hearing regulations require the permitting authority to hold a public hearing when the permitting authority "finds, on the basis of requests, a significant degree of public interest in a draft permit." *Id.* §§ 71.11(f)(1), 124.12(a)(1). The regulations also authorize the permitting authority to hold a public hearing "at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision." *Id.* §§ 71.11(f)(2), 124.12(a)(2); *accord In re Russell City Energy Ctr.* ("*Russell City I*"), 14 E.A.D. 159, 164 n.6 (EAB 2008). The public hearing regulations also prescribe the method of giving public notice of the hearing, 40 C.F.R. §§ 71.11(f)(3), 124.12 (a)(4), the procedure for designating a presiding officer to preside at the hearing, *id.* §§ 71.11(f)(4), 124.12 (b), and the procedures for the public to comment at the hearing, *id.* §§ 71.11(f)(5), 124.12 (c). Finally, both regulations require that a tape recording or written transcript of the hearing be made publically available. *Id.* §§ 71.11(f)(6), 124.12 (d).

Parts 71 and 124 also both require the permit issuer, in making its final decision, to consider all comments it receives during the public comment period and at any public hearings and to issue a "response to comments." *Id.* §§ 71.11(j), 124.17(a); *see also id.* §§ 71.11(e), 124.11. More particularly, these provisions require the permit issuer to "[b]riefly describe and respond to all significant comments on the draft permit * * * raised during the public comment period, or during any hearing" in the response to comments document issued at the same time the final permit decision is issued. *Id.* §§ 77.11(j)(1)(ii), 124.17(a)(1). Importantly, none of the aforementioned regulations refer to, or in any way mention, a requirement to provide an interpreter or a requirement to provide written materials at the hearing.

Upon review of the administrative record and the parties' arguments, the Board concludes that ICAS has not shown that the Region clearly erred in its handling of the Barrow public hearing for any of the three reasons ICAS advances. Not only does ICAS fail to point to any specific regulatory provision that the Region violated, but none of the alleged problems otherwise warrant Board review. The Board addresses each alleged deficiency in more detail below.

ICAS's first contention – that the Region committed clear error because it was allegedly unable to adequately obtain input from the public due to telecom-

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[85] According to ICAS, although the Region may have noted that an interpreter was available at the top of the hearing's sign-in sheet, it did not make a public announcement of this fact at the outset of the hearing. ICAS Petition at 10; ICAS Reply at 6; *see also infra* note 89.

munication problems during the hearing – is unpersuasive. The Region addressed this concern in its Response to Comments. *See* RTC at 9. There, the Region explained that, because such telecommunication problems are common on the North Slope, it had "recorded the public hearing in addition to having the hearing transcribed by a court reporter. From these *two* sources, Region 10 was able to capture the comments provided during the public hearing." *Id.* (emphasis added); *see also* Public Hearing Transcript ("Pub. Hrg Tr.") at 3 (explaining that the hearing was recorded on the teleconference line as a "safety net"). In response, ICAS merely asserts that "this does not change the fact that people were not able to be heard via phone." ICAS Petition at 9. Significantly, however, ICAS does not identify any comment that the Region failed to hear or for which the Region failed to provide a response.[86] *See id.* at 9; ICAS Reply at 6. Nor has any commenter come forward alleging that the Region failed to respond to his or her public hearing comments. The fact that the call center experienced some telecommunications problems during the public hearing – which the Region appears to have adequately anticipated and addressed by utilizing two methods of note taking – does not, without more, constitute clear legal error. Speculative claims that a permitting authority may have failed to hear a comment are insufficient to warrant Board review.

ICAS's contention that the Region committed clear procedural error by failing to provide pre-meeting copies of a Powerpoint presentation is inapposite. In its response to the petition, the Region explains that this presentation was given during the informational meeting, not during the public hearing. Region Response at 39; *see also* Statement of Basis at 11 (scheduling informational hearing prior to public hearing); RTC at 6-7 (mentioning informational meeting). ICAS does not dispute this.[87] *See* ICAS Reply at 5-7. Furthermore, nowhere do the regulations require a permitting authority to provide informational handouts at an informational meeting (or at a public hearing).[88] Thus, while it may be useful for a permit

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[86] As discussed above, the regulatory requirement is for a permit issuer to respond to significant comments. *See* 40 C.F.R. § 77.11(j)(1)(ii), 124.17(a)(1). Thus, had ICAS identified significant comments raised at the public hearing that the Region failed to address, ICAS's arguments would have been more persuasive. *See, e.g., In re Rockgen Energy Ctr.*, 8 E.A.D. 536, 557 (EAB 1999) (remanding so that permit issuer could demonstrate it had given thoughtful and full consideration to public comments); *In re W. Suburban Recycling & Energy Ctr., L.P.*, 6 E.A.D. 692, 710-12 (EAB 1996) (remanding permit and requiring permit issuer to comply with procedures under part 124 including provision requiring a response to all significant comments received); *see also In re N. Mich. Univ.*, 14 E.A.D. 283, 317-18 (EAB 2009) (discussing part 124 requirement to adequately respond to comments).

[87] The Region's explanation makes sense in light of the purpose of the two meetings. While the permitting authority may present its analyses, findings, and conclusions about the draft permit at an informational meeting, the purpose of the public hearing is to obtain comments *from* the public.

[88] The only document the public hearing regulations require a permit issuer make available to the public is the transcript of the hearing. 40 C.F.R. §§ 71.11(f)(6), 124.12 (d).

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issuer to provide copies of a presentation to the audience attending an informational meeting, failure to do so at the meeting – or at a subsequent public hearing – does not constitute clear error or otherwise warrant Board review.

ICAS's final contention – that the Region committed clear procedural error by not adequately informing the public that an interpreter was available at the public hearing – is also unconvincing. Importantly, as noted above, there is no regulatory requirement for an interpreter in either part 71 or part 124, nor is there a provision specifying the method a permit issuer should use to inform the public of the availability of an interpreter at the public hearing.[89] ICAS has not pointed to any other requirement, regulatory or otherwise, requiring an interpreter or prescribing the method for announcing one. Accordingly, while it may be preferable for the permit issuer to formally announce the availability of an interpreter at the beginning of the public hearing, and in both languages, failure to do so does not constitute clear error or otherwise warrant Board review.

In sum, ICAS has failed to demonstrate that the public hearing procedures utilized by the Region constituted clear error. ICAS has not shown that the Region violated any part 71 or 124 procedural regulation. Moreover, the alleged problems ICAS has identified do not, even if the Board were to find them to constitute a deficiency in some way, warrant Board review. Consequently, the Board denies review of the Permit on this ground.

VII. *CONCLUSION AND ORDER*

For the foregoing reasons, the Board concludes that none of the petitioners have demonstrated that review of Permit No. R10 OCS030000 is warranted on any of the grounds presented. The Board therefore denies review of the Permit.

So ordered.

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[89] The parties seemingly dispute the method in which the Region notified the public of the availability of the interpreter. The Region stated in its Response to Comments that, "[p]rior to the Barrow public hearing, Region 10 contacted [ICAS] to arrange for an Inupiat speaker to be available to provide Inupiat interpretation at the hearing if requested by any participant. At the beginning of the hearing, participants were provided the opportunity to request Inupiat interpretation during the hearing. No participant requested translation and therefore an interpreter was not used." RTC at 10-11. In response, ICAS claims that attendees only recall mention of an interpreter on the sign-up sheet, and only in English. ICAS Petition at 10. ICAS further asserts that the transcript of the public hearing does not indicate that an announcement was made. ICAS Reply at 6. In light of the Board's conclusion on this issue, it is unnecessary to determine the precise methodology the Region used to notify the public of the interpreter's availability.

IN RE TUCSON ELECTRIC POWER

PSD Appeal No. 18-02

ORDER DENYING REVIEW

Decided December 3, 2018

Syllabus

The Sierra Club petitions the Environmental Appeals Board ("Board") to review a decision by the Department of Environmental Quality for Pima County, Arizona ("Pima County") to issue a federal Prevention of Significant Deterioration ("PSD") permit to Tucson Electric Power. The permit authorizes Tucson Electric Power to construct and operate up to ten additional electricity-generating units ("Units") at its Irvington Generating Station facility. Sierra Club challenges Pima County's determination that PSD requirements do not apply to the nitrogen oxide ("NO_x") emissions from the modified facility. Although the permit contains a cap that limits NO_x emissions below the level triggering PSD requirements, Sierra Club argues that the permit's monitoring requirements are not adequate to render the NO_x emissions cap practically enforceable and thus PSD requirements should apply.

The permit imposes several monitoring requirements to verify compliance with the NO_x emissions cap. Those requirements include, among other things: (i) biennial performance (stack) tests to determine how much NO_x each Unit emits; (ii) calculation of monthly and yearly NO_x emissions using information from the required stack tests and monitoring of ongoing operations; and (iii) monitoring of the pollution control devices for the new Units to ensure that the devices are working properly. Pima County concluded that these compliance monitoring requirements were sufficient to make the NO_x emissions cap practically enforceable.

Held: The Board denies Sierra Club's Petition for Review. Sierra Club has not carried its burden of showing that Pima County clearly erred or abused its discretion in determining that the NO_x emissions cap is practically enforceable.

Sierra Club's argument that the NO_x emissions cap is not practically enforceable because the permit's compliance monitoring requirements rely solely on biennial stack tests lacks merit because monitoring of the facility's pollution control devices is also an integral part of the permit's compliance monitoring requirements. Sierra Club's contention that the monitoring of the pollution control devices does not cure the problem with the permit's reliance on biennial stack tests was not preserved for review because that assertion

was not raised during the public comment period. In any event, Sierra Club's contention is not responsive to the role of monitoring of the pollution control devices as described by Pima County. Additionally, Sierra Club does not substantiate its argument that Pima County failed to support in the administrative record its conclusion that the method for calculating monthly and yearly NO_x emissions would likely overstate emissions. Lastly, Pima County adequately responded to Sierra Club's comments on the practical enforceability of the NO_x emissions cap. Pima County responded to Sierra Club's generalized claims on the inadequacy of biennial stack testing to monitor compliance throughout the year by providing a description of all the elements of the permit's compliance monitoring requirements. Given the general nature of Sierra Club's comments, more was not required.

Before Environmental Appeals Judges Aaron P. Avila, Mary Kay Lynch, and Mary Beth Ward.

Opinion of the Board by Judge Ward:

I. *STATEMENT OF THE CASE*

This case involves a challenge by the Sierra Club to a determination in a federal Clean Air Act permit that the Act's Prevention of Significant Deterioration ("PSD") requirements do not apply to the emissions of nitrogen oxides – commonly referred to as NO_x – from a facility owned and operated by Tucson Electric Power ("Tucson Electric"). Potential NO_x emissions from the facility are reduced by pollution control devices, and the permit imposes a limit (or cap) on NO_x emissions consistent with the control devices' ability to reduce emissions. In such circumstances, the applicability of PSD requirements is based on the facility's emission rate, as reduced by the control devices, so long as the cap on the reduced emissions is enforceable as a practical matter. The specific issue presented here is whether the challenged permit's compliance monitoring requirements are sufficient to make the NO_x emissions cap practically enforceable.

In August 2018, the Department of Environmental Quality for Pima County, Arizona ("Pima County") issued a federal PSD permit ("Permit") to Tucson Electric authorizing the construction and operation of up to ten additional electricity-generating units ("Units") at Tucson Electric's Irvington Generating Station facility. Although the expanded facility would emit several pollutants above levels that trigger PSD requirements, the Permit imposes certain requirements as to NO_x emissions that bring those emissions below levels that trigger such requirements. Specifically, the Permit requires two existing electricity-generating units at the facility to be shut down, mandates the use of pollution control devices on the new Units that reduce NO_x emissions, and imposes a NO_x emissions cap consistent with that reduction.

The Permit further imposes monitoring and recordkeeping requirements to verify compliance with the NO_x emissions cap. Those compliance monitoring requirements include, among other things: (i) biennial performance (stack) tests to determine how much NO_x each Unit emits; (ii) calculation of monthly and yearly NO_x emissions using information from the required stack tests and monitoring of ongoing operations; and (iii) monitoring of pollution control devices to ensure that they are working properly. Finding that these compliance monitoring requirements made the NO_x emissions cap practically enforceable, Pima County concluded that PSD requirements do not apply to the new Units as to their NO_x emissions.

In its Petition for Review, Sierra Club argues that the NO_x emissions cap is not practically enforceable – that is, compliance with the cap cannot be verified – because the stack tests are conducted too infrequently, the monthly and yearly emission calculations rely solely on these infrequent stack tests, and the monitoring of pollution control devices does not cure the problem with the infrequent stack tests. As a consequence, Sierra Club contends that PSD requirements should apply to the facility's increased NO_x emissions resulting from its proposed expansion.

We conclude that Sierra Club has not carried its burden of showing that Pima County clearly erred or abused its discretion in determining that the NO_x emissions cap is practically enforceable. The Petition for Review is therefore denied.

II. *PRINCIPLES GOVERNING BOARD REVIEW*

In considering a petition filed under 40 C.F.R. § 124.19(a), the Board first evaluates whether the petitioner has met threshold procedural requirements such as timeliness, standing, issue preservation, and specificity. *In re Indeck-Elwood, LLC*, 13 E.A.D. 126, 143 (EAB 2006). For example, a petitioner must demonstrate that any issues and arguments it raises on appeal have been preserved for Board review (i.e., were raised during the public comment period or public hearing on the proposed permit), unless the issues or arguments were not reasonably ascertainable at the time. 40 C.F.R. §§ 124.13, .19(a)(4)(ii); *see, e.g.*, *In re City of Attleboro*, 14 E.A.D. 398, 405-06, 444 (EAB 2009); *In re City of Moscow*, 10 E.A.D. 135, 141, 149-50 (EAB 2001).

Under part 124, the petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19(a)(4). Ordinarily, the Board will deny review of a permit decision and thus not remand it unless the petitioner demonstrates that the permit decision is based on a clearly erroneous finding of fact or conclusion of law or involves a matter of policy or exercise of discretion that warrants review. *Id.* § 124.19(a)(4)(i)(A)-(B); *see, e.g.*, *In re La Paloma Energy Ctr., LLC*,

16 E.A.D. 267, 269 (EAB 2014). The Board's power to grant review "should be only sparingly exercised," and "most permit conditions should be finally determined at the [permit issuer's] level." Consolidated Permit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980); *see also* Revisions to Procedural Rules Applicable in Permit Appeals, 78 Fed. Reg. 5281, 5282 (Jan. 25, 2013).

When evaluating a permit decision for clear error, the Board examines the administrative record that serves as the basis for the permit to determine whether the permit issuer exercised "considered judgment" in rendering its decision. *See, e.g.*, *In re Steel Dynamics, Inc.*, 9 E.A.D. 165, 191, 224-25 (EAB 2000); *In re Ash Grove Cement Co.*, 7 E.A.D. 387, 417-18 (EAB 1997). Similarly, the Board will uphold a permitting authority's exercise of discretion if that decision is cogently explained and supported in the record. *See, e.g.*, *La Paloma Energy Ctr.*, 16 E.A.D. at 270, 284, 292. The Board does not find clear error or an abuse of discretion simply because petitioner presents a difference of opinion or alternative theory regarding a matter. *See In re Town of Ashland Wastewater Treatment Facility*, 9 E.A.D. 661, 667 (EAB 2001); *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3d Cir. 1999). And on matters that are fundamentally technical or scientific in nature, the Board typically defers to a permit issuer's technical expertise and experience, as long as the permit issuer has adequately explained its rationale and supported its reasoning in the administrative record. *See, e.g.*, *In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 733-35 (EAB 2015), *review dismissed as moot sub nom. DJL Farm LLC v. EPA*, 813 F.3d 1048 (7th Cir. 2016).

III. *STATUTORY AND REGULATORY HISTORY*

The PSD provisions of the Clean Air Act govern air pollution both in "attainment" areas, where the air quality meets or is cleaner than the Environmental Protection Agency's ("EPA") national ambient air quality standards, and in "unclassifiable" areas where EPA has not categorized the air quality as having attainment or nonattainment status. Clean Air Act ("CAA") §§ 160-169, 42 U.S.C. §§ 7470-7479; *see also In re Palmdale Energy, LLC*, PSD Appeal No. 18-01, slip op. at 4-7 (EAB Oct. 23, 2018), 17 E.A.D. ___ (providing in-depth description of the PSD program). In both these areas, the PSD program requires that new "major stationary sources" of air pollutants or "major modifications" to such sources obtain a permit prior to construction.[1] *See* CAA § 165, 42 U.S.C. § 7475; 40 C.F.R.

[1] The actual term in the PSD statutory provisions is "major emitting facility." *See* CAA § 169(1), (2)(C), 42 U.S.C. § 7479(1), (2)(C). The related term "major stationary source" is used elsewhere in the Clean Air Act, *see* CAA § 111(a), (f), 40 U.S.C. § 7411(a),

§ 52.21. Among other things, an applicant for a PSD permit must show that its facility will achieve emission limits attainable by the "best available control technology" for pollutants emitted from the facility above designated levels. CAA § 165(a)(4), 42 U.S.C. § 7475(a)(4); 40 C.F.R. § 52.21(b)(23), (j)(2)-(3).

Under the regulations implementing the PSD program, a "major stationary source" is, among other things, any source from certain source categories (including fossil fuel-fired steam electric power plants such as the facility here) that have the "potential to emit" 100 tons per year or more of any of several regulated pollutants, including NO_x.[2] 40 C.F.R. § 52.21(b)(1)(i). A "major modification" is "any physical change in or change in the method of operation of a major stationary source" that would result in: (1) a "significant emissions increase" of any of such pollutants; and (2) a "significant net emissions increase" of any of such pollutants. *Id.* § 52.21(b)(2)(i). The regulations define a significant emissions increase and significant net emissions increase on a pollutant-by-pollutant basis. *Id.* § 52.21(b)(23), (40). For NO_x, a significant increase and a significant net increase are both defined as an increase of 40 tons per year. *Id.*

A critical aspect of determining whether a new source or the modification of a source would be a major source or major modification, respectively, is ascertaining the new source or modification's "potential to emit" pollutants and whether that potential meets or exceeds designated levels. "Potential to emit" has been defined by regulation as requiring consideration of "[a]ny physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment." *Id.* § 52.21(b)(4). However, the definition makes clear that a pollution control device's limitation on capacity can only be considered in determining a facility's potential to emit "if the limitation or the effect it would have on emissions is federally enforceable." *Id.*

(f). The Act recognizes the similarity between the two terms by defining "major stationary source" and "major emitting facility" as synonymous "[e]xcept as otherwise expressly provided." CAA § 302(j), 42 U.S.C. § 7602(j); *see Chevron, U.S.A., Inc. v. NRDC, Inc.*, 467 U.S. 837, 860 (1984). In implementing the PSD program, EPA uses the terms "major stationary source" and "major modification," 40 C.F.R. § 52.21(b)(1), (2), and, therefore, the Board will use that terminology as well. *See* U.S. EPA, *New Source Review Workshop Manual*, at A.1 (draft Oct. 1990).

[2] The applicable regulation defines these pollutants as including "[a]ny pollutant for which a national ambient air quality standard has been promulgated." 40 C.F.R. § 50.21(b)(50)(i).

Whether a physical or operational limitation on a source's emissions is "federally enforceable" has been interpreted by EPA as meaning that the emission limit reflecting the physical or operational limitation is "enforceable as a practical matter," or "practically enforceable." Memorandum from John S. Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, and Robert I. Van Heuvelen, Dir., Office of Regulatory Enf't, U.S. EPA, to EPA Reg'l Air Div. Dirs., Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act 3 & attach. 3, at 1 (Jan. 25, 1995) ("Seitz Memorandum"); *see also In re Peabody W. Coal Co.*, 12 E.A.D. 22, 32 (EAB 2005). To be practically enforceable, a permit must, among other things, specify "the method to determine compliance including appropriate monitoring, recordkeeping, and reporting." Seitz Memorandum at 6; *cf.* 40 C.F.R. § 49.152 (defining "enforceable as a practical matter" in a similar manner for air quality planning and management in Indian country). To be appropriate, such monitoring, recordkeeping, and reporting must be sufficient to allow a permitting agency to verify a source's compliance with the permit's emission limit. *See In re Shell Offshore, Inc.*, 15 E.A.D. 536, 557, 559 n.25 (EAB 2012) (holding that the permit issuer did not clearly err in concluding that emission limits were practically enforceable because the permit's monitoring requirements provided "the ability to assess and verify compliance"); *Peabody*, 12 E.A.D. at 39-41 (finding no clear error by the permit issuer in determining that the permittee's proposed monitoring requirements were insufficient to make an emission limit practically enforceable because the requirements did not provide "a reliable method of determining compliance"); *In re Pencor-Masada Oxynol, LLC*, Pet. No. II-2001-05, 2002 EPA CAA Title V LEXIS 44, at *16 (Adm'r Apr. 8, 2002) (stating that for an emission limit to be practically enforceable, the permit must contain terms and conditions sufficient "to determine whether the limit has been exceeded").

Pima County's Department of Environmental Quality administers the federal PSD permitting program within Pima County, Arizona pursuant to a delegation from EPA. *See* Agreement for Delegation of Source Review under the Federal Prevention of Significant Deterioration (PSD) Program Set Forth in 40 CFR 52.21 by the United States Environmental Protection Agency, Region 9 to the Pima County Air Quality Control District (June 5, 2018). Accordingly, the Tucson Electric Permit is a federally-issued permit appealable to the Board under section 124.19 of Title 40 of the Code of Federal Regulations. 40 C.F.R. § 124.19(a)(1).

IV. *FACTUAL AND PROCEDURAL HISTORY*

A. *Tucson Electric's Proposed Expansion of the Irvington Generating Station Facility*

Tucson Electric is proposing to expand its fossil fuel-fired steam electric power plant, known as the Irvington Generating Station, by building up to ten new internal combustion engine units ("Units"). Pima Cty. Dep't of Envtl. Quality, *Prevention of Significant Deterioration Air Quality Permit, Permit No. 1052*, at 4 (Aug. 8, 2018) (Administrative Record ("A.R.") 23) ("Permit"). Tucson Electric plans to use these new Units to support increased use of wind and solar-generated electrical power sources. The new Units can compensate for the variability of wind and solar power sources by providing "[r]eliable, efficient, grid-balancing resources which can ramp up quickly and provide 100 percent of their [effective load carrying capability] during multiple peak periods of any length." Tucson Elec. Power, *Application for a Prevention of Significant Deterioration (PSD) Authorization and Significant Revision to Class I Air Quality Permit for Irvington Generating Station* 2-2, 2-5 (July 2017) (A.R. 2) ("Permit Application").

The Irvington Generating Station is a major stationary source subject to the Clean Air Act's PSD program and is in an area designated by EPA as in attainment. Permit at 4. Because the proposed addition of ten new Units would significantly increase potential emissions of several regulated pollutants, this expansion of the facility qualifies as a major modification and triggers PSD requirements. *Id.* Accordingly, Tucson Electric applied to Pima County to amend its existing air quality permit (referred to as a Class I permit) and convert it to a combined PSD permit and Class I permit.[3]

The modified facility would have triggered PSD requirements for its NO_x emissions; however, Tucson Electric requested a limit on NO_x emissions – referred to by the parties as a NO_x emissions cap – for the new Units to keep their emissions below the PSD threshold.[4] *See* Letter from Conrad Spencer, Tucson Elec. Power,

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[3] The Class I permit was required to allow construction and operation of the original facility under the Arizona Administrative Code, *see* Ariz. Admin. Code § R18-2-302, which implements Arizona's operating permits program, authorized by EPA under Title V of the Clean Air Act, 42 U.S.C. §§ 7661-7661f. *See* Clean Air Act Full Approval of the Arizona Operating Permits Program, 66 Fed. Reg. 63,175 (Dec. 5, 2001) (final rule fully approving Arizona's operating permits program).

[4] In the Administrative Record, the limitation on NO_x emissions is described interchangeably as a "cap" and a "limit." *See, e.g.*, Permit at Part B § II.A.1. For clarity

to Rupesh Patel, Pima Cty. Dep't of Envtl. Prot. (Feb. 23, 2018) (A.R. 13) (requesting NO_x emissions cap of 170 tons per year). Tucson Electric also identified in its permit application three other aspects of the modified facility that would curtail NO_x emissions from the new Units or the overall facility. First, each new Unit would be equipped with a selective catalytic reduction device that would substantially reduce NO_x emissions. *See* Permit Application at 2-6, 3-3. Second, the Units would be limited to five startups per day. *See id.* at 2-6. Third, two existing steam-generating units at the facility would be permanently shut down offsetting, in part, the increase in NO_x emissions from the addition of the ten new Units. *See id.* at 2-5, 4-9. In combination, these terms of operation would limit the net increase in NO_x emissions from the expansion of the Irvington facility to an amount that is below the "significant" level of 40 tons per year.[5] Permit at 4.

We describe below: (i) the terms of the proposed combined PSD and Class I permit ("Proposed Permit") noticed for public comment with a focus on the compliance monitoring requirements pertaining to the NO_x emissions cap, *see* Part IV.B; and (ii) Sierra Club's comments on the Proposed Permit and Pima County's response to those comments, *see* Part IV.C.

B. *The Proposed Permit's Requirements Concerning the NO_x Emissions Cap*

In February 2018, Pima County issued the Proposed Permit for public comment. The Proposed Permit included the conditions necessary to restrict NO_x emissions below the level triggering PSD requirements – requiring use of selective catalytic reduction devices on each new Unit, limiting startups of the new Units to five per day, retiring two existing steam-generating units, and a 170 tons per year NO_x emissions cap – and imposed requirements to verify compliance with the NO_x

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and consistency, the Board will use the term "cap" to refer to the limitation on NO_x emissions.

[5] The to-be-eliminated steam units emit approximately 140 tons per year of NO_x. Thus, the replacement of these units with the ten new Units (limited to a combined total of 170 tons per year of NO_x) would result in a net legally-allowed increase of NO_x of approximately 30 tons per year. *See* Pima Cty. Dep't of Envtl. Quality, *Responses to Public Comments* 7 (Aug. 8, 2018) (A.R. 22) ("RTC"). Further, Pima County estimated that the ten Units would emit 152.8 tons per year of NO_x – i.e., less than the 170 tons per year cap – based on the manufacturer's specifications on NO_x emissions from the Units with selective catalytic reduction devices and assuming five startups per day, the maximum allowed under the Permit. Pima Cty. Dep't of Envtl. Quality, *Technical Support Document* attach. B at 2 tbl.B-2 (Aug. 2018) (A.R. 24).

emissions cap. Pima Cty. Dep't of Envtl. Quality, *Proposed Prevention of Significant Deterioration Air Quality Permit, Permit No. 1052*, at 4 & Part B § V.E (Feb. 9, 2018) (A.R. 12.1) ("Proposed Permit").

As to the verification of compliance, the Proposed Permit specified that "[c]ompliance with the NO_x emission [cap] shall be demonstrated by performance tests as detailed in Condition II.D, monitoring as detailed in Condition II.B, and recordkeeping as detailed in Condition II.C." *Id.* at Part B § II.A.1.b. The performance tests, monitoring, and recordkeeping required for compliance are described further below.

First, the Proposed Permit called for performance tests – also referred to as "stack tests" – for each of the new Units to be conducted "using the methods and procedures in 40 C.F.R. § 60.4244 and Table 2 of 40 C.F.R. part 60, subpart JJJJ." Proposed Permit at Part B § II.D.2.a. For NO_x emissions, these stack tests measure "the concentration of NO_x in the engine exhaust" during operation of the facility at periods other than at startup (i.e., non-startup operating periods). 40 C.F.R. § 60.4244(b), (d). Because the selective catalytic reduction devices must be operated "at all times while fuel is flowing to the [Unit], excluding periods of startup," stack tests reflect the impact the selective catalytic reduction devices have on NO_x emissions. *See* Proposed Permit at Part B § II.A.c.

In addition to the regulatory procedures for stack tests, the Proposed Permit specified that the tests "shall be performed at 25, 40, 70, and 100 percent of peak load" or at the minimum and peak load levels based on the prior twelve months of operation. *Id.* at Part B § II.D.2.b. As to the frequency of testing, each Unit must be tested "within 60 days after achieving the maximum production rate, but not later than 180 days after initial startup." *Id.* at Part B § II.D.1. Thereafter, each Unit must be subjected to a stack test "no less frequently than once in each period of two consecutive calendar years," but at least five of the Units must be tested each calendar year. *Id.* This means that each Unit will be tested at least once every two years.

Second, the Proposed Permit imposed several monitoring and recordkeeping requirements to verify continuing compliance with the NO_x emissions cap. These monitoring and recordkeeping requirements established a procedure for calculating monthly and yearly NO_x emissions and a program for ensuring that the selective catalytic reduction devices are operated properly at all times. *See id.* at Part B § II.C.

The Proposed Permit required the calculation of NO_x emissions on a monthly and yearly basis for non-startup and startup operating periods. For non-

startup operating periods, the Proposed Permit required that monthly NO_x emissions be calculated by combining information on NO_x emission rates measured in required stack tests with monitoring data on the operation of the Units. Specifically, the Proposed Permit required that Tucson Electric calculate a NO_x "emission factor" from the most recent stack test expressed in terms of pounds of NO_x emitted per the heat input measured in British thermal units ("BTUs") of natural gas used to power the Unit. *Id.* at Part B § II.D.2.c. Additionally, the Proposed Permit required Tucson Electric to monitor and record the hours of operation of each Unit and natural gas consumption in BTUs during operation. *Id.* at Part B § II.B.1. The Proposed Permit then directed that Tucson Electric calculate monthly NO_x emissions during non-startup operating periods on a Unit-by-Unit basis by multiplying each Unit's emission factor by the BTUs of heat input used by the Unit over the month during these operating periods. *Id.* at Part B § II.C.9.

For startup operating periods, the Proposed Permit required that monthly NO_x emissions be calculated by multiplying the number of startups per Unit in a month by the manufacturer-supplied NO_x rate of emissions for startup ("startup emission rate") of the Unit. *Id.* at Part B § II.C.9. To implement this requirement, the Proposed Permit specified that Tucson Electric monitor the number of startups for all Units and record the number and duration of all startups. *Id.* at Part B § II.B.2, II.C.1. Emission calculations for startup operating periods are then combined with emission calculations for non-startup operating periods to calculate total monthly emissions and a twelve-month (i.e., yearly) rolling average of NO_x emissions. *Id.* at Part B § II.C.9.

Lastly, the Proposed Permit imposed additional requirements as to the selective catalytic reduction devices to assure proper functioning of these devices. These monitoring and recordkeeping requirements included the following: (i) the devices must be maintained and operated in a manner consistent with good air pollution control practice for minimizing NOx emissions; (ii) the catalyst in the devices must be cleaned and replaced according to the manufacturer's recommendations; (iii) two key operating parameters of the devices – ammonia injection rate and temperature – must be monitored and recorded at least once every fifteen minutes; (iv) if ammonia injection to a device fails and cannot be restored in ten minutes, the Unit must be shut down; (v) records must be kept of any instance in which ammonia injection fails for more than two minutes; and (vi) the selective catalytic reduction devices must have a continuous NO_x process monitor (which measures NO_x concentration and adjusts ammonia injection levels to achieve desired NO_x reduction). Proposed Permit at Part B § II.A.1.c, II.B.3, II.C.4; *see* Hug Eng'g, *Operating Manual: Control Unit SNQ* 1 (v03.00 Mar. 6, 2013) (A.R. 12).

C. *Sierra Club's Comments on the Proposed Permit and Pima County's Response*

Sierra Club submitted comments on the Proposed Permit arguing, among other things, that the NO_x emissions cap is not "practically enforceable,"[6] and thus the cap cannot be considered a limitation on the facility's potential to emit NO_x. Sierra Club, *Intent to Approve: Proposed Revision to the existing Air Quality Permit No. 1052 to Tucson Electric Power (TEP) Irvington/H. Wilson Sundt Generating Station (IGS)* 8-9 & attach. at 20 (Mar. 29, 2018) (A.R. 21.2) ("Sierra Club Comments"). Sierra Club contended that absent a practically enforceable limitation on the facility's potential to emit NO_x, Pima County erred in concluding that PSD requirements are not applicable to NO_x emissions. In its comments and in an expert report attached to its comments, Sierra Club advanced three arguments as to why the NO_x emissions cap is not practically enforceable.

First, Sierra Club contended that the Proposed Permit's compliance monitoring for NO_x was inadequate because it relied on stack tests that could be performed as infrequently as every two years. *Id.* at 2, 9. Sierra Club argued that "using stack tests once every two years to determine whether the [Units] are in compliance with the permit is woefully inadequate." *Id.* The expert report attached to Sierra Club's comments asserted that stack tests "may not be representative for emissions during routine operations" because stack tests do not provide data on whether pollution control devices at a facility are functioning at an effective level at times other than when the stack test is performed. *Id.* attach. at 21-22 & n.59 (citing to EPA comment letters on state permits that raise this concern as a reason to require additional compliance monitoring to supplement annual stack tests). The solution, according to the expert report, would be to require Continuous Emissions Monitors. *Id.* attach. at 23. The report argued that without Continuous Emissions Monitors, "community members will not be able to protect themselves against harmful emissions and local, state, and federal regulatory agencies cannot detect and cure violations of permit conditions." *Id.*

Second, Sierra Club argued that the NO_x emissions cap is not practically enforceable because the Permit does not contain an "unambiguous methodology for calculating NO_x emissions from the emission [stack] test." *Id.* attach. at 25; *see*

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[6] Sierra Club uses the term "practicably enforceable" as well as "practically enforceable" in its Petition. *See, e.g.*, Petition for Review of Prevention of Significant Deterioration Permit 1, 6 (Sept. 7, 2018) ("Pet."). But as we see no difference between the two (and Sierra Club does not assert that there is), the Board will use the term "practically enforceable" for clarity and consistency.

also id. at 2, 9. Sierra Club requested that the Proposed Permit "be revised to include an equation that lays out the emission calculation in detail." *Id.* attach. at 25.

Third, Sierra Club asserted that there was no record support for a manufacturer-supplied NO_x emission rate during startup, which was to be used to calculate emissions during startup operating periods. *Id.* at 2, 9 & attach. at 25. Although the Proposed Permit referred to the NO_x startup emission rate as "guaranteed," Sierra Club noted that there was no manufacturer guarantee provided for a startup NO_x emission rate included in an attachment to the draft Technical Support Document. *Id.* attach. at 25.

In August 2018, Pima County issued the Permit and its response to the public comments ("Response to Comments") received on the Proposed Permit, including its response to each of Sierra Club's comments on whether the NO_x emissions cap is practically enforceable.

As to Sierra Club's comment about the adequacy of stack tests for determining continuing compliance with the NO_x emissions cap, Pima County acknowledged that "EPA has indicated * * * that annual [stack] tests alone are insufficient to assure compliance with emission limits." Pima Cty. Dep't of Envtl. Quality, *Responses to Public Comments* 10 (Aug. 8, 2018) (A.R. 22) ("RTC"). However, Pima County explained that the Permit does not rely solely on the results of stack tests to determine compliance. *Id.* Pima County detailed how monthly and yearly NO_x emissions would be calculated using conservative non-startup emission factors and a similarly conservative startup emission rate and how monitoring of the selective catalytic reduction devices would assure that these control devices function properly at all times. *Id.* at 10-13.

In response to the request for an unambiguous methodology in calculating NO_x emissions, Pima County revised the Permit to include "a more detailed compliance determination methodology, expressed in the form of an equation." *Id.* at 13. Pima County noted that "[t]his methodology clearly indicates the emission factors and monitored data that will be used when calculating total NO_x emissions from the engines." *Id.*; *compare* Proposed Permit at Part B § II.C.9 *with* Permit at Part B § II.C.9.

Finally, to address the concern with the manufacturer-supplied startup emission rates, Pima County clarified that it had meant to reference the manufacturer-specified, not manufacturer-guaranteed, startup emission rates, and it amended the Permit accordingly. RTC at 12; *see* Permit at Part B § II.C.9. Further, Pima County admitted it had not included the latest manufacturer data in the

administrative record and explained that it had corrected this error by obtaining a waiver of the manufacturer's confidentiality claim concerning this information and included the information on its website. RTC at 4, 12.

This appeal followed.

V. *ANALYSIS*

In its Petition for Review, Sierra Club renews its challenge to Pima County's determination that the Permit's inclusion of a NO_x emissions cap prevents the addition of the ten new Units to Tucson Electric's Irvington facility from triggering PSD requirements for NO_x emissions. The sole issue that Sierra Club raises on appeal is whether the NO_x emissions cap is practically enforceable.

Specifically, Sierra Club argues (as it did in its comments) that biennial stack tests – used to develop each Unit's emission factor for calculating non-startup operating period emissions – are too infrequent to verify compliance with the NO_x emissions cap. Petition for Review of Prevention of Significant Deterioration Permit 5, 7 (Sept. 7, 2018) ("Pet."). Sierra Club further contends that reliance on biennial stack testing is not cured by the Permit's compliance monitoring requirements for the selective catalytic reduction devices or by Pima County's assertion that the emission factors for non-startup operating periods are required to be calculated in a conservative fashion. *Id.* at 12, 16 n.37. In a related vein, Sierra Club also asserts that Pima County's response to its comments was inadequate because Pima County did not "show that the permit relies on sufficient monitoring data to assure accurate and continuous monthly compliance with the NO_x cap." *Id.* at 12.

Mirroring its response to Sierra Club's comments, Pima County defends the practical enforceability of the NO_x emissions cap in its Response to the Petition by emphasizing the interconnected relationship of the entire suite of the Permit's compliance monitoring requirements. Pima County's Response to Sierra Club's Petition for Review 15, 17-19 (Oct. 1, 2018) ("Pima County Resp."); *see also* Response of Permittee Tucson Electric Power to Petition for Review 10-15 (Sept. 28, 2018) ("Tucson Electric Resp.").[7] Pima County does not claim that biennial

[7] Additionally, Tucson Electric contends that the Petition should be summarily dismissed because the question of whether a permit's compliance monitoring requirements are sufficient to ensure the practical enforceability of an emissions cap is not a "novel issue," as the Board and the Administrator have upheld substantially similar challenges to the practical enforceability of an emissions cap in *In re Shell Offshore, Inc.*, 15 E.A.D. 536,

stack testing is sufficient to make the NO_x emissions cap practically enforceable. Pima County Resp. at 16. Nor do we read Pima County's Response to Comments or its Response to the Petition as contending that biennial stack testing combined with monthly and yearly emission calculations based on that testing would *alone* provide adequate compliance monitoring requirements for the expansion of the Irvington facility. *Id.* Rather, Pima County argues that the NO_x emissions cap is practically enforceable based on how the biennial stack testing and the monthly and yearly emission calculations requirements are complemented by: (i) the requirements pertaining to the use, operation, and monitoring of the selective catalytic reduction devices; and (ii) the Permit's conservative methodology for calculating emission factors. *Id.* at 15-19; *see also* Tucson Electric Resp. at 11-15.

Given the Permit's compliance monitoring requirements and Pima County's justification for the practical enforceability of the NO_x emissions cap, the issues before us are narrower than stated by Sierra Club. Sierra Club's objections to the adequacy of the biennial stack tests and stack test-derived emission factors are not responsive to the actual compliance monitoring requirements in this Permit – which include more than stack tests and stack-test derived emission factors – and Pima County's explanation of how compliance with the Permit's NO_x emissions cap will be verified.[8] Thus, we need not determine whether biennial stack tests and use of

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546-67 (EAB 2012), and *In re Pope & Talbot, Inc., Lumber Mill*, Pet. No. VIII-2006-04, 2007 EPA CAA Title V LEXIS 3, at *12-13 (Adm'r Mar. 22, 2007). Tucson Electric Resp. at 7. We reject this argument. The Board's two main decisions involving a similar issue, *Shell Offshore* and *Peabody*, 12 E.A.D. at 34-47, as well as the Administrator's decision in *Pope & Talbot*, turned on a fact-based analysis of the permit in question, the nature of the facility, and the claims of the petitioner. They do not stand for the proposition that any permit using emission factors and monitoring of control devices to verify compliance with an emissions cap can be summarily affirmed as sufficient to ensure the practical enforceability of that cap.

[8] At times, several of Sierra Club's statements in its Petition and its comments appear to question the adequacy of the regulatorily-established requirements for conducting performance (stack) tests in subpart JJJJ, 40 C.F.R. § 60.4244, to determine the compliance of internal combustion engines with NO_x emission limitations. *See* Pet. at 11 (arguing that stack tests provide inadequate emissions compliance data due to the shortness of the tests and because they are conducted under ideal, prearranged conditions); Sierra Club Comments attach. at 21-22 & n.59 (same). To the extent Sierra Club intends this Petition to be a challenge to the requirements for tests in subpart JJJJ, 40 C.F.R. § 60.4244, that question is not properly before the Board because challenges to Clean Air Act regulations must be brought in the U.S. Court of Appeals, District of Columbia Circuit, within 60 days of promulgation. 42 U.S.C. § 7607(b). Moreover, the Board does not

emission factors based on those biennial stack tests to project monthly and yearly emissions – standing alone – would be sufficient to verify compliance with the NO_x emissions cap. What remains at issue, however, are Sierra Club's challenges to: (i) Pima County's reliance on two aspects of the Permit's compliance monitoring requirements – monitoring of the selective catalytic reduction devices and the conservative methodology for calculating emission factors for non-startup operating periods – to ensure the NO_x emissions cap is practically enforceable; and (ii) the adequacy of Pima County's response to Sierra Club's comments on the practical enforceability of the NO_x emissions cap. We address these contentions in turn below.

A. *Sierra Club's Challenges to the Permit's Compliance Monitoring Requirements*

1. *Sierra Club Fails to Show Clear Error in Pima County's Reliance on Monitoring of the Selective Catalytic Reduction Devices to Ensure the NO_x Emissions Cap is Practically Enforceable*

As discussed, the Permit's compliance monitoring requirements have two main components in addition to stack tests. The first component involves calculating monthly and yearly NO_x emissions for each Unit during non-startup and startup operating periods. NO_x emissions for non-startup periods are based on NO_x emission factors derived from stack tests conducted every two years and for startup periods are based on manufacturer data. The second component is monitoring of the selective catalytic reduction devices.

In its Petition, Sierra Club contends that the monitoring requirements for the selective catalytic reduction devices do not cure the problem with the Permit's reliance on stack tests and stack test-derived emission factors because the monitoring does not produce data to be "included in the formula to establish the NO_x emission factor." Pet. at 12. To the extent Sierra Club is challenging Pima County's conclusion that the monitoring requirements for the selective catalytic reduction devices are, in combination with the Permit's other monitoring requirements, adequate to ensure the NO_x emissions cap is practically enforceable, this argument is raised for the first time in Sierra Club's Petition. As a result, it has not been preserved for Board review. The regulations governing Board review of

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review EPA regulations as part of permit appeals. *See In re FutureGen Indus. All., Inc.*, 16 E.A.D. 717, 724 (EAB 2015) (the Board "is not the appropriate forum" for raising dissatisfaction with an EPA regulation); *In re Tondu Energy Co.*, 9 E.A.D. 710, 715-16 (EAB 2001) ("As we have repeatedly stated, permit appeals are not appropriate fora for challenging Agency regulations.").

permit appeals, require that the party seeking review establish "that each issue being raised in the petition was raised during the public comment period (including any public hearing)," or demonstrate that the issue was not "reasonably ascertainable" at that time. 40 C.F.R. § 124.13, 19(a)(4)(ii); *see, e.g.*, *In re Seneca Res. Corp.*, 16 E.A.D. 411, 415 (EAD 2014). As the Board has previously explained, "[t]he effective, efficient and predictable administration of the permitting process demands that the permit issuer be given the opportunity to address potential problems with draft permits before they become final." *In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 250 (EAB 1999). This is a particularly important requirement as to technical issues such as the adequacy of the compliance monitoring requirements presented here because "the locus of responsibility for important technical decisionmaking rests primarily with the permitting authority, which has the relevant specialized expertise and experience." *Peabody*, 12 E.A.D. at 33.

Although Sierra Club did challenge the practical enforceability of the NO_x emissions cap in its comments, Sierra Club did not include as part of that challenge any critique of the role that the monitoring requirements for the selective catalytic reduction devices play. In fact, Sierra Club's comments never even mentioned the Permit's monitoring requirements for the selective catalytic reduction devices.

The section in Sierra Club's comments addressing practical enforceability of the NO_x emissions cap contains four paragraphs: (1) two paragraphs describing in general terms the legal requirement for practically enforceable emission limits; (2) one paragraph arguing that the Permit contained nothing more than a "[b]lanket" emission limitation, which was not practically enforceable; and (3) a final paragraph raising the frequency of stack tests and two other unrelated concerns with practical enforceability of the NO_x emissions cap. Sierra Club Comments at 8-9. The two other concerns were described in that final paragraph as follows:

> [Sierra Club's] expert comments detail at length the enforceability issues with the proposed permit. Specifically, using stack tests once every two years to determine whether the [Units] are in compliance with the permit is woefully inadequate. *The permit does not contain an unambiguous methodology for demonstrating compliance with the annual NO_x emission cap, and there is no support for the applicant's "vendor-guaranteed" NO_x rate that is used to demonstrate compliance.*

Id. at 9 (emphasis added) (footnote omitted). While Sierra Club's expert report, which was attached to its comments, expanded on the concerns raised with stack

tests, the methodology issue as to emission factors, and the manufacturer data on NO_x emissions during startup, that report did not raise concerns with or otherwise discuss the Permit's monitoring requirements for the selective catalytic reduction devices. *See Id.* attach. at 20-25.

Sierra Club cannot claim that Pima County did not provide notice of the role that monitoring of the selective catalytic reduction devices plays in verifying compliance with the NO_x emissions cap. On its face, the Proposed Permit expressly stated that its requirements for monitoring of selective catalytic reduction devices are an element bearing on verifying compliance with the NO_x emissions cap. Condition II.A.1.b of the Proposed Permit provided that "[c]ompliance with the NO_x emission limit shall be demonstrated by performance [i.e. stack] tests as detailed in Condition II.D, monitoring as detailed in Condition II.B, and recordkeeping as detailed in Conditions II.C." Proposed Permit at Part B § II.A.1.b. And Conditions II.B and II.C on monitoring and recordkeeping, as well as Condition II.A addressing emission limitations, contain multiple requirements pertaining to monitoring of the selective catalytic reduction devices in addition to requirements as to stack tests and calculation of monthly and yearly emissions. *See id.* at Part B § II.A.1 (setting the 170 tons per year NO_x emission limit, requiring installation of selective catalytic reduction devices with continuous NO_x process monitors, and imposing operating requirements on such devices); *id.* at Part B § II.B (requiring monitoring of fuel consumption and startups of the new Units and monitoring of operating parameters – ammonia injection rate and temperature – for selective catalytic reduction devices); *id.* at Part B § II.C (requiring records be kept of the monitoring of fuel consumption, of startups of the engines, and of the operating parameters of the selective catalytic reduction devices; and specifying that monthly and yearly NO_x emissions must be calculated). Thus, the Permit's reliance on monitoring of the selective catalytic reduction devices as a key part of determining compliance with the NO_x emissions cap was reasonably ascertainable at the time of the comment period. Any challenge to the way in which the monitoring of the selective catalytic reduction devices functioned in verifying compliance with the NO_x emissions cap should have been presented to the permit issuer in the first instance.

In any event, even if Sierra Club's challenge to Pima County's reliance on the monitoring of the selective catalytic reduction devices to verify compliance with the NO_x emissions cap was preserved for Board review, Sierra Club's specific challenge (the monitoring results are not "included in the formula to establish the 'NO_x emission factor'") reflects a misunderstanding of how the Permit works. *See* Pet. at 12. In response to Sierra Club's general argument about the lack of practical enforceability of the NO_x emissions cap through reliance on biennial stack tests,

Pima County explained that it was not relying solely on stack tests to verify compliance. In addition to the required stack tests, Pima County pointed to the Permit's requirements to calculate monthly and yearly NO_x emissions and the monitoring of the selective catalytic reduction devices. RTC at 10-13. As to the latter, Pima County explained that monitoring of the selective catalytic reduction devices would assure that the devices were functioning properly "at all times." *Id.* at 10. Pima County's intent was not to obtain data from this monitoring to adjust the emission factors. Instead, the data are required to make sure the selective catalytic reduction devices are working properly at all times. Thus, Sierra Club's argument in its Petition is not responsive to the role of monitoring of the selective catalytic reduction devices as described by Pima County.

2. *Sierra Club Fails to Show Clear Error in Pima County's Determination that the Non-Startup Emission Factors Are Conservative*

In a footnote to its Petition, Sierra Club also takes issue with Pima County's assertion that the methodology for calculating emission factors for non-startup operating periods is conservative. Pet. at 16 n.37. Under Board case law, a determination such as this one by Pima County "requires the sort of quintessential technical expertise the permit issuer possesses." *In re Shell Offshore, Inc.*, 15 E.A.D. 536, 558 (EAB 2012) (upholding a permit issuer's choice of emission factors in a challenge to the practical enforceability of an emissions cap limiting a facility's potential to emit). Sierra Club has not met the "particularly heavy burden" it bears on this technical question. *See Peabody*, 12 E.A.D. at 41.

Sierra Club disputes that calculating non-startup emission factors from the highest emission rate produced during required stack tests will, as Pima County claims, result in an emission factor that "over-calculat[es]" NO_x emissions. Pet. at 16, n.37. Sierra Club maintains that there is no support in the record for this conclusion and no specific calculation of the quantitative extent of the over-calculation. We find no merit in Sierra Club's argument.[9]

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[9] Sierra Club's argument here also appears for the first time in its Petition. However, neither the Proposed Permit nor draft Technical Support Document explained that the conservative nature of the methodology for calculating non-startup emission factors was a consideration bearing on the practical enforceability of the NO_x emissions cap. That explanation appears for the first time in the Response to Comments, RTC at 13, and thus Sierra Club's challenge to that rationale may be raised on appeal. *See In re Pio Pico Energy Ctr.*, 16 E.A.D.56, 102 (EAB 2013) (allowing consideration of an issue not

First, although Pima County does state at one point that the Permit's methodology for calculating emission factors based on stack tests will overstate actual emissions, the record as a whole suggests that Pima County did not design the procedure for establishing emission factors to overstate emissions by a specific quantitative amount but rather to guard against understating emissions. For example, Pima County introduced its emission factor methodology by explaining that "certain elements [of the methodology] * * * will inherently produce a conservative calculation of emissions (i.e., a tendency to over-calculate, rather than under-calculate, engine NO_x emissions)." RTC at 13. Nor does the record show that Pima County relied upon a specific quantitative degree of over-calculation in the emission factors to justify the practical enforceability of the NO_x emissions cap.

Second, the Permit's description of the methodology for establishing an emission factor for non-startup operating periods provides sufficient record support for Pima County's description of emission factors as conservative (i.e., likely to overstate emissions). The emission factor methodology requires Tucson Electric to identify the maximum NO_x emissions that will be emitted across the full range of load levels during non-startup operating periods. To do this, the Permit requires Tucson Electric to conduct each stack test across the full range of non-startup operating load levels. Permit at Part B § II.D.2.b. The methodology then requires that the emission factor be calculated using the maximum emission rate found in that test as the presumed emission rate whenever the engine is operating in non-startup conditions, irrespective of the load level at which it is operating. *Id.* at Part B § II.D.2.c. Given that the methodology requires that the highest measured emission rate from stack tests be used in the calculation of emission factors, it was reasonable for Pima County to conclude that this approach is a conservative one. Sierra Club's "bare assertion" to the contrary is not adequate to support the opposite conclusion. *See Shell Offshore*, 15 E.A.D. at 561 n.28 (the Board refuses to rely on a petitioner's "bare assertion" that stack tests supporting emission factors were too infrequent).[10]

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raised in a public comment "where the permit issuer's reasoning on an issue was not clearly ascertainable from the record at the draft permit stage").

[10] Additionally, Sierra Club ignores that the methodology for calculating emissions during startup operating periods is also designed to conservatively calculate emissions. NO_x emissions differ significantly between "cold" or "warm" startups with cold startups generating approximately three times the NO_x emissions as warm startups. Letter from Conrad Spencer, Tucson Elec. Power, to Rupesh Patel, Pima Cty. Dep't of Envtl. Prot. 6 (Sept. 21, 2017) (A.R. 6) (finding that a cold startup emits 10.3 pounds of NO_x compared

For all the above reasons, Sierra Club fails to substantiate its claim that the record does not support Pima County's determination that the emission factor methodology is likely to overstate, not understate, actual emissions.

3. *Conclusion*

Sierra Club failed to preserve for Board review its ability to challenge Pima County's reliance on monitoring of the selective catalytic reduction devices as a component of the Permit's compliance monitoring program. Sierra Club further did not substantiate its challenge to either the adequacy of that monitoring or the conservative emission factor methodology. Accordingly, the Board concludes that Sierra Club has not carried its burden to show that Pima County clearly erred in its determination that the Permit's NO_x emissions cap is practically enforceable.

B. *Sierra Club Fails to Show Pima County Clearly Erred in Responding to Sierra Club's Comments*

Sierra Club asserts that Pima County's "responses to Sierra Club's comments were inadequate." Pet. at 12. In support of that contention, Sierra Club argues that Pima County did not "otherwise show that the permit relies on sufficient monitoring data to assure accurate and continuous monthly compliance with the NO_x cap," and "did nothing to address the fact that the NO_x cap remains practically unenforceable." *Id.*

The adequacy of a permit issuer's response to comments must be evaluated in the context of the content, specificity, and precision of the submitted comments. The Board has held that "parties submitting comments on draft permits must present their concerns with sufficient precision and specificity to apprise the permitting authorities of the significant issues so that the permit issuer can make timely and appropriate adjustments to its permit determination, or, if no adjustments are made, can explain why none are necessary in its response to comments." *In re Pio Pico Energy Ctr.*, 16 E.A.D. 56, 85 (EAB 2013). Where a comment lacks specificity and precision, the permit issuer's obligation to respond is similarly tempered. It is well settled that "permit issuers need not guess the meaning behind imprecise comments and are under no obligation to speculate about possible concerns that were not articulated in the comments." *In re Scituate Wastewater*

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to a warm startup that emits 3.5 pounds). Nonetheless, the methodology for calculating emissions during startup requires Tucson Electric to assume that all startups are cold startups. Permit at Part B II.C.9.

Treatment Plant, 12 E.A.D. 708, 723 (EAB 2006) (quotations and citations omitted).

Sierra Club's comments on practical enforceability of the NO_x emissions cap focused on the adequacy of biennial stack testing as a form of compliance monitoring and were very general in nature.[11] In its comments, Sierra Club merely stated that "using stack tests once every two years to determine whether the [Units] are in compliance with the permit is woefully inadequate." Sierra Club Comments at 9. The expert report attached to Sierra Club's comments added some detail but not much more. *See id.* attach. at 20-25. The report explained that infrequent stack tests may not be representative of "routine operations" and noted that "EPA itself has stated that annual stack tests are not sufficient to assure compliance with emissions limits." *Id.* attach. at 21-22. The information cited to support this assertion showed that EPA was concerned that annual stack tests may not be adequate to demonstrate compliance throughout the remainder of the year, particularly where the proper functioning of pollution control technology is necessary for the source to meet applicable requirements. *Id.* attach. at 21 n.59. Instead of stack testing, Sierra Club's expert report recommended that the Permit require Continuous Emissions Monitors. *Id.* attach. at 23.

Pima County responded to these comments by first acknowledging that annual stack tests "are insufficient to assure compliance with emission limits." RTC at 10. Pima County then provided a detailed explanation of what other requirements it had included in the Permit to assure sufficient compliance monitoring during all periods of operation. That lengthy explanation touched on the requirements for use of stack test-derived emission factors and manufacturer emission rates to calculate monthly and yearly NO_x emissions, the conservative nature of these emission factors and emission rates, and the required monitoring of the selective catalytic reduction devices. *Id.* at 10-13. This level of detail was more than an adequate response to Sierra Club's comment that the Permit's compliance

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[11] As described in Part IV.B, Sierra Club also argued in its comments that the NO_x emissions cap was not practically enforceable because the Proposed Permit lacked a clear statement of the methodology for calculating NO_x emissions from emission factors and because Pima County had not included in the record the manufacturer data on startup emission rates that are required for calculating emissions during startup operating periods. Sierra Club Comments at 2, 9. In response, Pima County amended the Permit to include an equation for calculating NO_x emissions and included in the record the manufacturer data on startup emission rates. RTC at 4, 13. Sierra Club has not suggested these comment responses were inadequate.

monitoring was "woefully inadequate" and the expert report explanation that infrequent stack tests may not be representative of routine operations. As the Board has previously held, if "an issue is raised only generically during the public comment period, the permit issuer is not required to provide more than a generic justification for its decision, and the petitioners cannot raise more specific concerns for the first time on appeal." *Encogen*, 8 E.A.D. at 251 n.12; *see In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 146-47 (EAB 1999) (where commenter submitted comments challenging representativeness of air quality data without supplying reasons, permit issuer's response that the data is conservative was adequate given the generic nature of the comment).

To the extent Sierra Club now raises concerns about any of the specifics of that response, we have addressed those claims in Part V.A, above. Sierra Club provides no further detail to support its claim of an inadequate response to comments. In fact, a substantial portion of Sierra Club's Petition is composed of block quotes from Pima County's explanation in the Response to Comments of its basis for concluding that the NO_x emissions cap is practically enforceable. *See* Pet. at 13-16. But as the Board's regulations make clear, when a permit issuer has addressed a petitioner's comments in the record, the petitioner must do more than insist that the permit issuer's response is incorrect, the petitioner "must * * * explain why the Regional Administrator's response to the comment was clearly erroneous or otherwise warrants review." 40 C.F.R. § 124.19(a)(4)(ii); *see In re Windfall Oil & Gas, Inc.*, 16 E.A.D. 769, 797-98 (EAB 2015) ("Simply disagreeing with the Region and repeating concerns [raised in public comments] in a petition for review * * * does not satisfy the regulatory requirement that petitioners confront the permit issuer's responses and explain why the responses were clearly erroneous."). Accordingly, the Board concludes that Sierra Club has not shown Pima County clearly erred in the manner in which it responded to Sierra Club's comments.

VI. *CONCLUSION*

For the reasons stated above, the Board denies Sierra Club's Petition for Review.

So ordered.

United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

AIR QUALITY CONSTRUCTION PERMIT

Permit Number: **2020-49WION-001**

Issue Date: September 9, 2020 Effective Date: September 9, 2020

In accordance with the provisions of the Clean Air Act and the Federal Minor New Source Review Program in Indian Country, 40 C.F.R. §§ 49.151 – 49.165,

Cintas Corporation

is authorized to construct and operate air emissions units and to conduct other air pollutant emitting activities in accordance with the permit conditions listed in this permit.

This source is authorized to construct in the following location:

Cintas Corporation – Green Bay
800 Isbell Street
Green Bay, WI 54303

Cintas Corporation – Green Bay is located on reservation lands held by the United States government in trust for the Oneida Tribe.

All terms and conditions of the permit are enforceable by the U.S. Environmental Protection Agency and citizens under the Clean Air Act.

Genevieve Damico, Chief
Air Permits Section
Air and Radiation Division
U.S. EPA, Region 5

Date

Abbreviations and Acronyms

BTU	British Thermal Unit
CAA	Clean Air Act
C.F.R	Code of Federal Regulations
CO	Carbon Monoxide
DSCF	Dry Standard Cubic Foot
DSCM	Dry Standard Cubic Meter
EPA	U.S. Environmental Protection Agency
g	gram
hr	Hour
lb	Pound
MMBTU	Millions of BTUs
NAAQS	National Ambient Air Quality Standards
NSPS	New Source Performance Standards
NO_x	Oxides of Nitrogen
PM	Particulate Matter
PM_{10}	PM less than or equal to 10 microns diameter
$PM_{2.5}$	PM less than or equal to 2.5 microns diameter
PTE	Potential to Emit
PSD	Prevention of Significant Deterioration
tpy	Tons per year
VOC	Volatile Organic Compound

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SECTION I FACILITY DESCRIPTION

(A) General Source Information

Owner: Cintas Corporation
27 Whitney Drive
Milford, OH 45150

Facility: Cintas Corporation – Green Bay
800 Isbell Street
Green Bay, WI 54303

County: Brown

Reservation: Oneida Tribe of Wisconsin

SIC Code: 7218, Commercial and Industrial Laundering Facility

NAICS Code: 812332, Industrial Launderers

This permit authorizes Cintas Corporation to take synthetic minor limits for VOC in order to convert from a Part 71 to a Part 49 source at the Cintas Corporation – Green Bay facility located within the exterior boundaries of the Oneida Tribe of Wisconsin. The facility launders (cleans and reconditions) soiled industrial towels, coveralls, uniforms, and other textiles for industrial customers.

The permit establishes federally enforceable potential to emit emission limits for the industrial laundering facility. The Permittee shall not process more than 28,950,000 pounds of soiled shop towels during any 12 consecutive-month period to avoid major source Prevention of Significant Deterioration review. This is an existing facility and no modification, expansion, or change in the method of operation is being taken in this permitting action.

(B) Emission Unit Description

(1) Boiler B01 – 10.46 MMBtu/hr

(2) Process P01 – Industrial Washers, Indoor-vented
   a. Industrial Washing Machine (#3)
   b. Industrial Washing Machine (#4)
   c. Industrial Washing Machine (#5)
   d. Industrial Washing Machine (#6)
   e. Industrial Washing Machine (Unimac #1)

(3) Process P02 – Industrial Washers, Stack-vented
   a. Industrial Washing Machine (Unimac #3)
   b. Industrial Washing Machine (Unimac #2)
   c. Industrial Washing Machine (#1)
   d. Industrial Washing Machine (#2)

(4) Process P03 – Industrial Dryers Burning Natural Gas
   a. Industrial Dryer (Wash Tech), 0.25 MMBtu/hr
   b. Industrial Dryer (Cissell #2), 0.25 MMBtu/hr
   c. Industrial Dryer (#3), 2.75 MMBtu/hr
   d. Industrial Dryer (#4), 2.75 MMBtu/hr
   e. Industrial Dryer (Jensen #1), 2.5 MMBtu/hr
   f. Industrial Dryer (Jensen #2), 2.5 MMBtu/hr

(5) Process P04 – Wastewater Pretreatment System

(6) Insignificant Emission Sources
   a. Steam Tunnel, 3.0 MMBtu/hr
   b. Miscellaneous Natural Gas Combustion Units, Combined 11.6 MMBtu/hr
      i. Space Heating
      ii. Water Heating

SECTION II UNIT-SPECIFIC REQUIREMENTS

(A) Emissions Limitations and Standards

The Permittee shall comply with the following requirements:

(1) The Permittee shall not exceed the following emission limits:

Pollutant	Limit	Time Period/Monitoring/Emission Unit
1. NO_x	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
2. CO	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
3. VOC	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
4. SO_2	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
5. PM	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
6. PM	0.23 grams/DSCM Or 0.1 grains/DSCF	3-hour average for natural gas-fired Boiler
7. PM	0.12 grams/DSCM or 0.05 grains/DSCF	3-hour average for natural gas-fired Industrial Dryers and process vents.
8. PM_{10}	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
9. $PM_{2.5}$	99 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
10. Single HAP	9.9 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.
11. Total HAPs	24.9 tpy	12-month rolling time period as calculated at the end of each calendar month for the facility.

(2) The Permittee shall not operate the facility to process more than 28,950,000 pounds of soiled shop towels per year based on a 12-month rolling time period as determined at the end of each calendar month.

(3) The permittee shall not dry or heat any soiled shop towels in any dryer unless they have first been washed in a washing machine included in Process P01 or Process P02.

(4) The Industrial Dryers may only be fired using natural gas.

(5) The Boiler may only be fired using natural gas.

(6) Lint filters or other particulate capture systems, installed as part of the equipment design, shall be operated at all times that each process is in operation.

(7) All emission units and associated equipment authorized by this permit, must be maintained in good working order and operated properly.

(8) Good Air Pollution Control Practices- At all times, including start-up, shut-down, and malfunction, the permittee shall maintain and operate all sources, including associated air pollution control equipment regulated by this permit in a manner consistent with good air pollution control practices for minimizing emissions. This includes, but is not limited to, operating emission units and the particulate matter control systems in accordance with the manufacturer's guidelines and following the instructions included in the owners' operations manual [40 CFR 49.125(d)(1) and (3)].

(B) Monitoring and Performance Testing [40 C.F.R. § 49.155(a)(3)]

(1) Monitoring

(a) The Permittee shall develop and follow guidelines and procedures for sorting and categorizing soiled materials to be washed and dried during industrial laundry operations. At minimum, these procedures shall document the method of classifying soiled materials as either soiled shop towels or non-VOC containing items.

(b) The Permittee shall develop and follow guidelines and procedures for sorting soiled shop towels to minimize fugitive VOC and HAP emissions in accordance with good work practices. Good work practices include, but are not limited to, storing soiled shop towels in covered containers prior to sorting or washing the towels.

(c) The facility shall sort, categorize, and weigh laundry by type (shop towel, other);

(d) The facility shall conduct daily visual inspections of the lint coup to ensure lint filters (screens) are installed and functioning properly;

(e) The Permittee shall calculate monthly VOC emissions using Equation 1:

(1) $E_M = U \times VOC_{ef} \div 2{,}000$

Where:

E_M is the total monthly VOC emissions from industrial laundry operations, in tons;
U is the total mass of soiled shop towels processed by the facility, in 1000 pounds;
VOC_{ef} is the VOC emission factor for soiled towels processed by the facility, in pounds of VOC per 1000 pounds of soiled shop towels, as applicable

(f) The permittee shall calculate the VOC emissions on a 12-month rolling period using Equation 2:

(2) $E_T = \sum_{i=1}^{12} E_{Mi}$

Where:
E_T is the total emissions of all VOCs during the previous 12 consecutive calendar months, in tons; and
E_{Mi} is the total VOC emissions during each of the previous 12 consecutive calendar months, in tons, as calculated using Equation 1.

(g) The permittee shall calculate monthly Federal HAP emissions using Equation 3:

(3) $E_i = U \times HAP_{ef} \div 2{,}000$

Where:
E_i is the monthly emissions of an individual HAP from industrial laundry operations, in tons;
U is the total mass of shop towels processed by the facility, in 1000 pounds; and
HAP_{ef} is the Federal HAP emission factor for soiled towels processed by the facility, in pounds of an individual HAP per 1000 pounds of soiled shop towels, as applicable.

(h) The permittee shall calculate monthly total of all Federal HAP emissions using Equation 4:

(4) $E_M = \sum_{i=1}^{n} E_i$

Where:
E_M is the monthly total of all federal HAP emissions from industrial laundry operations, in tons;
E_i is the monthly emissions of an individual federal HAP, calculated using Equation 3; and
n is the total number of federal HAPs emitted by the industrial laundry operations.

(i) The permittee shall calculate the emissions of total individual Federal HAP on a 12-month rolling period using Equation 5:

(5) $E_{Tl} = \sum_{i=1}^{12} EM_i$

Where:
E_{Tl} is the total emissions of an individual Federal HAP during the previous 12 consecutive months, in tons;
EM_i is the total of an individual Federal HAP during the previous 12 consecutive calendar months, in tons, as calculated using Equation 4.

(j) The permittee shall calculate the emissions of total Federal HAPs on a 12-month rolling period using Equation 6:

(6) $E_T = \sum_{i=1}^{12} EM_i$

Where:
E_T is the total emissions of all Federal HAPs during the previous 12 consecutive months, in tons;
EM_i is the total of all Federal HAP emissions during the previous 12 consecutive months, in tons, as calculated using Equation 4.

(k) The Permittee shall calculate the monthly and rolling 12-month NO_x, CO, SO_2, VOC, HAP, PM, PM_{10}, $PM_{2.5}$, and Lead emissions from all combustion units at the facility using AP-42 emission factors.

(l) The Permittee shall calculate the monthly and rolling 12-month NO_x, CO, SO_2, VOC, HAP, PM, PM_{10}, $PM_{2.5}$, and Lead emissions from all processes at the facility.

(2) Performance Testing

(a) Reference Test Methods. Upon request, the Permittee shall test for emissions of particulate matter, VOCs, and HAPs in accordance with the methods and procedures specified in Method 5 of 40 C.F.R. Part 60, Appendix A or an alternative method approved by the EPA.

(b) No less than 30 days prior to testing, the Permittee shall submit a complete test plan to the EPA. The EPA must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete test report of the test results to the EPA within 60 days following the last date of the test.

(c) Representative Testing Conditions. Performance tests shall be conducted under such conditions as the EPA shall specify to the facility operator based on representative performance of the affected facility. The permittee shall make available to the EPA such records as may be necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

(d) Operating Conditions for Performance Testing. All performance tests shall be conducted at worst-case operating (non-malfunction) conditions for all emission units for each air pollutant.

(e) Failure to Demonstrate Compliance. Upon the EPA's written notice that the facility has failed to demonstrate compliance with an applicable emission limit, unless an alternative schedule is given in an applicable requirement or compliance document, the permittee shall:

(i) Conduct a retest within 30 days of receipt of the EPA written notice;
(ii) Submit to the EPA written notice of testing and submit a test plan for the retest; and
(iii) Submit a complete report of the results of the retest within 45 days after completion.

(C) Recordkeeping and Reporting [40 C.F.R. § 49.155(a)(4)]

(1) Recordkeeping

(a) The permittee shall maintain a file of all records required by this permit. The permittee shall retain all records required in this permit for at least 5 years. [40 C.F.R. § 49.155(a)(4)(ii)]

(b) The permittee shall retain records of all calibration and maintenance records, and copies of all reports required by the permit. The Permittee shall also maintain the following records of the monitoring required by this permit:

(i) Total weight of soiled towels processed by the facility per month sorted by category (shop towels, other) in 1,000 pounds;
(ii) Amount of natural gas used by the facility each month;
(iii) Total emissions of each individual Federal HAP emitted during each month, in tons;
(iv) Total emissions of each individual Federal HAP emitted during the previous 12 consecutive months, in tons;

(v) Total emissions of all Federal HAPs combined emitted during each month, in tons;
(vi) Total emissions of all Federal HAPs combined emitted during the previous 12 consecutive months, in tons;
(vii) Total emissions of NO_x, CO, SO_2, Lead, PM, PM_{10}, and $PM_{2.5}$ emitted during each month and the previous 12 consecutive months.
(viii) Documentation of the source and development of any Federal HAP emission factor used; and
(ix) Daily records of visual inspection of the lint coup and note the date when the lint coup collection fabric is replaced.

(2) Reporting

(a) Testing Notification. The Permittee shall submit notification of the proposed test date to EPA at least 30 days prior to the planned test date. The Permittee may submit the testing notification at the same time the test protocol is submitted. If there is a delay in conducting the scheduled performance test, the Permittee shall notify EPA as soon as possible, either by providing 7 days prior notice of the rescheduled date of the performance test or by arranging a rescheduled test date with EPA by mutual agreement.

(b) Test Protocol. The Permittee shall submit a test protocol to the EPA at least 30 days prior to testing. The test protocol shall contain, at a minimum, the following information:

(i) Name and address of the facility;
(ii) Emissions units to be tested;
(iii) Proposed operating conditions for each emissions unit to be tested;
(iv) Air pollution control equipment for each emission unit to be tested;
(v) Pollutants to be measured;
(vi) Proposed analytical techniques and test methods;
(vii) Emission points and sampling locations; and
(viii) Expected date of the test, if known.

(c) Test Reports. No later than 45 days following the completion of the initial or periodic performance tests required in Sections II(B)(2)(a) and (b) of this permit, the Permittee shall submit to EPA a written report of the test results obtained from the performance tests.

(d) Deviation Reporting. The Permittee shall promptly report to EPA any deviation from any permit requirements, including those attributable to upset conditions, the probable cause of such deviation, and any corrective

actions or preventative measures taken. "Promptly" shall mean within 30 business days of the deviation. [40 C.F.R. § 49.155(a)(5)(ii)]

(e) Annual Report. The Permittee shall submit an annual report of all required monitoring to assure compliance with the synthetic minor limits established in this permit. This report must include confirmation that the synthetic minor limit was maintained for the previous 12 months and must clearly list all instances of deviations from the permit requirements. The annual reporting period shall end on December 31, and the annual report shall be submitted by March 1. [40 C.F.R. § 49.155(a)(5)(i)] An annual report under this section shall include the following:

(i) The company name and address;
(ii) The beginning and ending dates of the reporting period;
(iii) Copies of records required to be maintained in Section II(C)(1)(b)(i) – (vii) of this permit;
(iv) All instances of deviations from permit requirements whether demonstrated by reference test method, monitoring, or through any other creditable evidence, the date on which each deviation occurred, and either the total duration of deviations indicated by such monitoring or the actual records of deviations.
(v) The name, title, and signature of the responsible official who is certifying the truth, accuracy, and completeness of the report.

SECTION III GENERAL PERMIT REQUIREMENTS

(A) Definitions

Terms and conditions in this permit have the meaning assigned to them in 40 C.F.R. § 49.152 unless other regulations or statutes are referenced or applicable.

(B) Submittals

(1) Unless otherwise directed by EPA or this permit, the Permittee shall submit a copy of all test plans, reports, certifications, notifications, and other information pertaining to compliance with this permit to:

Air Enforcement and Compliance
Assurance Branch (AE-18J)
Enforcement Division
EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Alternatively, the Permittee may submit the Annual Reports and Deviations Reports required under Section II(C)(2) of this permit through the Compliance and Emissions Data Reporting Interface (CEDRI).

(2) The Permittee shall submit permit applications, applications for permit amendments, MAP and other applicable permit information, which includes but is not limited to applications and information regarding installation of control equipment, replacement of an emissions unit, and requests for changes that contravene permit terms to:

Air Permits Section
Air Programs Branch (AR-18J)
EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

(C) Severability [40 C.F.R. § 49.155(a)(6)]

The terms and conditions in this permit are distinct and severable. Each permit term and condition is independent of the permit as a whole and remains valid regardless of a challenge to any other part of this permit. If any term or condition in this permit is held invalid, such invalidity shall not affect the validity or application of other terms or conditions.

(D) Compliance with Permit Requirements [40 C.F.R. § 49.155(a)(7)(i)]

The Permittee shall comply with all conditions of this permit, including emission limitations that apply to the affected emissions units at the source. Noncompliance with any permit term or condition is a violation of the permit and may constitute a violation of the Clean Air Act and is grounds for enforcement action and for a permit termination or revocation.

(E) Prohibition on Violation of National Ambient Air Quality Standards and Prevention of Significant Deterioration Increments [40 C.F.R. § 49.155(a)(7)(ii)]

The permitted source shall not cause or contribute to a violation of a National Ambient Air Quality Standard or, in an attainment area, shall not cause or contribute to a Prevention of Significant Deterioration increment violation.

(F) Need to Halt or Reduce Activity Not a Defense [40 C.F.R. § 49.155(a)(7)(iii)]

It is not a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(G) Permit Revision, Reopening, Revocation and Reissuance, or Termination [40 C.F.R. § 49.155(a)(7)(iv)]

This permit may be revised, reopened, revoked and reissued or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance or termination or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

(H) Property Rights [40 C.F.R. § 49.155(a)(7)(v)]

This permit does not convey any property rights of any sort or any exclusive privilege.

(I) Duty to Provide Information [40 C.F.R. § 49.155(a)(7)(vi)]

The Permittee shall furnish to the EPA, within a reasonable time, any information that EPA may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. For any such information claimed to be confidential, the Permittee must also submit a claim of confidentiality in accordance with 40 C.F.R. Part 2, Subpart B.

(J) Entry and Inspection [40 C.F.R. § 49.155(a)(7)(vii)]

Upon presentation of proper credentials, the Permittee shall allow a representative of the EPA to:

(1) Enter upon the premises where a source is located or emissions-related activity is conducted or where records are required to be kept under the conditions of the permit;

(2) Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

(3) Inspect, during normal business hours or while the source is in operation, any facilities, equipment (including monitoring and air pollution control equipment), practices or operations regulated or required under the permit;

(4) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and

(5) Record any inspection by use of written, electronic, magnetic and photographic media.

(K) Permit Invalidation [40 C.F.R. §§ 49.155(a)(1)(i), (b)]

This permit becomes invalid if the Permittee does not commence construction within 18 months after the effective date of this permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The reviewing authority may extend the 18-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project. The Permittee must commence construction of each phase within 18 months of the projected and approved commencement date.

(L) Construction Without a Permit

If the Permittee constructs or operates any source or modification not in accordance with the terms of any approval to construct, the Permittee shall be subject to appropriate enforcement actions.

(M) Construction Approval

(1) Nothing in this permit shall alter the requirement for the Permittee to obtain a construction permit before commencement of construction or modification of an emission unit.

(2) Approval for construction or installation shall not relieve the Permittee of the responsibility to comply fully with the applicable provisions of any other requirements of federal law or regulation, including Title V of the CAA.

(N) Circumvention

The Permittee shall not build, erect, install, or use any article, machine, equipment, or process, the use of which conceals any emission which would otherwise constitute a violation of an applicable standard.

Appendix F – Cost Spreadsheets for Control Technology Analysis

Data Inputs

Select the type of oxidizer: Regenerative Thermal Oxidizer

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	16	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760	hours/year	
Inlet volumetric flow rate (Q_{ref}) at 77°F and 1 atm.	62,594	scfm	
Inlet volumetric flow rate (Q_{act}) (actual conditions)	74,592	acfm	
Pressure drop (ΔP)	19	inches of water	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60	percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_{wg})	170.5	°F	
Operating Temperature (T_{ft})	1,900	°F	*Note: Default value for Tft is 2000°F for thermal regenerative oxidizers. Use actual value if known. Tft for regenerative oxidizers typically between 1800 and 2000°F.
Destruction and Removal Efficiency (DRE)	90	percent	
Estimated Equipment Life	20	Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Heat Loss (η)	1	percent*	* 1 percent is a default value for the heat loss. User should enter actual value, if known. Heat loss is typically between 0.1 and 1.5%.

Percent Energy Recovery (HR) = 70 percent

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	541.7	2016 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 5 and 15 percent.

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

R011513

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	16	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	16	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0	°F
Density of auxiliary fuel at 77 °F (ρ_{af}) =		0.0408	lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{f,af}$) =		21,502	Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739	lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{p,mair}$)	(For thermal oxidizers)	0.255	Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components =	= ($\sum x_i$) =	16	ppmv		
Lower Explosive Limit of waste gas ($LEL_{m,i}$)	= $\{\sum(x_i)/(\sum x_i) \times LEL_i)\}^{-1}$ =	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% $LEL_{m,i}$	= (Total Combustible Conc. in Mixture/$LEL_{m,i}$) × 100 =	0.01	percent	* Note: Since the LEL of the waste gas stream is below 25%, no dilution air is needed.	
Dilution Factor	= ($LEL_{m,i}$ × 0.249)/($\sum x$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= [Total Adjusted Conc. With Dilution Air/$LEL_{m,i}$] × 100 =	Not Applicable			
Inlet volumetric flow rate (Q_{wi}) at 77°F and 1 atm.	(From Data Inputs Tab) =	62,594	scfm		
Oxygen Content of gas stream	= 100 − ($\sum x_i \times 100/10^6$) × 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_w × ΔP]/ε	276.4	kW		
Q_{wo}	= Q_w =	62,594	scfm		
Operating temperature of oxidizer (T_o)	(From Data Inputs Tab)	1,900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_o − T_w) + T_w =	1,381	°F		
Temperature of flue gas exiting the regenerative oxidizer (T_{fo})	= T_o − 0.95(T_o − T_w) =	257	°F		
Heat Input of waste gas ($-\Delta h_{f,w}$)					
	= $\sum$ ($-\Delta h_{ci}$) x_i				
	Where ($-\Delta h_{ci}$) is the heat of combustion and x_i the fraction of component "i" at 77 °F	0.01	Btu/scf	0.1	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm.	(Calculated using Equation 2.45 in Appendix B)	2.25	scfm		
Auxiliary fuel Energy Input =		1,976	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_A × Q_A × $C_{p,m,A}$ × (T_o − T_{ref}) =	107,521	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion? auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)	(Note: If the	No		Note: Additional auxiliary fuel equivalent to 5% of total energy input is required to stabilize combustion.	
Auxiliary fuel flow (Q_{af}) (adjusted for fuel required for combustion stabilization) at 77°F and 1 atm. =		123	scfm		
Total Volumetric Throughput (Q_{act}) at 77 °F and 1 atm.	= Q_A = Q_{wo} + Q_o + Q_{af} = Q_{wo} + Q_{af} =	62,717	scfm		

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$i\,[1+i)^n/(1+i)^n - 1$ =	0.0944
	Where n = Equipment Life and i = Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (In 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Costs (EC) for Regenerative Oxidizer	=[2.664 x 100,000 + (13.98 x Qtot)] x (2022 CEPI/2016 CEPCI) =	$1,683,227 in 2022 dollars
Instrumentation[b] =	0.10 x A =	$168,323
Sales taxes =	0.03 x A =	$50,497
Freight =	0.05 x A =	$84,161
	Total Purchased equipment costs (B) =	$1,986,207 in 2022 dollars

Footnotes
a = Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.
b = Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 x B =	$158,897
Handlong and Erection =	0.14 x B =	$278,069
Electrical =	0.04 x B =	$79,448
Piping =	0.02 x B =	$39,724
Insulation for Ductwork =	0.01 x B =	$19,862
Painting =	0.01 x B =	$19,862
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$595,862
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$2,582,070 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 x B =	$198,621
Construction and field expenses =	0.05 x B =	$99,310
Contractor fees =	0.10 x B =	$198,621
Start-up =	0.02 x B =	$39,724
Performance test =	0.01 x B =	$19,862
	Total Indirect Costs (IC) =	$556,138
Continency Cost (C) =	CF(IC+DC)=	$313,821
Total Capital Investment =	**DC + IC +C =**	**$3,452,028 in 2022 dollars**

Direct Annual Costs

Annual Electricity Cost	= Fan Power Consumption x Operating Hours/year x Electricity Price =	$205,780
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ x Fuel Usage Rate x 60 min/hr x Operating hours/year	$553,997
Operating Labor	Operator = 0.5hours/shift x Labor Rate x (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift x Labor Rate x (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$806,535 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$69,041
Property Taxes	= 1% of TCI	$34,520
Insurance	= 1% of TCI	$34,520
Capital Recovery	= CRF(TCI-1.08(cat. Cost))	$325,847
Indirect Annual Costs (IC) =		**$491,983 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$1,298,518 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$1,298,518	per year in 2022 dollars
CO Destroyed =	17.4	tons/year
Cost Effectiveness =	$74,754	per ton of pollutants removed in 2022 dollars

Data Inputs

Select the type of oxidizer [Catalytic Oxidizer - Fixed Bed]

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	16	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760 hours/year	
Inlet volumetric flow rate(Q_{std}) at 77°F and 1 atm.	62,594 scfm	
Inlet volumetric flow rate(Q_{act}) (actual conditions)	74,592 acfm	
Pressure drop (ΔP)	23 inches of water*	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60 percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_w)	170.5 °F	
Operating Temperature (T_{ri})	900 °F	* Note: Default value for Tri is 900°F for catalytic oxidizers. Use actual value if known. Tri for catalytic oxidizers is typically between 300 and 900°F.
Destruction and Removal Efficiency (DRE)	90 percent	
Estimated Equipment Life	20 Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Catalyst Data:		
Estimated catalyst life (y)	4 years	* 4 years is a default value. User should enter actual value, if known
Catalyst Unit Cost (CC)	0 $/ft^3	
Space velocity for catalyst (Φ)	30,000 /hour	* 30,000 per hour is a default value. User should enter actual value, if known.

Percent Energy Recovery (HR) = [50 percent]

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	390.6	1999 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 5 and 15 percent.

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

R011516

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	16	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	16	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0	°F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408	lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{c,af}$) =		21,502	Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739	lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{p,mix}$) =	(For catalytic oxidizers)	0	Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components =	= ($\sum x_i$) =	16	ppmv		
Lower Explosive Limit of waste gas (LEL_m)	= $\{\sum(x_i)/(\sum x_i \div LEL_i)\}^{-1}$ =	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% LEL_m	= (Total Combustible Conc. In Mixture/LEL_m) × 100 =	0.01	percent		
Dilution Factor	= (LEL_m × 0.249)/($\sum x_i$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/LEL_m) × 100 =	Not Applicable			
Inlet volumetric flow rate(Qwi) at 77°F and 1 atm.	(From Data Inputs Tab) =	62,594	scfm		
Oxygen Content of gas stream	= 100 - ($\sum x_i$ × 100/10^6) × 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_w × ΔP]/ε	334.5	kW		
Q_w	= Q_{wi} =	62,594	scfm		
Operating temperature of oxidizer (T_x)	(From Data Inputs Tab)	900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_x - T_w) + T_w =	535	°F		
Temperature of flue gas exiting the oxidizer (T_{fg})	= T_x - T_{wo} + T_w =	535	°F		
Heat Input of waste gas ($-\Delta h_{c,wg}$)					
	= $\sum(-\Delta h_{ci})x_i$				
	Where $(-\Delta h_c)$ is the heat of combustion and x_i the fraction of component "i" at 77 °F.	0.01	Btu/scf	0.1	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm.	(Calculated using Equation 2.21 in Chapter 2 of the Cost Manual)	590.38	scfm		
Auxiliary fuel Energy Input =		517,928	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_a × Q_a × $C_{p,mix}$ × (T_r - T_{ref}) =	47,652	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion?	(Note: If the auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)	Yes			
Auxiliary fuel flow (Qaf) at 77°F and 1 atm. =		590	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm.	= Q_a = Q_{wg} + Q_a + Q_{af} = Q_{wi} + Q_{af} =	63,185	scfm		
Calculation of Catalyst Volume and Estimated Temperature of Waste Gas Entering the Catalyst Bed					
Volumetric Flow Rate at 60 °F and 1 atm (Q_r)	= Q_{tot} × (519)/(77 °F + 460) =	61,067	scfm		
Catalyst Volume (Vol_{cat})	= Q_r/Θ	122.13	ft^3		
Estimated inlet temperature to the catalyst bed (T_c) =	(Calculated using Equation 2.27 in Chapter 2 of the Cost Manual)	900	°F		

Capital Recovery Factor

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$i(1+i)^n/[(1+i)^n - 1]$ =	0.0944
	Where n = Equipment Life and i = Interest Rate	

* Note: Since the LEL of the waste gas stream is below 25%, no dilution air is needed.

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Costs (EC) for a Fixed Bed Catalytic Oxidizer	= (1,215 x Qtot^(0.5375)) x (2022 CEPI/1999 CEPCI) =	$1,177,527 in 2022 dollars
Instrumentation[b] =	0.10 × A =	$117,753
Sales taxes =	0.03 × A =	$35,326
Freight =	0.05 × A =	$58,876
	Total Purchased equipment costs (B) =	$1,389,482 in 2022 dollars

Footnotes
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.
b - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 × B =	$111,159
Handlong and Errection =	0.14 × B =	$194,528
Electrical =	0.04 × B =	$55,579
Piping =	0.02 × B =	$27,790
Insulation for Ductwork =	0.01 × B =	$13,895
Painting =	0.01 × B =	$13,895
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$416,845
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$1,806,327 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 × B =	$138,948
Construction and field expenses =	0.05 × B =	$69,474
Contractor fees =	0.10 × B =	$138,948
Start up =	0.02 × B =	$27,790
Performance test =	0.01 × B =	$13,895
	Total Indirect Costs (IC) =	$389,055
Continency Cost (C) =	CF(IC+DC)=	$219,538
Total Capital Investment =	**DC + IC +C =**	**$2,414,920 in 2022 dollars**

Direct Annual Costs

Catalyst Replacement Cost	= 1.08 × CC × Vol_{cat} × FWF Where CC is the $/ft^3 cost for the replacement catalyst; Vol_{cat} is the volume of catalyst required based on the waste gas flow rate (Q_h) and the catalyst space velocity (Θ); and FWF is the future worth factor.	$0
Annual Electricity Cost	= Fan Power Consumption × Operating Hours/year × Electricity Price =	$249,102
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$2,668,605
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$2,964,465 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$48,298
Property Taxes	= 1% of TCI	$24,149
Insurance	= 1% of TCI	$24,149
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$227,951
Indirect Annual Costs (IC) =		**$352,603 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$3,317,068 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$3,317,068	per year in 2022 dollars
CO Destroyed =	17.4	tons/year
Cost Effectiveness =	$190,959	per ton of pollutants removed in 2022 dollars

Data Inputs

Select the type of oxidizer: [Regenerative Thermal Oxidizer]

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	43	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760	hours/year	
Inlet volumetric flow rate(Q_{ss}) at 77°F and 1 atm.	255,617	scfm	
Inlet volumetric flow rate(Q_{wf}) (actual conditions)	282,389	acfm	
Pressure drop (ΔP)	19	inches of water	* 23 inches of water is the default pressure drop for thermal oxidizers, 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60	percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_{wf})	126.8	°F	
Operating Temperature (T_f)	1,900	°F	* Note: Default value for Tf is 2000°F for thermal regenerative oxidizers. Use actual value if known. Tf for regenerative oxidizers typically between 1800 and 2000°F.
Destruction and Removal Efficiency (DRE)	90	percent	
Estimated Equipment Life	20	Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Heat Loss (η)	1	percent*	* 1 percent is a default value for the heat loss. User should enter actual value, if known. Heat loss is typically between 0.2 and 1.5%.

Percent Energy Recovery (HR) = [70 percent]

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	541.7	2016 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 5 and 15 percent

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

R011519

Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	43	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	43	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0 °F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408 lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{caf}$) =		21,502 Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739 lb/ft^3 (actual = 0.0486)
Mean Heat Capacity of Air ($C_{pm,a}$)	(For thermal oxidizers)	0.255 Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components =	$= (\sum x_i) =$	43	ppmv		
Lower Explosive Limit of waste gas ($LEL_{m,x}$)	$= [\sum((x_i)/(\sum x_i) \times LEL_i))]^{-1} =$	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
$\%LEL_{m,x}$	= (Total Combustible Conc. In Mixture/$LEL_{m,x}$) × 100 =	0.03	percent	* Note: Since the LEL of the waste gas stream is below 25%, no dilution air is needed.	
Dilution Factor	$= (LEL_{m,x} \times 0.249)/(\sum x_i) =$	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/$LEL_{m,x}$) × 100 =	Not Applicable			
Inlet volumetric flow rate(Q_{wi}) at 77°F and 1 atm.	(From Data Inputs Tab) =	255,617	scfm		
Oxygen Content of gas stream	$= 100 - (\sum x_i \times 100/10^6) \times 0.209 =$	20.90	percent		
Fan Power Consumption (FP)	$= [(1.17 \times 10^{-4}) \times Q_{wi} \times \Delta P]/\varepsilon$	1046.3	kW		
Q_{wo}	$= Q_{wi} =$	255,617	scfm		
Operating temperature of oxidizer (T_o)	(From Data Inputs Tab)	1,900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_n - T_w) + T_{wi} =	1,368	°F		
Temperature of flue gas exiting the regenerative oxidizer (T_{fg})	= T_n - 0.95(T_n - T_w) =	215	°F		
Heat Input of waste gas ($-\Delta h_{wg}$)					
	$= \sum (-\Delta h_{ci})\, x_i$ Where $(-\Delta h_{ci})$ is the heat of combustion and x_i the fraction of component "i" at 77 °F.	0.01	Btu/scf	0.2	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm.	(Calculated using Equation 2.45 in Appendix B)	0.70	scfm		
Auxiliary fuel Energy Input =		614	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = $0.05 \times \rho_A \times Q_A \times C_{pm,a} \times (T_o - T_{ref})$ =	439,069	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion? auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)	(Note: If the	No		Note: Additional auxiliary fuel equivalent to 5% of total energy input is required to stabilize combustion.	
Auxiliary fuel flow (Qaf) (adjusted for fuel required for combustion stabilization) at 77 °F and 1 atm. =		500	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm.	$= Q_A = Q_{wo} + Q_a + Q_{af} = Q_{wi} + Q_{af} =$	256,118	scfm		

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$i(1+i)^n/(1+i)^n - 1 =$	0.0944
	Where n = Equipment Life and i= Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Costs (EC) for Regenerative Oxidizer	=[2.664 x 100,000 + (13.98 x Qtot)] x (2022 CEPCI/2016 CEPCI) =	$5,664,224 in 2022 dollars
Instrumentation[b] =	0.10 × A =	$566,422
Sales taxes =	0.03 × A =	$169,927
Freight =	0.05 × A =	$283,211
	Total Purchased equipment costs (B) =	$6,683,784 in 2022 dollars

Footnotes
a - Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.
b - Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 × B =	$534,703
Handlong and Errection =	0.14 × B =	$935,730
Electrical =	0.04 × B =	$267,351
Piping =	0.02 × B =	$133,676
Insulation for Ductwork =	0.01 × B =	$66,838
Painting =	0.01 × B =	$66,838
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$2,005,135
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$8,688,920 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 × B =	$668,378
Construction and field expenses =	0.05 × B =	$334,189
Contractor fees =	0.10 × B =	$668,378
Start-up =	0.02 × B =	$133,676
Performance test =	0.01 × B =	$66,838
	Total Indirect Costs (IC) =	$1,871,460
Contingency Cost (C) =	CF(IC+DC)=	$1,056,038
Total Capital Investment =	**DC + IC +C =**	**$11,616,417 in 2022 dollars**

Direct Annual Costs

Annual Electricity Cost	= Fan Power Consumption × Operating Hours/year × Electricity Price =	$779,039
Annual Fuel Costs for Natural Gas	= $Cost_{Fuel}$ × Fuel Usage Rate × 60 min/hr × Operating hours/year	$2,262,287
Operating Labor	Operator = 0.5hours/shift × Labor Rate × (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift × Labor Rate × (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$3,088,083 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$232,328
Property Taxes	= 1% of TCI	$116,164
Insurance	= 1% of TCI	$116,164
Capital Recovery	= CRF(TCI-1.08(cat. Cost)]	$1,096,508
Indirect Annual Costs (IC) =		**$1,589,219 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$4,677,302 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$4,677,302	per year in 2022 dollars
CO Destroyed =	190.4	tons/year
Cost Effectiveness =	$24,563	per ton of pollutants removed in 2022 dollars

Data Inputs

Select the type of oxidizer [Catalytic Oxidizer, Fluid Bed]

Enter the following information for your emission source:

Composition of Inlet Gas Stream

Pollutant Name	Concentration (ppmv)	Lower Explosive Limit (LEL) (ppmv)*	Heat of Combustion (Btu/scf)	Molecular Weight
Carbon monoxide	43	125,000	323	28.01

Note: The lower explosion limit (LEL), heat of combustion and molecular weight for some commonly used VOC/HAP are provided in the table below.

Enter the design data for the proposed oxidizer:

Number of operating hours/year	8,760	hours/year	
Inlet volumetric flow rate(Q_s) at 77°F and 1 atm	255,617	scfm	
Inlet volumetric flow rate(Q_w) (actual conditions)	282,389	acfm	
Pressure drop (ΔP)	23	inches of water*	* 23 inches of water is the default pressure drop for thermal oxidizers; 19 inches of water is the default pressure drop for catalytic oxidizers. Enter actual value, if known.
Motor/Fan Efficiency (ε)	60	percent*	* 60% is a default fan efficiency. User should enter actual value, if known.
Inlet Waste Gas Temperature (T_w)	126.8	°F	
Operating Temperature (T_h)	900	°F	* Note: Default value for Th is 900°F for catalytic oxidizers. Use actual value if known. Tfi for catalytic oxidizers is typically between 300 and 900°F.
Destruction and Removal Efficiency (DRE)	90	percent	
Estimated Equipment Life	20	Years*	* 20 years is the typical equipment life. User should enter actual value, if known.
Catalyst Data:			
Estimated catalyst life (y)	4	years	* 4 years is a default value. User should enter actual value, if known.
Catalyst Unit Cost (CC)	0	$/ft^3	
Space velocity for catalyst (Φ)	30,000	/hour	* 30,000 per hour is a default value. User should enter actual value, if known.

Percent Energy Recovery (HR) = [50 percent]

Enter the cost data:

Desired dollar-year	2022			
CEPCI* for 2022	797.6	Enter the CEPCI value for 2022	390.6	1999 CEPCI
Annual Interest Rate (i)	7	Percent		
Electricity ($Cost_{elect}$)	0.085	$/kWh		
Natural Gas Fuel Cost ($Cost_{fuel}$)	0.00860	$/scf		
Operator Labor Rate	$26.61	per hour		* $26.61 per hour is a default labor rate. User should enter actual value, if known.
Maintenance Labor rate	$27.40	per hour		* $27.40 per hour is a default labor rate. User should enter actual value, if known.
Contingency Factor (CF)	10.0	Percent		* 10 percent is a default value for construction contingencies. User may enter values between 5 and 15 percent.

* CEPCI is the Chemical Engineering Plant Cost Escalation/De-escalation Index. The use of CEPCI in this spreadsheet is not an endorsement of the index for purposes of cost escalation or de-escalation, but is there merely to allow for availability of a well-known cost index to spreadsheet users. Use of other well-known cost indexes (e.g., M&S) is acceptable.

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Design Parameters

The following design parameters for the oxidizer were calculated based on the values entered on the *Data Inputs* tab. These values were used to prepare the costs shown on the *Cost Estimate* tab.

Composition of Inlet Gas Stream		
Pollutant Name	Concentration in Waste Stream (ppmv) From Data Inputs Tab	Adjusted Concentration with Dilution Air (ppmv)
Carbon monoxide	43	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
0	0	NA
Total	43	0

Constants used in calculations:

Temperature of auxiliary fuel (T_{af}) =	Reference Temperature (T_{ref}) =	77.0	°F
Density of auxiliary Fuel at 77 °F (ρ_{af}) =		0.0408	lb/ft^3
Heat Input of auxiliary fuel ($-\Delta h_{af}$) =		21,502	Btu/lb
Density of waste gas at 77 °F (ρ_{wg}) =		0.0739	lb/ft^3 (actual = 0.0486)
Mean Heat Capability of Air (C_{p-air}) =	(For catalytic oxidizers)	0	Btu/lb °F

Parameter	Equation	Calculated Value	Units	Value	Units
Sum of volume fraction of combustible components =	= ($\sum x_i$) =	43	ppmv		
Lower Explosive Limit of waste gas (LEL_{m-1})	= $\{\sum(x_i)/(\{\sum x_i\} \times LEL_i)\}]^{-1}$ =	125,000	ppmv		
	Where x_i is the volume fraction and LEL_i the lower explosive limit for each combustible component in the waste gas.				
% LEL_{m-1}	= (Total Combustible Conc. In Mixture/LEL_{m-1}) × 100 =	0.03	percent	*Note: Since the LEL of the waste gas stream is below 25%, no dilution air is needed.	
Dilution Factor	= (LEL_{m-1} x 0.249)/($\sum x_i$) =	Not applicable			
Lower Explosive Limit (LEL) of waste gas after addition of dilution air	= (Total Adjusted Conc. With Dilution Air/LEL_{m-1}) × 100 =	Not Applicable			
Inlet volumetric flow rate(Qw) at 77°F and 1 atm.	(From Data Inputs Tab) =	255,617	scfm		
Oxygen Content of gas stream	= 100 - [$\sum x_i$ × 100/10^6] x 0.209 =	20.90	percent		
Fan Power Consumption (FP)	= [(1.17 × 10^{-4}) × Q_w × ΔP]/ε	1266.5	kW		
Q_{wo}	= Q_w =	255,617	scfm		
Operating temperature of oxidizer (T_f)	(From Data Inputs Tab)	900	°F		
Temperature of waste gas at outlet to preheater (T_{wo})	= Heat Recovery × (T_f - T_w) + T_w =	513	°F		
Temperature of flue gas exiting the oxidizer (T_{fg})	= T_f - T_{wo} + T_w =	513	°F		
Heat Input of waste gas ($-\Delta h_{i-w}$)					
	= $\sum$ [$-\Delta h_{c,i}$] x_i Where ($-\Delta h_{c,i}$) is the heat of combustion and x_i the fraction of component "i" at 77 °F.	0.01	Btu/scf	0.2	Btu/lb
Estimated Auxiliary Fuel Flow (Q_{af}) at 77 °F and 1 atm.	(Calculated using Equation 2.21 in Chapter 2 of the Cost Manual)	2,526.25	scfm		
Auxiliary fuel Energy Input =		2,216,233	Btu/min		
Minimum Energy required for combustion stabilization =	= 5% × Total Energy Input = 0.05 × ρ_w × Q_w × C_{p-w} × (T_w - T_{ref}) =	194,683	Btu/min		
Is the calculated auxiliary fuel sufficient to stabilize combustion? (Note: If the auxiliary fuel energy input > 5% of Total Energy Input, then the auxiliary fuel is sufficient.)		Yes			
Auxiliary fuel flow (Q_{af}) at 77°F and 1 atm. =		2,526	scfm		
Total Volumetric Throughput (Q_{tot}) at 77 °F and 1 atm. =	= Q_A = Q_{wo} + Q_s + Q_{af} = Q_{wo} + Q_{af} =	258,144	scfm		
Calculation of Catalyst Volume and Estimated Temperature of Waste Gas Entering the Catalyst Bed					
Volumetric Flow Rate at 60 °F and 1 atm (Q_n)	= Q_{tot} × (519)/(77 °F + 460) =	249,491	scfm		
Catalyst Volume (Vol_{cat})	= Q_n/Φ	498.98	ft^3		
Estimated inlet temperature to the catalyst bed (T_r) =	(Calculated using Equation 2.27 in Chapter 2 of the Cost Manual)	899	°F		

Capital Recovery Factor:

Parameter	Equation	Calculated Value
Capital Recovery Factor (CRF) =	$I(1+i)^n/[(1+i)^n - 1]$ =	0.0944
	Where n = Equipment life and i = Interest Rate	

Cost Estimate

Direct Costs

Total Purchased equipment costs (in 2022 dollars)

Incinerator + auxiliary equipment[a] (A) =		
Equipment Costs (EC) for a Fixed Bed Catalytic Oxidizer	= (1,215 x Qtot^(0.5575)) x (2022 CEPI/1999 CEPCI) =	$2,580,726 in 2022 dollars
Instrumentation[b] =	0.10 x A =	$258,073
Sales taxes =	0.03 x A =	$77,422
Freight =	0.05 x A =	$129,036
	Total Purchased equipment costs (B) =	$3,045,257 in 2022 dollars

Footnotes

a = Auxiliary equipment includes equipment (e.g., duct work) normally not included with unit furnished by incinerator vendor.

b = Includes the instrumentation and controls furnished by the incinerator vendor.

Direct Installation Costs (in 2022 dollars)

Foundations and Supports =	0.08 x B =	$243,621
Handlong and Errection =	0.14 x B =	$426,336
Electrical =	0.04 x B =	$121,810
Piping =	0.02 x B =	$60,905
Insulation for Ductwork =	0.01 x B =	$30,453
Painting =	0.01 x B =	$30,453
Site Preparation (SP) =		$0
Buildings (Bldg) =		$0
	Total Direct Installaton Costs =	$913,577
Total Direct Costs (DC) =	Total Purchase Equipment Costs (B) + Total Direct Installation Costs =	$3,958,834 in 2022 dollars

Total Indirect Installation Costs (in 2022 dollars)

Engineering =	0.10 x B =	$304,526
Construction and field expenses =	0.05 x B =	$152,263
Contractor fees =	0.10 x B =	$304,526
Start up =	0.02 x B =	$60,905
Performance test =	0.01 x B =	$30,453
	Total Indirect Costs (IC) =	$852,672
Continency Cost (C) =	CF(IC+DC)=	$481,151
Total Capital Investment =	**DC + IC +C =**	**$5,292,657 in 2022 dollars**

Direct Annual Costs

Catalyst Replacement Cost	= 1.08 x CC x Vol_{cat} x FWF Where CC is the $/ft^3 cost for the replacement catalyst; Vol_{cat} is the volume of catalyst required based on the waste gas flow rate (Q_R) and the catalyst space velocity (Φ); and FWF is the future worth factor.	$0
Annual Electricity Cost	= Fan Power Consumption x Operating Hours/year x Electricity Price =	$943,047
Annual Fuel Costs for Natural Gas	= $Cost_{fuel}$ x Fuel Usage Rate x 60 min/hr x Operating hours/year	$11,419,055
Operating Labor	Operator = 0.5hours/shift x Labor Rate x (Operating hours/8 hours/shift)	$14,569
	Supervisor = 15% of Operator	$2,185
Maintenance Costs	Labor = 0.5 hours/shift x Labor Rate x (Operating Hours/8 hours/shift)	$15,002
	Materials = 100% of maintenance labor	$15,002
Direct Annual Costs (DC) =		**$12,408,859 in 2022 dollars**

Indirect Annual Costs

Overhead	= 60% of sum of operating, supervisor, maintenance labor and maintenance materials	$28,054
Administrative Charges	= 2% of TCI	$105,853
Property Taxes	= 1% of TCI	$52,927
Insurance	= 1% of TCI	$52,927
Capital Recovery	= CRF[TCI-1.08(cat. Cost)]	$499,589
Indirect Annual Costs (IC) =		**$739,350 in 2022 dollars**
Total Annual Cost =	**DC + IC =**	**$13,148,209 in 2022 dollars**

Cost Effectiveness

Cost Effectiveness = (Total Annual Cost)/(Annual Quantity of VOC/HAP Pollutants Destroyed)

Total Annual Cost (TAC) =	$13,148,209	per year in 2022 dollars
CO Destroyed =	190.4	tons/year
Cost Effectiveness =	$69,049	per ton of pollutants removed in 2022 dollars

R011525

CALCULATION SHEET

Facility U.S. Steel	I.D. 119813AAI
Anal. Eng. [illegible] Date 12 6 23	PN 95010001
Rev. Eng. _____ Date _____	Date Rec. 10 07 22

Application for Revision to Construction Permit for the 1996 Particulate Interim Effluent

Update - In July 2023, the Illinois EPA began a public comment period on a Draft Water Quality Analysis Applications Reasons for denial were set forth in the draft letter

The Illinois EPA reviewed comment received on the draft letter. The comments did not support changes to the denial letter on "substantive grounds." However, they did support changes on procedural grounds as the draft letter did not clearly address requirements of Section 39(a) of denial letters. It was decided to prepare a revised draft denial letter that would clearly address the procedural requirements of Section 39(a) of the Act and to hold a new public comment period. This calculation sheet addresses is prepared for the revised draft/denial letter. This revised draft denial has been expanded [illegible] in "Overview" directly responding to requirements of Section 39(a)

As a new public comment period is being held on the revised draft denial letter expanded reasons for the first draft denial letter would be responded to the comments in the initial draft has been put on hold. This is because further comments may be [illegible] on the revised draft denial letter.

[illegible]

IL 532-0262
APC 268 3/80

Sheet 1 of 1

Illinois Environmental Protection Agency
Bureau of Air, Permit Section
Springfield, Illinois

December 2023

Project Summary for the Proposed Denial of an Application* from United States Steel Corporation – Granite City Works for Revisions to a Construction Permit/PSD Approval Issued for a Production Increase Project at its Mill in Granite City

Note : This Project Summary has been prepared to accompany the public comment period that the Illinois EPA is holding on a Revised Draft Denial Letter, which has been prepared in response to certain comments that were received on the initial Draft Denial Letter.

Site Identification No.: 119813AAI
Permit/Application No.: 95010001

Illinois EPA Contacts:
Review Engineers: Mincsh Patel, Christopher Romaine and Jason Schnepp
Community Relations Coordinator: Brad Frost

Schedule for Public Comment Period:
Comment Period Begins: December 8, 2023
Comment Period Scheduled to Close: January 8, 2024

* In its application, U. S. Steel asks that the requested revisions of Permit 95010001 be processed by the Illinois EPA with "Integrated Processing," as is allowed by Section 39.5(13)(a) and (c)(v) of the Illinois Environmental Protection Act. Integrated Processing of the revised permit would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit. Integrated Processing would require that the revision of the permit provide for compliance requirements that are substantially equivalent to those that are required in CAAPP permits. The processing of the permit must also be subject to procedural requirements that are substantially equivalent to those that apply for issuance CAAPP permits, including an opportunity for USEPA to review and comment upon a proposed version of the revised permit following completion of a public comment period on the draft of the revised permit.

1. Introduction

United States Steel - Granite City Works (US Steel) has applied to the Illinois EPA for revisions to an air pollution control construction permit (Permit 95010001) for a project at its Granite City Works, the steel mill in Granite City. This project (the "Project") involved increases in the permitted production of iron and steel by this facility. As this facility is a source of emissions, Permit 95010001 provided approval for the Project under both Illinois' construction permit programs for sources of emissions and the Prevention of Significant Deterioration (PSD) program under the federal Clean Air Act. This permit was originally issued in January 1996 to National Steel and was transferred to US Steel after it became the owner of the facility. This proposed denial involves the US Steel's revised application submitted in October 2022 (the "2022 application").

A key reason why revisions to Permit 95010001 are needed is that emission testing conducted in 2014 on the two basic oxygen furnaces (BOFs), in which steel is produced, showed their emissions of nitrogen oxides (NOx), as well as volatile organic material (VOM), are higher than is allowed by this permit. This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit were based on information in the original application.

US Steel has worked to prepare an application for revisions to Permit 9501001 that would allow more emissions of NOx and VOM from the BOFs. The 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted and subsequent changes that have occurred at the facility. Notably, the emissions of carbon monoxide (CO) of certain units have also been found to be higher than stated in the original application. A baghouse control system has been installed for the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. The byproduct coke oven batteries formerly at the facility were shut down in 2015. A brief description of some of the revisions to Permit 95010001 that US Steel has requested is provided at the back of this document in Appendix 1. The requested revisions do not include increases in the permitted iron and steel production of the facility as allowed by this permit as issued in 1996.

The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this are now set forth in the revised draft of the proposed denial that has been prepared. Brief descriptions of the reasons why the Illinois EPA has determined that the 2022 application should be denied are provided in Appendix 2 of this document. For some requested revisions to Permit 95010001, the application should be denied because it does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply to this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application should be denied because it would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

As required by the PSD program, the Illinois EPA **must** hold a public comment period on its preliminary determination that the 2022 application should be denied and the draft denial letter that has been prepared. This will allow for the public to consider and comment on this planned action

and the draft of the denial letter that the Illinois EPA has prepared. The Illinois EPA previously prepared a draft of its proposed denial letter and made it available for a public comment period that began in July 2023. The Illinois EPA has now prepared a revised draft of its proposed denial letter and is again making it available for public review and comment. This revised draft of the proposed denial letter more clearly sets forth the sections of the Illinois Environmental Protection Act, the provision(s) of Title 35 Subtitle B: Air Pollution of the Illinois Administrative Code, and the reasons that would be the basis for the Illinois EPA's proposed denial on the 2022 application. For this purpose, for each denial point, Attachment 1 of the revised draft denial letter now includes an overview of the laws, rules and reasons that would be the basis for the Illinois EPA's proposed denial of this application. This is followed by the explanation and discussion that were provided in the initial draft denial letter with, as specifically denoted, corrections to certain numerical emission data and a date in the initial draft denial letter. The revised permit denial letter also has two appendices. Appendix A lists the various sections of the Act that are cited in Attachment 1 as the statutory basis for this denial letter, with description and, in some cases, general explanation why the section might be violated if Permit 95010001 were to be revised as requested by this application. Appendix B lists the various provisions in Subtitle B of Title 35 of the Illinois Administrative Code that are cited as the regulatory basis for this denial letter, with description and, in some cases, general explanation why the provision might be violated if Permit 95010001 were to be revised as requested by this application.

This project summary for the revised draft of the proposed denial letter is identical to the initial project summary except as it explains that a revised draft denial letter has now been prepared and is being made available for public review and comment and this project summary now also makes corrections to certain details in the project summary that accompanied the initial draft denial letter.

2. Background on the Granite City Works

The Granite City Works are an integrated steel mill, making both iron and steel. It has two blast furnaces to make iron from iron ore and an associated casthouse located between them in which tapping of iron and slag from the furnaces take place . Two basic oxygen furnaces (BOFs) are used to process iron from the blast furnaces, together with scrap metal, into steel. Before molten iron from the blast furnaces is charged to a BOF vessel, the iron undergoes "desulfurization" with a reagent to remove sulfur from the iron. Ladles of molten steel produced in the BOFs are transferred to "ladle metallurgy" where with the final additions of alloying materials are made to the molten steel. The two basic oxygen furnaces, the iron desulfurization operation, and the ladle metallurgy operations are all located in the basic oxygen furnace shop (BOF shop). From ladle metallurgy, the ladles of molten steel are transferred to the continuous casters in an adjoining building. The solid steel slabs from continuous casting are processed in rolling mills at the source, which make long, thin strips of steel that are wound in coils. Steel slabs from the casters also go to other plants to be made into finished steel.

Other operations at the Granite City Works include raw material handling and storage, steam boilers, and fuel-burning process equipment. The raw material handling and storage operations handle raw materials, such as iron ore pellets, limestone and other fluxing agents, coke, and alloy materials, for the iron and steel making operations. The steam boilers can burn both natural gas and blast furnace gas (BFG). BFG is a low heat content gaseous byproduct from the blast furnaces. BFG is the principal fuel for the blast furnace stoves in which the blast air supply for these furnaces is

heated. Other fuel-burning process equipment at the source burns natural gas. Vehicle traffic on roads and parking lots at the Granite City Works also is a source of emissions of fugitive dust.

The Granite City Works formerly included two by-product recovery coke oven batteries and associated by-product processing plant. These operations were permanently shut down in February 2015. The primary source for coke used in the blast furnaces is now two heat recovery coke oven batteries in Granite City that are operated by Gateway Energy. With the shutdown of the by-product recovery coke oven batteries, coke oven gas is no longer produced and available for use in the blast furnace stoves, boilers and other fuel-burning equipment at the Granite City Works that previously used coke oven gas to provide a portion of their fuel.

Granite City is located in Madison County, which is part of the S. Louis Major Metropolitan Area. Madison County is designated nonattainment under the federal Clean Air Act for the National Ambient Air Quality Standard (NAAQS) for ozone.[1] For other pollutants for which there are NAAQS, i.e., carbon monoxide (CO), lead, nitrogen dioxide (NO_2), particulate matter$_{10}$ (PM_{10}), particulate matter$_{2.5}$ ($PM_{2.5}$) and sulfur dioxide (SO_2), Madison County is designated attainment or unclassifiable. USEPA maintains information about current ambient air quality for ozone and particulate on the internet at AirNow (airnow.gov). The Illinois EPA prepares annual reports for ambient air quality as measured by its network of air monitoring stations around the states. These reports are also available on the internet (epa.illinois.gov/topics/air-quality-reports).

The Granite City Works are in an area that is of concern for Environmental Justice. As such, any proposed permit actions involving this facility are subject to the Illinois EPA's "Environmental Justice Policy." As addressed in this policy, the Illinois EPA is committed to protecting the environment and the health of the residents of Illinois, and to promoting equity in the administration of its environmental programs.

3. The Production Increase Project or the "Project"

In January 1996, National Steel, the former owner of the Granite City Works was issued Construction Permit 95010001 for increases in the allowable production of iron and steel by the Granite City Works, also referred to as the "Production Increase Project" or the "Project." As explained at that time, the increases in production would in part involve continuing improvements in the operation and maintenance of equipment, which is something that normally occur over the course of time. These would involve things such as the availability and use of ore pellets with higher yield, the availability and use of better refractories linings for furnaces, and ongoing improvements in maintenance practices that would reduce the frequency and duration of furnace outages for maintenance. However, the Project also involved certain physical changes to emission units to enable increased production of iron, i.e., changes to the blast furnace stove blowers to increase their air flow capacity. As such, the Project entailed a modification to the Granite City Works for which an air pollution control construction permit was needed.

[1] Air quality designations are adopted by USEPA. The designations for Illinois are found at 40 Code of Federal Regulations (CFR) 81.314.

National Steel's application for a construction permit for the Project addressed its implications for emissions of the iron and steel making operations and other operations at the Granite City Works that would be affected. The application showed that the increases in emissions from the Project would be significant so that the Project was a major modification for sulfur dioxide (SO_2)and carbon monoxide (CO) under the federal rules for Prevention of Significant Deterioration (PSD), 40 CFR 52.21, as governed in 1996.[2] In this regard, in 1996, Granite City was located in areas that were designated attainment for the NAAQS for SO_2 and CO. The application submitted by National Steel addressed the substantive requirements of the PSD rules, as they applied to the Project for SO_2 and CO. For example, the application addressed the use of Best Available Control Technology (BACT) for the casthouse at the blast furnaces as it was identified as emitting SO_2 and the blast furnace stoves as they were identified as emitting SO_2 and CO. The Illinois EPA found that emissions of these pollutants from these units would be appropriately controlled with measures that reflected BACT.

National Steel's application showed that Project was not a major modification for other pollutants. For lead, the application showed that the increase in lead emissions would not be significant. For particulate matter (PM),[3] particulate matter$_{10}$,[4] nitrogen oxides (NOx) and volatile organic material (VOM), the application showed that the net increases in emissions from the Project, considering contemporaneous decreases and increases in emissions, would not be significant. For example, the shutdown of ingot casting and the associated blooming mill at the Granite City Works provided emission decreases that were contemporaneous with the emission increases from the Project. Accordingly, for lead, PM, PM_{10}, NOx and VOM, the permitting of the Project did not address the substantive requirements of PSD or Illinois's rules for Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203 (more generally referred to as Nonattainment New Source Review or "NaNSR").

In this regard, in 1996, Granite City was located in areas that were attainment for PM and NO_2.[5] National City's application showed that the net increases in emissions of these pollutant from the Project (i.e., the increases in emissions after considering contemporaneous increases and decreases in emissions) would be below the rates that would be considered to be significant under PSD (25 and 40 tons/year for PM and NOx , respectively). In 1996, Granite City was located in areas that

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[2] In 1996, the Illinois EPA administered the USEPA's PSD rules at 40 CFR 52.21 under a delegation agreement with USEPA. The Illinois EPA now implements the PSD program through states regulation at 35 IAC Part 204, which have been approved by USEPA as part of Illinois' State Implementation Plan.

[3] Particulate matter (PM), as addressed by the application and relevant USEPA and Illinois rules, only includes filterable particulate and not condensable particulate. Relevant rules provide that measurements of PM emissions are to be made by test methods that are designed to only measure filterable particulate.

[4] For particulate matter$_{10}$, the application only addressed filterable emissions and not condensable emissions. As subsequently addressed in USEPA rules, emissions of condensable particulate were not regulated as a constituent of particulate matter$_{10}$ before January 1, 2011 [40 CFR 51 Appendix S, Emission Offset Interpretative Ruling, Part II, (A)(31)(ii)(*a*)].
In Illinois' rules, filterable particulate matter$_{10}$ is referred to as "PM-10;" condensable particulate as "condensible PM-10." This usage is confirmed in 35 IAC 212.108(a) and (b) by the methods that are specified for emissions testing.

[5] For purposes of PSD and MSSCAM, NOx was initially regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere. As addressed in the Clean Air Act as amended in 1990, NOx also became also regulated as a precursor to the formation of ozone. Finally, NOx is now also regulated as it is a precursor to $PM_{2.5}$.

were designated nonattainment for NAAQS for ozone and PM_{10}. Madison County was and continues to be nonattainment for ozone. The part of Madison County that was nonattainment for PM_{10} included Granite City. For VOM and NOx, as they are regulated as precursors to ozone in the atmosphere, National City's application showed that the net increases in emissions from the Project would be below the rates that would be significant under MSSCAM (40 tons/year for both VOM and NOx). For PM_{10},the application showed that the net increase in PM_{10} emissions from the project would also be below the rate that would be significant under MSSCAM (15 tons/year).

When issuing Permit 95010001 for the Project in 1996, the Illinois EPA included various limits to hold National Steel to the representations made in the application and make those representations enforceable. The future annual production of iron by the blast furnaces and steel by the BOFs were limited to the maximum production levels requested by National Steel in the application. The future annual emissions of different pollutants from the various process units affected by the Project were limited. For the BOFs, whose particulate emissions were only controlled by an electrostatic precipitator (ESP) add-on control system in 1996, separate emission limits were set for the emissions from ESP and the uncaptured emissions from open roof monitor above the BOFs. For fuel-burning units, e.g., the blast furnace stoves and boilers, emissions limits for different pollutants were set collectively for the group of such units, rather than individually. However, separate limits were set for the emissions from burning BFG, natural gas and fuel oil.[6] The annual emission limits for different pollutant were accompanied by "emission factor limits" that addressed emissions in pounds per ton of iron or steel produced or handled, or for the fuel-burning units, emissions in pounds per volume of fuel burned. The permit required emission testing to be conducted for certain units following issuance of the permit to verify compliance with the requirements of the permit. [7, 8]

The Illinois EPA also included certain requirements in Permit 95010001 for the BOFs that were more stringent than those that had previously applied.[9] The opacity of emissions from the roof

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[6] For fuel burning units, the permit did not set limits for emissions from the burning of coke oven gas (COG). The operation of the by-product coke oven batteries at the Granite City Works and the associated production of COG was considered to be unaffected by the increased production of iron by the blast furnaces. As a matter of good practice, coke oven batteries are operated at a stable production rate that is consistent with the design and conditions of the batteries. To the extent that the amount of coke produced at a source is more or less than is needed by the source, surplus coke can readily be shipped to other sources, or the deficit made up with coke shipped in from other sources.

[7] For the blast furnaces, emission testing was required for the baghouse that controls particulate emissions of the casthouse, i.e., the structure that encloses the area where molten iron and slag are periodically tapped from the bottoms of the blast furnaces, with testing required PM, VOM, SO_2 and NOx, as well as for opacity. For the BOFs, testing was required for the ESP control system for emissions of PM, CO and lead, as well as for opacity. Testing for emissions of PM was also required for the baghouse that control iron molten iron desulfurization operation that precedes the BOFs and from a representative steam boiler while burning BFG.

[8] The permit stated that the BACT requirement of the PSD rules would be met for SO_2 and CO. However, the permit did not identify specific emission limits or practices that were determined to be BACT for the BACT-subject units. For CO, the specific limits or practice that would be considered to be BACT would be addressed with the proposed revisions to this permit. For CO. US Steel has identified the existence of emissions and higher levels of emissions from the blast furnace casthouse and stoves, respectively. As such, for these unit, BACT for CO must be reevaluated. For SO_2, US Steel has not requested increases in permitted annual emissions. Therefore, BACT for SO_2 does not need to be reevaluated. It would nevertheless be reasonable in the revised permit to identify requirements that are considered to be BACT for SO_2.

[9] The PM-10 emissions of the Granite City Works with the Project were of singular concern to the Illinois EPA. In 1996, an area that included Granite City was designated as nonattainment for PM_{10} air quality. The

monitor was limited to 20 percent on a 3-minute average, from 30 percent on a 6-minute average. Specific practices that were required to be used to reduce particulate emissions of the BOFs. For example, use of flame suppression was required during tapping of a BOF, when molten steel and slag are poured from a BOF into a ladle. Minimum values were set for the air flow through the hoods that capture the particulate emissions of the BOFs for control by the ESP, with different values set for the charging, refining, and tapping steps in the operation of a BOF. A housekeeping program was required for the area below the ESP where collected particulate is transferred from hoppers on the bottom of the ESP into fabric containers for transport off-site. For roadways at the Granite City Works, the permit set specific requirements for the frequency of treatment of different road segment to reduce emissions of fugitive dust due to vehicle traffic on the roadway. These requirements were accompanied by requirements for daily recordkeeping for the treatment of roadways and the implementation of the cleaning program for these roads. The permit also required periodic treatment of certain public roads that serve the source to their reduce emissions.

4. Improved Control of Particulate Emissions of the BOFs (the New Baghouse)

The version of Permit 95010001 that is the subject of US Steel's 2022 application is the revised permit issued on December 17, 2012. In this regard, in 2010, US Steel agreed to install a baghouse control system with fabric filter that would operate along with the existing ESP system to improve control of particulate emissions of the BOFs from charging and tapping. The commitment to the additional control system was made in an agreement between US Steel and the Illinois EPA[10] for several measures to reduce particulate emissions from steelmaking.[11] For the BOFs, installation of a baghouse system was required to improve control of emissions from tapping, when steel and slag are poured from a BOF vessel into a ladle. US Steel was also required to evaluate whether the new baghouse system could be designed to also improve the control of emissions from charging, when iron and scrap metal are poured and unloaded into a BOF vessel. US Steel determined that the new

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Illinois EPA performed computerized dispersion modeling for the future PM_{10} air quality of the Granite City area with the Project. The modeling analysis showed that the National Ambient Air Quality Standards (NAAQS) for PM_{10} would be met with PM-10 emissions from the Project-affected units at the Granite City Works at the maximum rates in reflected by the application. In May of 1998, the USEPA redesignated the area in which Granite City is located to attainment for PM_{10}.

Incidentally, the Granite City area is now also designated attainment for the NAAQS for $PM_{2.5}$. The NAAQS for $PM_{2.5}$ were initially adopted by USEPA in 2006, with the NAAQS on an annual average subsequently being lowered in 2012. The ambient air monitoring stations conducted in Granite City by the Illinois EPA continue to show attainment of the NAAQS for PM_{10} and $PM_{2.5}$.

[10] "United States Steel Corporation Granite City Works and IEPA Memorandum of Understanding," signed by US Steel on June 30, 2010, and by the Illinois EPA on July 1, 2010 (the Agreement).

[11] In addition to the new baghouse system for the BOFs, the Agreement also provided for use of "steam rings." In a BOF, oxygen is used during the refining step to remove carbon and silica from the molten iron by oxidation. The oxygen lances are inserted into the BOF through openings in the hood over the BOF. Steam rings inject steam in the annular areas between the lances and the openings for the lances. This interferes with outward flow through the openings in the hood improving capture of particulate. by the hood.

The Agreement also provided for limits for emissions of particulate matter, in grains per dry standard cubic foot (gr/dscf), that were more stringent than the emission standards that were applicable under state rules. and 40 CFR 63 Subpart FFFFF:

- Baghouses for iron desulfurization, slag skimming and ladle metallurgy: 0.005 gr/dscf (compared to 0.01 gr/dscf)
- ESP for the BOFs: 0.01 gr/dscf (compared to 0.02 gr/dscf)
- New baghouse for the BOFs: 0.005 gr/dscf (compared to 0.01 gr/dscf).

baghouse system could be designed to improve control of emissions from both charging and tapping. As such, once the new baghouse system began operation, the existing ESP system continued to control emissions for the BOFs from refining; the emissions from charging and tapping began to be controlled by a combination of the ESP system and the new baghouse system.

The new baghouse system for the BOFs was initially addressed by Construction Permit 11050006, as issued on August 31, 2011. For purposes of PSD and MSSCAM, this permit was based on the new system being a project that would reduce the emissions of particulate and lead from these furnaces AND NOT increase any emissions. US Steel subsequently applied for a revision of this permit, which was issued on April 1, 2013. In the application for revision of this permit, US Steel formally requested Integrated Processing so as to allow certain related changes to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by means of an administrative amendment. This would assure that the baghouse system could be used in compliance with requirements in the CAAPP permit, which did not address the possibility that a baghouse might be added for the BOFs. For example, for tapping of a BOF, flame suppression was required by the CAAPP permit reduce particulate emissions. However, this would not be appropriate with the new baghouse system.[12]

It was not possible to simply revise Permit 11050006 with Integrated Processing to enable the revisions to the CAAPP permit that were needed to facilitate the installation and use of this system. It was first necessary to revise Permit 95010001, the permit that is now the subject of the 2022 application.[13] This is because the requirements in the CAAPP permit that were impediments to moving forward with the baghouse system were actually established by Permit 95010001.[14] For example, Condition 11 of Permit 95010001 required the use of flame suppression for tapping; the CAAPP permit merely restated this requirement. Accordingly, Permit 95010001 was revised to provide that this requirement, as well as similar operational requirements that would be inconsistent with the use of the new baghouse system would cease to apply when the new system began to be operated.[15] In their place, US Steel was broadly required to operate and maintain the BOFs and

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[12] In flame suppression, the use of natural gas burners reduces generation of particulate by depleting the amount of oxygen in the air that comes in contact with molten metal. To improve control of emissions from tapping, the new baghouse system includes local hoods specifically to capture emissions from tapping, as well as local hoods to capture emissions from charging. With local capture hoods for tapping, the continued use of flame suppression would be unsafe, posing hazards both to personnel and equipment, as well as being of uncertain effectiveness to reduce emissions. The high levels of draft provided by the local capture hoods are incompatible with flame suppression as they can act to interfere with the stability and orientation of the flame and pose risks of blowing out the flame.

[13] The revision of Permit 95010001 was completed several months before the revision of Permit 11050006, the permit for the baghouse system. As a PSD permit issued pursuant to 40 CFR 52.21, the revision to Permit 95010001 did not take effect on December 13, 2012, when it was issued. It became effective later in January 2013 after the date for filing an appeal of the revised permit with USEPA's Environmental Appeals Board had passed without any appeal. With the effectiveness of revised Permit 95010001, the revision to Permit 11050006 with Integrated Processing could then be completed.

[14] If Permit 95010001 had not been revised to remove operational requirements that precluded the use of the new baghouse system, these requirements could not have been removed from the CAAPP permit by means of Integrated Processing of a revision to Permit 11050006. These operational requirements would still have been applicable since these requirements would have continued to be present in Permit 95010001.

[15] To address the period before the new baghouse system was operational, the revision to Permit 95010001 provided that the use of flame suppression for tapping and other measures that would obstruct the use of the

associated emissions capture and control systems in accordance with the applicable requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Facilities, 40 CFR 63 Subpart FFFFF.[16]

In the revision to Permit 95010001, operational requirements for the BOFs and the ESP system that were considered to be obsolete or outdated with the new requirements of the NESHAP, 40 CFR 63 Subpart FFFFF, were also removed. The operational requirements of this NESHAP were determined to better address proper operation of emission control systems for BOFs. For example, as related to capture of secondary emissions,[17] the NESHAP addresses the operation of the capture hoods and the air flow entering the control device(s), rather than the aggregate air flow at the stack of the control device(s).[18] Likewise, the compliance procedures of the NESHAP (e.g., requirements for emission testing and operational monitoring) were determined to be more appropriate for the BOFs and their control systems than the requirements in Permit 95010001.[19]

In summary, the previous revisions to Permit 95010001 were narrowly focused on enabling the installation of the new baghouse system. This was done by removing specific requirements that were inconsistent with the use of this system and, more generally, by removing requirements that were no longer appropriate because of applicable requirements in 40 CFR 63 Subpart FFFFF. The revisions to Permit 95010001 did not extend to other requirements, such as the emissions limits set by this permit for the BOFs. Likewise, the changes to the CAAPP permit that were authorized by means of the Integrated Processing of the revision of Permit 11050006 were focused on enabling the future operation of new baghouse system, including the related changes that had been made in the December 2012 revision to Permit 95010001.[20] The changes authorized to the CAAPP permit

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new baghouse system cease to apply when US Steel began operation of the new system. [Revised Permit 95010001, Condition 11(b).]

[16] US Steel became subject to the requirements of this NESHAP, which applies to the BOFs and certain other operations at the Granite City Works, beginning May 22, 2006. This is because the facility is considered an existing source under 40 CFR 63 Subpart FFFFF.

[17] In common usage, the particulate emissions of BOFs from refining are often referred to as the "primary emissions;" the emissions from charging and tapping are referred to as "secondary emissions." However, in the NESHAP, 40 CFR 63.7852, the primary particulate emissions of a BOF are defined as the emissions that are captured for control by the primary emission control system; the secondary emissions are the emissions that are not captured for control by the primary emission control system. As such, the Granite City Works, the ESP control system is the primary control device for the BOFs under the NESHAP. All emissions that are captured by this system, including emissions from charging, refining and tapping, are primary emissions.

[18] The NESHAP also places the burden for establishing the specific measures that will be implemented to ensure proper operation of the capture systems and control devices for BOFs on the source rather than on the permitting authority. The measures that are required to be used are the ones that were present when performance testing for particulate matter emissions shows compliance with the applicable standard.

In light of the applicable requirements of the NESHAP, the operating procedures and requirements in Attachment A, as formerly addressed by Condition 10, were also considered overly prescriptive. For example, Attachment A set out actions that were to be to be taken by employees, e.g., the emission control foreman and operator, rather than practices that the Permittee was required to implement.

[19] A practical concern also existed because certain operational requirements of Permit 95010001 were similar to but different than those of the NESHAP. Given the requirements of the NESHAP, which were newer and developed through rulemaking, the continuing implementation and oversight of the older requirements in Permit 95010001 was not considered to be an appropriate or effective use of resources.

[20] The 2012 revision of Permit 11050056 provided that the changes to the CAAPP permit for the facility that were authorized by means of Integrated Processing could only happen or take effect after the new baghouse

also included relevant requirements for the ongoing operation of the baghouse system that were actually set in Permit 11050006 and would appropriately be restated in the CAAPP permit. However, changes were not authorized to the emissions limits in the CAAPP permit for the BOFs and various other emission units as those limits were still present in Permit 95010001.[21]

5. US Steel's Current Application for Revisions to Permit 95010001

US Steel's current application (the "2022 application" or "application") requests a number of revisions to Permit 95010001. A key reason why revisions to Permit 95010001 are needed is that emission testing for the two basic oxygen furnaces (BOFs) shows their emissions of nitrogen oxides (NOx), as well as their emissions of volatile organic material (VOM), are higher than is allowed by this permit.[22] This is because the original application understated the NOx and VOM emissions of the BOFs and the emission limits in this permit reflected information in the application. US Steel has also determined that emissions of carbon monoxide (CO) of the casthouse on the blast furnaces and certain Projected-affected fuel burning units are higher than are addressed by the permit. This is because original application did not address CO emissions from the casthouse and understated CO emissions from Project-affected fuel burning units

Accordingly, the 2022 application requests revisions to Permit 9501001 to allow more emissions of NOx and VOM from the BOFs, which the original application understated. In particular, the application requests that the permitted NOx emissions of the casthouse and the BOFs be increased by 19.4 and 220.2 tons/year, respectively. To support these increases in emissions, the application includes revised netting analyses that attempt to show that the Project would not be a major modification for purposes of either PSD or MSSCAM with the requested increases in emissions.

US Steel also requests that the revised permit address CO emissions from the casthouse and allow more CO emissions from fuel burning units.[23] For CO, the application attempts to show that the

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system for the BOFs began operation (Permit 11050056, issued April 1, 2013, page 16). US Steel has not yet applied to the Illinois EPA to initiate issuance of an administrative amendment to the CAAPP permit that would reflect the changes to this permit authorized by Permit 11050056.

[21] US Steel filed an appeal of revised Permit 11050056 with the Illinois Pollution Control Board (Board), PCB 13-62. Similar to the appeal of CAAPP permit for the facility (PCD-53), Permit 11050056 was appealed because it also provided for the emission limits for the BOFs and other units in the BOF shop set by Permit 95010001 to again be restated in the CAAPP permit. In this regard, to address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for the complete replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, with a new, revised Section that addresses the basic oxygen furnace shop with the new baghouse system. As an appeal was filed, the provision of Permit 11050056 that would have restated those limits have been stayed pending resolution of the appeal.

[22] This emissions testing of the BOFs for NOx and VOM was first conducted in 2014, with further testing conducted in 2018 and 2021.

[23] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse, for which CO emissions were not identified and addressed in the original permitting for the project. This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than ten boilers that are now retired. For the fuel burning units, US Steel has determined that the emission factors for CO utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas (BFG) used in the blast furnaces stoves, understated CO emissions.

Project would still comply with the substantive requirements of PSD, which are applicable as the Project originally was a major modification for CO under the PSD program. The application includes an evaluation of BACT for CO for the casthouse and blast furnace stoves, i.e., the units that are or would become subject to the BACT requirement of the PSD program.[24] The application also includes a new air quality impact analysis for CO that would address the Project with the increases in CO emissions as are requested.

This 2022 application also addresses other issues that are now posed by the manner in which the Project was originally permitted. For PM, PM_{10}, NOx and VOM (i.e., pollutants other than CO, sulfur dioxide (SO_2),and lead), the application requests that the revised permit not include the provisions in Permit 95010001 that would address emissions of individual "processes" in pounds/ton of production or throughput. (For convenience, these provisions in the permit that address emissions in pounds/ton of production or throughput or, for lead, in pounds per hour, are generally referred to by the Illinois EPA as "emission factor limits." The Illinois EPA set the emission factor limits and limits on annual emissions in Permit 95010001to ensure that the Project would not be a major modification for purposes of PSD or MSSCAM.[25] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes or emission points, the application requests "group limits" for the annual emissions of groups of related emission units.[26] For emission units for which routine emission testing is feasible, the emissions contributed by units towards the group limits would be determined using emissions rates that reflect the results of emission testing. For certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the BOFs), for which routine emission testing is not feasible, the application requests that the revised permit set "prescribed emission factors." For these units or emission points, the prescribed emission factors would effectively replace the provisions currently

[24] The BOFs were not physically modified as part of the Project. Accordingly, they would not become subject to requirements for BACT or LAER even if the Project were a major modification for a pollutant.
[25] The removal from Permit 95010001 of the "emission factor limits" would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62, as these appeals address PM, PM_{10} and NOx and VOM emissions. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, before issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing "emission factors" were considered to constitute enforceable limits on emissions.
[26] For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period.

in Permit 95010001 for process units that currently restrict emissions in pounds/ton of input or production or in pounds/hour.[27]

Lastly, the application also recognizes subsequent changes at the facility, which occurred after the Project, that were not contemplated in 1996 and not provided for when Permit 95010001 was originally issued. The changes at the facility include the addition of a baghouse control system for the BOFs to improve control of their particulate emissions. The changes also include the shutdown of the by-product coke oven batteries that were formerly at the facility, which eliminated emissions from these operations. In this regard, the application requests revisions to Permit 95010001 to provide for increased use of natural gas by Project-affected fuel burning units. The application explains that this is necessary with the shutdown of the by-product coke oven batteries because COG is no longer available and more natural gas may need to be used.

The Illinois EPA has reviewed the 2022 application to determine whether the application shows compliance with applicable regulatory requirements and would support issuance of a revision to Permit 95010001 as requested by US Steel. The Illinois EPA has also considered whether the application would support issuance of such a revised permit with Integrated Processing, as has also been requested, so that related revisions to the CAAPP permit for the Granite City Works may be made by administrative amendment. The Illinois EPA has made a preliminary determination that the 2022 application should be denied. The reasons for this determination are set forth in the draft of the proposed denial letter that has been prepared.[28] As discussed in further detail below, for some of the revisions requested to Permit 95010001, the application does not show that they would comply with the relevant regulatory requirements and USEPA policy that apply for this permit. For other requested revisions, the application does not include the information needed to support those revisions or enable those revisions to be made as a practical matter. In addition, the application would not allow for processing of a revised permit with Integrated Processing, as has been requested. If the Illinois EPA's final decision is to deny this application, it is expected that Permit 95010001 would continue in effect as it now exists until and unless action is taken on a subsequent application.

6. Discussion of Key Reasons for the Planned Denial of the Application

6.1. The Revised Netting Analysis for the Project for NOx

A. Overview

The revised netting analysis for NOx submitted for the Project with additional NOx emissions as requested does not show that the Project would not become a major modification for NOx. Accordingly, a revised permit cannot be issued as requested because, for emissions of NOx, the 2022 application does not address or show fulfillment of the substantive requirements of the rules for Prevention of Significant Deterioration (PSD) and Major Stationary Sources Construction and

[27] Unlike the emission factor limits in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors established in a revision to Permit 95010001 would instead be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit.

[28] Brief descriptions of the reasons why the Illinois EPA's preliminary determination for this application is that it should be denied are provided in Appendix 2 of this document.

Modification related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and MSSCAM (35 IAC 203.301) for NOx. This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx. The application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the application must show for NOx that the relevant substantive requirements of PSD and MSSCAM are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and MSSCAM would be met for the Project for NOx.

The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[29] However, the application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would be such that the Project would not be a major modification for NOx.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at

[29] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

certain fuel burning units after the initial issuance of Permit 95010001. The application proposes to rely upon the decreases in NOx emissions due to these changes, which were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as it does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed below, the application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

B. The Analysis Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application relies on decreases in emissions that occurred long after 1996. This includes decreases from the shutdown of ten of the twelve boilers at the facility that were originally addressed by Permit 95010001 in 1996. The shutdown of Boilers 1 through 10 was required by Construction Permit 06070023, which was originally issued in July 2006 for construction of a cogeneration boiler that would burn blast furnace gas (BFG) and natural gas. The application does not show that NOx emissions of these ten boilers, as existed in the period prior to 2009, were considered in the "future" NOx emissions with the Project from the Project-affected fuel burning units. In addition, with regard to the two remaining old boilers at the facility, Boilers 11 and 12, that continue in operation, flue gas recirculation systems have been installed pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to reduce NOx emissions to facilitate compliance with 35 IAC 217.164. The application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from these boilers that are now being achieved with the new systems, rather than the NOx emissions as previously existed with the Project in the period before these systems were installed.

The application also indicates baseline NOx emissions from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12. In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[30]

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application. This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the BOFs. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the application reflect maximum actual NOx emissions

[30] The revised netting analysis does address increased use of natural gas by Project-affected fuel burning units because COG is no longer available and more natural gas may need to be used to make up for this.

beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[31]

C. Insufficient Information to Independently Confirm the Revised Baseline NOx Emissions

The revised determination of baseline NOx emissions of Project-affected fuel burning units that is part of the revised netting analysis is not accompanied by information that would allow it to be independently verified. In this regard, the application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, concerns exist with the determination of the overall baseline NOx emissions for the Project. In particular, this application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The application utilizes a NOx emission factor for Boilers 11 and 12 for use of COG that the application states is based on emission testing conducted on the stack for underfiring of one of the coke batteries, rather than testing on one of these boilers or other similar boiler. For burning of natural gas, the application does not show the emission factor that is utilized for boilers would also be appropriate for ladle preheaters and casting operations.

D. Supporting Date Is Not Provided For Future NOx Emissions of Fuel-Burning Units

The 2022 application proposes a future amount for the NOx emissions of Project-affected fuel burning units of 706 tons/year. The application does not explain why actual NOx emissions of the subject units would not exceed this amount going forward if the permit were revised, much less demonstrate that actual emissions have not exceeded this amount historically. The application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

6.2. The Application Does Not Address the Potential for Uncaptured Emissions of NOx, VOM and CO Through the Roof Monitor of the BOF Shop

The application is deficient in its approach to the uncaptured emissions of NOx, VOM and CO emissions of the BOFs. For the BOFs, consistent with the original permitting of the Project, the application only quantifies stack emissions of NOx, VOM and CO. Moreover, the revised netting analyses for NOx and VOM assume that all emissions of these pollutants from the BOFs are now captured. That is, with the new baghouse system to improve control of particulate emissions, all

[31] Indeed, with the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of affected fuel burning units indicated in the application are emissions that could have been allowed by this permit in 1996. The future NOx emissions of these units indicated in the application are less than their baseline NOx emissions. As the Project did not include any elements that would lower the NOx emissions of fuel burning units, the production of more iron and steel would have been accompanied by increased utilization of the blast furnace stoves and boilers so that in 1996 the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.).

NOx and VOM emissions of the BOFs that originally were not captured and were emitted through the roof monitor are now captured and emitted through the stack on the baghouse system.

This assumption is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were not addressed in the original permitting for the Project, likely because they were considered negligible. Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the application to the particulate and lead emissions of these furnaces, which assumes that there are uncaptured emissions that still occur through the roof monitor. By way of contrast, the 2022 application requests that the revised permit establish prescribed emission factors for the particulate emissions of the BOFs that occur through the roof monitor.

The fact that there are emissions of NOx and VOM from the BOFs that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. In this regard, the application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions. However, the application does not propose any such revisions for the BOFs or explain why such revisions are not needed. For example, the application also does not explain why it would not be inappropriate for any revised permit to set a limit for the annual emissions of CO from the BOFs through the stacks of the control systems, with associated requirements for periodic emission testing.

6.3. The Inventory Used in the Air Quality Analysis for CO Omits Certain Emissions

The results of the analysis of the impacts of the Project on ambient air quality for CO cannot be relied upon because the inventory for the CO emissions of the facility with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The application includes an air quality analysis for CO because the Project was originally permitted as a major modification for CO under the PSD program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted. To support this request, an air quality analysis for CO must be part of the application pursuant to 35 IAC 204.1130, since this request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program. In this regard, the air quality analysis in the 2022 application does not address uncaptured CO emissions of the casthouse. As discussed earlier, the application does not address uncaptured emissions from these furnaces or does not explain why uncaptured emissions would not be present. In this regard, the application does not show 100 percent capture of the particulate emissions of these furnaces by the control systems for particulate. The application also does not explain why the

air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the facility. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. In addition, the air quality analysis uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.

6.4. The Proposed Scope of Proposed Group Emission Limits Is Overly Broad

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate. In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two BOFs. These are principal emission units at this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two BOFs to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the BOFs should not both continue to be limited individually.

In this regard, the application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted. The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[32] However, the application does not show that the specific circumstances of the Project are such that the current limits for annual emissions of the principal emission units should be replaced with group limits that apply to the combined emissions of the principal emission units and other lesser emission

[32] The application cites two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

units.[33] The circumstances of the Granite City Works are not the same as those presented by the cited permits. The Granite City Works are a manufacturing facility at which iron is produced from iron ore and then converted into steel in BOFs. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station.

6.5. Inadequate Justification for Elimination of Current Limits for Project-Affected Fuel Burning Units

The justification provided in the application for revisions to Permit 95010001 to eliminate limits on usage of fuel and, presumably, emission by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and blast furnace gas currently set by Permit 95010001, it does not propose any new limits in their place. This rationale is deficient because it does not consider that the application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed above, this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the application does not show that new limits for fuel usage would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shut down. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

6.6. The Application Does Not Show That the Emission Factors Proposed As Prescribed Factors for Certain Units Would Be Representative

A. Introduction

To calculate baseline emissions for certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are not based on

[33] For the casthouse, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the main baghouse for the casthouse, the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited for the permit to restrict the overall emissions of pollutants other than CO from the casthouse, rather than to individually limit the stack emissions of each control system and the uncaptured emissions. (As the Project is subject to BACT for CO, the limit could only apply to stack emissions.)

The circumstances of the BOF are similar, as the current permit separately addresses emissions of particulate and lead from the ESP stack and the roof monitor. It would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of each pollutant from the BOFs.

source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3.

For the Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Relative to prescribing emission factors, the USEPA's finding, as is provided below, should be considered *dicta* since the permit that was the subject of the appeal did not actually provide for use of prescribed emission factors. As the order addresses the possibility of using prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a permit applicant must provide in an application if it seeks a permit that would provide for use of prescribed emission factors. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
>
> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works. CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012. p. 12.

B. Particulate Emissions of the BOFs Through the Roof Monitor

The application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the BOF shop (i.e., the uncaptured emissions from the BOFs). In this regard, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the BOFs. As capture and control for particulate improved, the factor for future uncaptured emissions would be different and lower (better) than the factor for baseline uncaptured emissions.

C. Continuous Casting Lines

For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors that are proposed reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative.

D. Particulate Emissions of the Casthouse Through the Roof Monitor

For the casthouse roof monitor (uncaptured emissions particulate emissions of the casthouse), the application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency. Further support is needed for a prescribed emission factor for uncaptured emissions of the casthouse that is based on achievement of this level of capture.

E. Emissions of the Slag Pits and Iron Pellet Screen

For the slag pits and the iron pellet screen, the application does not provide support for the background information or inputs that were used to adjust the published factors for the operating conditions or circumstances of these units at the facility. Absent this information, the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

F. Current Provisions of the CAAPP Permit Requiring Use of Appropriate Emission Factors

The application is also deficient as it simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors." To facilitate the use of prescribed emission factors, the application also needs to propose or request revisions to general provisions in Permit 95010001 so as to also enable subsequent revisions to be made by administrative amendment to the CAAPP permit for the facility, Permit 96030056, to allow prescribed emission factors to actually be used to determine ongoing emissions of certain units.[34]

6.7. Requested Changes for Consistency with the Grouping of Units in the CAAPP Permit

In the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete

[34] The CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. These procedures do not provide for the use of prescribed emission factors. Rather, US Steel is generally required to use "appropriate emission factors," i.e., factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that being are used resting on US Steel. The CAAPP permit also provides for recordkeeping and reporting by US Steel so that information about the factors that are being used is publicly available and the Illinois EPA, the USEPA and interested parties can review the factors that are in use.

material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed by the specific changes to Permit 95010001 that have been requested. For example, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 95010001 with operations in the Basic Oxygen Furnace Shop and be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term.

On the other hand, the application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System). These emission units are currently addressed in Permit 95010001 with continuous casting operations. In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations. The application does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop as it would constitute a "BOPF {basic oxygen process furnace} shop ancillary operation" for purpose of 40 CFR 63 Subpart FFFFF. US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations.[35]

6.8 The Application Does Not Address the Amendment to the CAAPP Permit Previously Authorized Pursuant to Construction Permit 11050006

The 2022 application does not identify the version of the CAAPP permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Permit 11050006, issued April 1, 2013, for the addition of a baghouse system to improve control of particulate emissions of the BOFs. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[36]

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[35] For Ladle Drying/Preheating, the application also does not request any changes to Permit 95010001 to maintain consistency with the approach taken in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units. In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the BOF Shop, as well as elsewhere in the permit with other Project-affected fuel burning units. In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop.

[36] The 2022 application does address the addition of the baghouse control system for the BOFs as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points

Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[37]

6.9. The Application Does Not Address Changes to the CAAPP Permit That Are Needed Due to Revisions To 40 CFR 63 Subpart FFFFF

The application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources. These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the BOFs and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate.

6.10. Changes to the CAAPP Permit That Have Resulted from Shutdown of Emission Units

The application is deficient as it does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. …

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for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the BOFs.

[37] Concerns are posed by certain conditions in existing Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit.

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes. In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary. It would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.

6.11. The Evaluation of BACT for CO in the Application Is Not Sufficient

The evaluation of BACT for CO in the application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the application requests that the revision of Permit 95010001 allows for more emissions of CO from these units.

A. The Scope of the Evaluation of Available Control Options

As provided in the definition of BACT in Section 169(3) of the Clean Air Act and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices. For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices. In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option. i.e., "Work Practice Standards, including good combustion practices." The evaluation does not explain why process-related control options are not available for the casthouse.

B. Documentations for the Investigation into Available Control Options

For both the casthouse and the blast furnace stoves, the BACT evaluation in the application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. This is not sufficient for the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for the BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

C. Support for Not Setting Numerical BACT Limits for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard. Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While

certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

6.12. Inconsistency of the Application with a Pending 2008 Application & Pending Appeals

A. Pending 2008 Application

On February 4, 2008,[38] the Illinois EPA received an application from US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of blast furnace gas (BFG) and the SO_2 emissions resulting from the combustion of BFG. The 2022 application is inconsistent with and conflicts with that prior application (the "2008 application"). As such, these two applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "… does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." The 2008 application does request changes to the provisions of the permit for SO_2, as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors."

B. Pending Board Appeals

The application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. For CO, the application does request that the revised permit address emissions of CO from the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[39] However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the BOFs, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack. As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. In these appeals, US Steel challenged all emission factor limits set by Permit

[38] Several things interfered with work on the 2008 application. These include the amount of effort needed by the Illinois EPA to issue the initial CAAPP permit for the Granite City Works. The first two CAAPP permits issued for this facility had to be enhanced and reissued to address certain deficiencies identified by USEPA in Orders responding to petitions requesting the USEPA object to the permits that had been issued. Then, additional revisions to Permit 95010001, as US Steel has tried to address with the 2022 application, were found to be necessary because the NOx and VOM emissions of the basic oxygen furnaces exceed or may exceed the limits established in this permit. Work on the current application for revisions to this permit was also disrupted by an interruption in the iron and steel production of the facility that began in December 2015. This interruption, which ultimately lasted for over two years, meant that it was uncertain that the facility would resume production of iron and steel.

[39] As already discussed, in the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests updates to the limits for CO emissions from use of BFG and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the emission factor limits that are set for SO_2, CO and lead. In addition, in the application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.

With regard to the CO emissions of the BOFs, the application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the BOFs, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system.

6.13. Other Deficiencies in the Application

There are also a number of other lesser reasons why the Illinois EPA determined that the application should be denied, as are set forth in the draft of the denial letter. For example, this application does not include a signed certification for its truth, accuracy and completeness. While this deficiency could be remedied with a supplement to the application that provides both this certification and corrections to the errors in the application that have been noted, this would not be sufficient for a revised permit to be issued given more substantial deficiencies in the application that have been identified..

7. Request for Comments

It is the Illinois EPA's preliminary determination that US Steel's 2022 application for revisions to Permit 95010001 should be denied. The Illinois EPA has prepared a draft of the denial letter that it proposes to issue for the 2022 application. The draft denial letter details the reasons why the Illinois EPA has determined that this application should be denied.

The Illinois EPA is providing the public with an opportunity to review and comment on this proposed denial of this application and the reasons for such action identified by the Illinois EPA as set forth in the draft of the denial letter.

Appendix 1

Brief Descriptions of the Revisions to Permit 95010001 Requested By US Steel

- Raise permitted NOx and VOM emissions of the basic oxygen furnaces (steel production) to correct for data in the original application that understated emissions. This revision would facilitate resolution of two appeals to Illinois' Pollution Control Board (PCB), PCB 2013-053 and PCB 2013-062 as they address NOx and VOM emissions of the BOFs. The first appeal addresses the Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) as issued in 2013 as it repeats emission limits set by Permit 95010001. The second appeal addresses Construction Permit 11050006, a construction permit issued in 2013 for improvements to the particulate control for the BOFs, as this permit also refers to emission limits set by Permit 95010001.

- Eliminate limits set by the permit for individual process operations for emissions of particulate matter and particulate matter$_{10}$ (collectively particulate), NOx and VOM. These limits, which are in pounds/ton of throughput and tons/year, were set for purposes of New Source Review (NSR). In place of these limits, set "group limits" for the annual emissions of groups of related operations, e.g., limits for the overall emissions of the casthouse for the blast furnaces and other units involved in production of iron. This would also facilitate resolution of the two appeals to the PCB as they both challenge the limits in pounds/ton of throughput. These requested revisions would make the permit less stringent. Any "overage" of emissions by certain unit(s) in a group could potentially be balanced by lower levels of emissions by other units in the group. Group limits have been allowed by USEPA for purposes of PSD in certain construction permits issued outside of Illinois.

- Address the CO emissions of the casthouse for the blast furnaces, which were not identified in the original application and are not currently addressed by the permit.

- Provide for an increase in usage of natural gas by Project-affected fuel burning units because coke oven gas is no longer available with the shutdown in 2015 of the byproduct coke oven batteries at the facility.

- Update the construction permit to be consistent with the grouping of units in the CAAPP permit for the facility, including addressing discrete material handling operations as a group of units.

- Process the revised construction permit with "Integrated Processing" so that appropriate revisions can be made to the CAAPP permit for the facility by Administrative Amendment rather than by a separate proceeding for a major modification of the CAAPP permit.

- Update Permit 95010001 with a number of minor revisions as requested to US Steel.

Appendix 2:

Brief Descriptions of Deficiencies in the Application Identified in the Draft Denial Letter

- The revised netting analysis for the Production Increase Project (the "Project") for NOx in the 2022 application attempts to show that the Project would still not be a major modification for purposes of Prevention of Significant Deterioration (PSD) or Major Stationary Source Construction and Modification (MSSCAM) with higher permitted emissions of nitrogen oxides (NOx) from the basic oxygen furnaces, as are being requested. However, the revised netting analysis for NOx does not fulfill relevant requirements of the rules governing netting analyses. As a result, the revised analysis does not show that the Project would still not be a major modification for purposes of PSD and MSSCAM with the requested increases in NOx emissions to correct erroneous data in the original application. In addition, for NOx, the application does not address applicable requirements of the PSD and MSSCAM programs that would become applicable as the Project would now be a major modification. As related to the effect of the Project on air quality, these include an air quality impact analysis for nitrogen dioxide (NO_2) under the PSD program and emission offsets for NOx under MSSCAM. As related to control of NOx emissions, this entails use of appropriate control measures for the NOx emissions of the casthouse on the blast furnaces and the stoves associated with the blast furnaces. This is because the Project included physical modifications to the blast furnaces so that the control measures for NOx must reflect Best Available Control Technology (BACT) under PSD and the Lowest Achievable Emission Rate (LAER) under MSSCAM.

  In particular, the application relies on decreases in NOx emissions due to actions at the facility that occurred after 1996, i.e., the shutdown of ten older boilers in 2010 and the shutdown of the by-product coke oven batteries in 2015. These actions are not contemporaneous with the Project, which occurred in 1996. As such, the accompanying decreases in NOx emissions cannot be relied upon to show that the Project should still be considered non-major.

- Certain emissions data underlying the revised netting analysis cannot be independently confirmed by the Illinois EPA.

- The application lacks detailed supporting information for the contribution of various Project-affected fuel burning units to the actual annual NOx emissions under the requested revised permit.

- The application does not show that the proposed groups of operations for the requested "group limits" for annual emissions are appropriate. In this regard, the 2022 application requests that emission limits currently set by Permit 95010001 that apply to emissions of various pollutants from individual emission units or points of emissions from the casthouse on the blast furnaces and the BOFs, which have both captured/controlled emissions and uncaptured emissions, be replaced with limits that apply to the emissions of groups of related emission units. This would not provide for emission limits that only apply to the blast furnaces casthouse and the two BOFs. These are principal emission units at this facility and their emissions should be directly limited separate from the emissions of other units. The construction permits issued by other jurisdictions cited in the application as support for setting group limits do not eliminate the need

for the Illinois EPA to exercise its technical judgment when deciding whether and to what extent to set group limits.

- The 2022 application does not show that certain emission factors that the application requests be prescribed by the revised permit should be considered representative and acceptable. In this regard, the application requests that for certain emission units, the revised permit specify or prescribe the emission factors that are to be used on an ongoing basis for purposes of assessing compliance with limits on emissions set by the permit.

- As related to sulfur dioxide (SO_2) emissions from burning blast furnace gas, a fuel byproduct from the blast furnaces, the 2022 application is inconsistent with an earlier application for revisions to Permit 95010001. This earlier application was submitted in 2008 pursuant to a state consent decree (*People of the State of Illinois v. US Steel Corporation, Inc.*, Madison County Circuit Court No. 05-CH-750 (December 18, 2007)). This earlier application is still pending. It requests revisions to Permit 95010001 to allow more emissions of SO_2 from burning blast furnace gas, both in pounds of SO_2 per million cubic feet of gas burned and in tons per year. However, the current application does not request any such changes and instead states that the limits for SO_2 emissions from blast furnace gas should not be changed.

- The application does not include information to facilitate Integrated Processing of a revised permit, as requested by US Steel. Most significantly, the application does not provide information to support removal of provisions in the CAAPP permit for the now shutdown coke oven batteries and for use of coke oven gas that should not be included in any amended CAAPP permit.

- US Steel has not taken necessary action to enable Integrated Processing of the requested revised permit. This is because it has not initiated the amendment of the CAAPP permit authorized by Permit 11050006, as issued in 2013, which is an earlier construction permit that was subject to Integrated Processing. That permit addresses the addition of the baghouse control system to the BOFs to improve control of particulate emissions from charging and tapping of these furnaces. Prior to installation of the baghouse system, the particulate emissions from charging and tapping were only controlled with the electrostatic precipitator (ESP) control system.

- There are also a number of other lesser deficiencies in the 2022 application that also warrant the denial of this application.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/785-1705 CERTIFIED MAIL

DENIAL OF AN APPLICATION FOR REVISIONS TO A CONSTRUCTION PERMIT/PSD APPROVAL[1] (REVISED DRAFT[2])

(Draft December 2023)

U.S. Steel Granite City
Attn: Krista Armentrout - Environmental Manager
1951 State Street
Granite City, Illinois 62040

Permit/Application No.: 95010001 I. D. No.: 119813AAI
Date Permit Originally Issued: January 25, 1996
Date Application for Revisions Received: October 7, 2022
Subject of Permit: Production Increase
Location: Granite City Works, Southeastern Granite City

The Illinois EPA has reviewed your above referenced application for revisions to the above-referenced construction permit/Prevention of Significant Deterioration (PSD) approval (Permit 95010001) issued for the above referenced project. The permit application is DENIED because, if a revision to Permit 95010001 were issued as requested by this application, it might violate various Sections of the Illinois Environmental Protection Act (Act) and various provisions in Illinois' regulation pursuant to the Act. The Sections of the Act that might be violated include Sections 9(a), 9(b)(2), 9.1(d), 39(a), 39.5(5)(e), 39.5(7)(a), 39.5(5)(i), 39.5(10)(a)(iv) and 39.5(13)(c)(v). The provisions of the relevant Illinois regulations, i.e., Subtitle B of Title 35 of the Illinois Administrative Code (IAC), that might be violated include 35 IAC 201.152, 201.159, 201.160(a), 203.123, 203.128, 203.201, 203.203(b), 203.208, 203.301, 203.302, 204.280, 204.330, 204.400, 204.550, 204.560, 204.810, 204.1100(c), 204.1110, 204.1130 and 270.401(f).

The specific Sections of the Act and the specific provisions of the Illinois Administrative Code that may not be met if Permit 95010001 were to be revised as requested by this application are detailed in the Listing of Denial Points, Attachment 1 of this permit denial. For each Denial Point, Attachment 1 also describes the information that this application did not provide and the specific reasons why the Act and might be violated if a revised permit were issued as requested, with accompanying explanation and discussion.

[1] In this application, US Steel requests that the revision of Permit 95010001 be processed with "Integrated Processing," as is provided for by Sections 39.5(13)(a) and (c)(v) of the Act. Integrated Processing would allow changes to the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, as would be set forth in the revised permit, to subsequently be made by means of an Administrative Amendment of the CAAPP permit.

[2] This revised draft denial letter takes the place of the initial draft denial letter, which was made available for public review and comment beginning in July 2023. This revised denial letter more clearly sets forth the specific laws, rules and reasons that would be the basis for the Illinois EPA's proposed denial of this application.

(This footnote would not be included later in any denial that would be issued by the Illinois EPA.)

This permit denial has two appendices. Appendix A lists the various sections of the Act that are cited in Attachment 1 as the statutory basis for this denial letter, with description and, in some cases, general explanation why the section might be violated if Permit 95010001 were to be revised as requested by this application. Appendix B lists the various provisions in Subtitle B of Title 35 of the Illinois Administrative Code that are cited in Attachment 1 as the regulatory basis for this denial letter, with description and, in some cases, general explanation why the provision might be violated if Permit 95010001 were to be revised as requested by this application.

Before taking action to deny the above-referenced application, the Illinois EPA held a public comment permit on a draft of a proposed permit denial letter in accordance with 35 IAC Part 252, as provided for by 35 IAC 252.105(b).

If you have any questions on the denial of this application, please call Jason Schnepp or Minesh Patel at 217/785-1705.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:mvp:tan

U.S. Steel Granite City (I. D. No. 119813AAI)
Permit/Application No. 95010001
Application for Revisions to the Permit Received on October 7, 2022
Draft of Permit Denial Letter December 2023

ATTACHMENT 1: LISTING OF DENIAL POINTS

1. THE REVISED NETTING ANALYSIS FOR THE PROJECT FOR NITROGEN OXIDES (NOx) DOES NOT FULFILL RELEVANT REQUIREMENTS OF NEW SOURCE REVIEW (NSR) FOR SUCH ANALYSES

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d) and 39(a)*. (Note: The significance of asterisks that accompany certain Sections of the Act is explained in Appendix A.)

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 Illinois Administrative Code (IAC) 201.160(a), 203.201, 203.203(b), 203.208**, 203.301, 203.302, 204.550**, 204.810, 204.1100(c), 204.1110 and 204.1130. (Note: The significance of asterisks that accompany certain provisions of the Illinois Administrative Code is explained in Appendix B.)

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not show that the Production Increase Project (Project) would still not be a major modification for emissions of nitrogen oxides (NOx) for purposes of New Source Review (NSR) with the increases in NOx emissions that are requested to address errors in the initial permitting of the Project. In particular, the application requests an increase in the permitted NOX emissions of the basic oxygen furnaces (BOFs) of more than 200 tons/year. The netting analysis for NOx in the application, which addresses the Project with the requested increases in NOx emissions, is flawed so cannot be relied upon to show that the increases in permitted NOx emissions would not result in the Project being a major modification. The revised NSR applicability analysis is flawed as, contrary to applicable rules, it relies upon decreases in NOx emissions from actions that were neither contemporaneous with the Project nor creditable as they were not required by Permit 95010001. These decreases resulted from the later shutdowns of ten older boilers at the facility and the much later shutdown of the two by-product recovery coke oven batteries at the facility, as coke oven gas (COG) ceased to be available for use in Project-affected fuel burning units. The incongruous conclusion of the revised NSR applicability analysis is that the Project was accompanied by an overall decrease in the NOx emissions of Project-affected fuel burning units rather than an increase in NOx emissions as would be expected from an increase in production of iron by the blast furnaces.

As the Project would become a major modification for NOx with the requested increase in permitted NOx emissions, the Project would become subject to Nonattainment New Source Review (NaNSR) (35 IAC Part 203, Major Stationary Sources Construction and Modification (MSSCAM)) for NOx. NOx is regulated as a precursor to the formation of ozone in the atmosphere and, in 1996, the Granite City Works was in an area designated nonattainment for ozone air quality. (This area is still nonattainment for ozone.) As the Project would become a major modification for NOx with the requested increase in permitted NOx emissions, the Project would also become subject to Prevention of Significant Deterioration or PSD (35 IAC Part 204) for NOx. NOx is also regulated as a precursor to the formation of nitrogen dioxide (NO_2) in the atmosphere and, in 1996, the facility was in an area designated attainment or unclassified for NO_2 air quality. (This area is still attainment or unclassified for NO_2.) However, as related to the NOx emissions of the Project as now requested by the 2022 application, the application does not address the substantive requirements of MSSCAM or PSD for a major modification, much less show that these requirements are fulfilled. The application does not show that for the Project-affected emissions units for which the Lowest Achievable Emission Rate (LAER) and Best Available Control Technology (BACT) should have originally been required for NOx, LAER and BACT are present as required, respectively, by MSSCAM and PSD. For NOx, the application also does not address the requirement of MSSCAM that a major project be accompanied by emission offsets to counterbalance the increase in emissions of the nonattainment pollutant from the project. The application also does not include an analysis for the impact of the project on NO_2 air quality, as required by PSD.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Section 9.1(d) of the Act and the substantive requirements of 35 IAC Part 203 and Part 204 for a major modification (the requirements for LAER, BACT and emission offsets for NOx and an air quality impact analysis for NO_2) would be violated if a revision to Permit 95010001 were issued that increased the permitted NOx emissions of the Project as requested by the 2022 application. This is because the revised NSR applicability analysis for the Project for NOx improperly relies upon decreases in NOx emissions that are neither contemporaneous nor creditable to claim that the Project would continue to not be a major modification for NOx with the increases in permitted NOx emissions that are being requested.

Discussion

Overview

For NOx emissions, the 2022 application for revisions to the Construction Permit 95010001 for the Production Increase Project (Project)[1] does not address or show fulfillment of the substantive requirements of the Prevention of Significant Deterioration (PSD) and Nonattainment New

[1] Permit 95010001 was initially issued in January 1996 for a "Production Increase" at the Granites City Works. It provides for increases in the allowable production rates of iron from 2,372,500 to 3,165,000 tons per year and of steel from 2,774,000 to 3,580,000 tons per year. This permit was preceded by Construction Permit 9209014, a permit for increases in production issued in September 1992. That permit provided for increases in the permitted production rate on a monthly average basis for iron from 5,600 to 6,500 tons per day (equivalent to production of 2,372,500 tons per year) and for steel from 6,900 to 7,600 tons per day (equivalent to production of 2,774,000 tons per year).

Source Review (NaNSR) programs related to impacts on air quality, i.e., air quality analysis for impacts on NO_2 air quality per 35 IAC 204.1130 and emission offsets for NOx per 35 IAC 203.302. For the blast furnaces and blast furnace stoves, i.e., the emission units that underwent physical modifications with the Project, the 2022 application also does not show fulfillment of the BACT and LAER requirements, respectively of PSD (35 IAC 204.1100) and NaNSR (35 IAC 203.301) for NOx emissions.[2, 3] This showing is necessary because Permit 95010001 is currently based on the net increase in NOx emissions from the Project not being significant so that the Project is not a major modification for NOx.[4] The 2022 application requests that the Project be permitted for additional NOx emissions but does not show that the Project would still not be a major modification for NOx if the permit were revised as requested. As the Project would become a major modification for NOx with the requested revisions to Permit 95010001, the 2022 application must show for NOx that the relevant substantive requirements of PSD and NaNSR are fulfilled for the Project. It would not be appropriate for a revised permit to be issued with increases in permitted NOx emissions as requested by the current application if this application does not also show that the applicable substantive requirements of PSD and NaNSR would be met for the Project for NOx.

In this regard, the 2022 application requests that the permitted NOx emissions of the casthouse on the blast furnaces and the basic oxygen furnaces be increased by 19.4 and 220.2 tons/year, respectively, for an overall increase of 239.6 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.)[5] The revised netting analysis for the Project for NOx in the 2022 application suggests that this increase would be accompanied by decreases in the NOx emissions of certain other units. With these accompanying decreases, the net increase in NOx emissions from the Project with the requested revised permit would continue to not be significant.[6] The requested increase in the permitted NOx emissions of the blast furnaces and

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[2] The basic oxygen furnaces, at which the largest increase in permitted NOx emissions is requested, were not physically modified and would not become subject to requirements for BACT or LAER for NOx even if the Project were a major modification.

[3] The 2022 application also does not include an analysis of alternatives. This analysis would have been required to be included in the original application for the Project if it had been recognized in 1996 that the Project was a major modification for NOx. It is beyond the scope of the revisions of Permit 95010001 that are now requested to address the fact that such an analysis was not originally part of the construction permit application for the Project.

[4] Under the PSD program, the significant emission rate for NOx is 40 tons/year; under NaNSR, since Granite City is not in an area that is classified as serious, severe or extreme nonattainment for ozone air quality, the significant emissions rate for NOx is also 40 tons/year. An increase in NOx emissions or, if the source elects to evaluate the net increase in emissions, a net increase in NOx emissions from a project that is equal to or greater than this rate is considered significant. (35 IAC 204.660 and 35 IAC 203.209.)

[5] In the 2022 application, the increases in the NOx emissions of the blast and basic oxygen furnaces reflect proposed corrections to baseline emissions, as well as increases in the permitted emissions with the project. For the blast furnaces, the application indicates that baseline NOx emissions should be lowered from 15.6 to 4.6 tons/year. For the basic oxygen furnaces, baseline NOx emissions should be raised from 46.94 to 179.8 tons/year. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.")

[6] When a netting analysis that showed a project would not be a major modification is found to have understated emissions of certain new or modified emission units, the next step is usually to examine

basic oxygen furnaces, 239.6 ton/year combined, would not result in the Project becoming a major modification for NOx. For this purpose, the 2022 application indicates that the overall decrease in NOx emissions from Project-affected fuel burning units would now be 250.3 tons/year, comparing their revised baseline NOx emissions of 956.3 tons/year and future NOx emissions of 706 tons/year. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) However, the 2022 application does not identify the specific decreases in NOx emissions that occurred at different groups of Project-affected fuel burning units. Instead, the 2022 application simply indicates that the future NOx emissions of the Project-affected fuel burning units, overall, would not exceed 706.0 tons/year.

This netting analysis for NOx in the 2022 application cannot be relied upon for issuance of a revised permit for the Project as requested by US Steel. The application does not include relevant information showing that additional decreases in NOx emissions that would now be proposed to be relied upon would be contemporaneous and creditable for permitting of the Project. For emission decreases to be relied on for the purpose of a netting analysis, 35 IAC 204.550 and 203.208 provide that the decreases must be contemporaneous and creditable. This necessitates information for how the additional decreases in NOx emissions addressed in the revised netting analysis for NOx were created and how the amounts of the decrease were quantified. Most significantly, the 2022 application does not show that certain decreases in NOx emissions that it would rely upon should be considered contemporaneous with the Project. A revised permit cannot be issued for the Project that relies upon "post-project" emissions decreases, which occurred after the Project, to show that the Project with the requested increases in NOx emissions of the furnaces, should still not be considered a major modification. This is critical because changes that are unrelated to the Project have occurred at certain fuel burning units after the initial issuance of Permit 95010001. The 2022 application proposes to rely upon the decreases in NOx emissions due to these changes, which decreases were not and could not have been relied upon by the original permit for the Project. These decreases in emissions would be relied upon by the revised netting analysis as the analysis does not account for and exclude the emissions decreases from these changes from the analysis. (In addition, as will be addressed separately below, the 2022 application does not include appropriate support for certain units for the quantification of NOx emissions in the revised netting analysis.)

Application Relies on Emission Decreases That Are Not Contemporaneous

As related to the requirement of the NSR rules that decreases in emissions relied upon for netting be contemporaneous, the 2022 application indicates baseline NOx emissions of 131.8 and 123.2 tons/year from the use of blast furnace gas (BFG) and natural gas, respectively, in Boilers 1

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whether the project should still not be considered a major modification. The revised netting analysis for this purpose may consider adjustments such as reductions in the permitted emissions of other new or modified units involved in the project. It may also consider additional emission decreases that were not relied upon by the original netting analysis but could have been as they are contemporaneous and creditable. As this reexamination of a project shows that it still would not be considered a major modification with appropriate adjustments to the netting analysis, an appropriately revised construction permit may be issued that is based on the project continuing to not be a major modification.

through 12. (2022 application, Appendix B - Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) Boilers 1 through 12 are the twelve boilers at the source in 1996 that were addressed by Permit 95010001. Ten of these boilers, Boilers 1 through 10, were shut down in 2009.[7] The 2022 application does not show that NOx emissions of these ten boilers, as existed in the period prior to 2009, were considered in the "future" NOx emissions with the Project of at most 706 tons/year from the Project-affected fuel burning units. In addition, with regard to Boilers 11 and 12, the two remaining old boilers at the source that continue in operation, flue gas recirculation systems have been installed on these boilers pursuant to Construction Permit 10080022, issued in January 2011. These systems were installed to control NOx emissions to facilitate compliance with 35 IAC 217.164. The 2022 application does not show that the revised netting analysis for NOx does not rely on the lower NOx emissions from Boilers 11 and 12 that are now being achieved with the new control systems, rather than their NOx emissions as previously existed with the Project in the period before these control systems were installed.

The application also indicates baseline NOx emissions of 461 tons/year from use of coke oven gas (COG) in the blast furnace stoves and Boilers 11 and 12.[8] In 2015, US Steel shut down the two by-product recovery coke oven batteries at the Granite City Works. COG ceased to be available for use in the stoves or Boilers 11 and 12. However, COG was available for use in the stoves and these boilers in 1996. As related to the Project, the 2022 application does not show that the revised netting analysis for NOx would not rely upon decreases in the NOx emissions of the stoves and boilers due to the elimination of COG, which did not occur until 2015.[9]

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[7] The shutdown of Boilers 1 through 10 was required by Condition 2.6(a) of Construction Permit 06070023, which was originally issued in July 2006. This permit addresses construction of a cogeneration boiler at the facility that would be designed to produce both high-pressure steam to generate electricity and lower pressure process steam. This boiler has been constructed and is in operation. The permitting of this new boiler relied upon contemporaneous decreases in NOx emissions from several actions, most notably, a decrease of 558.9 tons/year from addition of low NOx burners to four reheat furnaces. The permitting of the new cogeneration boiler also relied on a 33.41 tons/year decrease in NOx emissions from the shutdown of Boilers 1 through 10 as this eliminated use of natural gas by these boilers. The related application for emissions decreases that were contemporaneous with the new boiler did not rely on any decreases in the NOx emissions of these boilers from use of COG and BFG. This is because "…the boilers shutdowns will not result in any change in the amount of BFG and COG combusted at the Facility." (Application 06070022, Section 3.3.1 "Boilers 1 through 10 Shutdown Emission Calculations," p. 3-7.) The reliance of Permit 06070023 on emission decreases from the shutdown of these boilers is a further impediment to reliance on these decreases in a revised netting analysis for the Project.

[8] For Project-affected boilers, the 2022 application indicates that baseline NOx emissions from usage of COG are addressed only for Boilers 11 and 12. (2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units.") This is likely erroneous since the application for Permit 06070022 indicates that Boilers 1 through 10 also had the ability to use COG.

[9] The 2022 application does reflect increased use of natural gas by Project-affected fuel burning units. The application explains that with the shutdown of the by-product coke oven batteries, COG is no longer available and more natural gas may need to be used (e.g., 2022 application, Section 6.3, Post-Project NOx Emissions Limitations"). Permit 95010001 currently limits annual use of natural gas by the Project-affected fuel burning units to 1,346 million cubic feet. The revised netting analyses in the 2022

In summary, for purposes of applicability of NSR, the NOx emissions allowed from the Project in 1996 that would be permitted with the requested revisions to the permit could be substantially higher than indicated in the 2022 application.[10] This application does not show that this would not be the case such that the Project would not become a major modification for NOx with the requested increases in the permitted emissions of the blast furnaces and the basic oxygen furnaces. The timing of actions that have resulted in decreases in NOx emissions of fuel burning units after 1996 is critical when considering applicability of NSR to the Project with the requested revisions to Permit 95010001. As the decreases in NOx emissions from certain actions cannot be considered or would be smaller, the net increase in NOx emissions of the Project would be greater. In this regard, it must be assumed that the "future NOx emissions" indicated in the 2022 application reflect maximum actual NOx emissions beginning in 2023, with the requested revisions to Permit 95010001. The application does not suggest that these future NOx emissions are the emissions that should have been allowed by the permit back in 1996 when the permit was issued and the Project commenced.[11]

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application are based on a post-project annual natural gas usage of up to 1,980 million cubic feet (e.g., Tables 5-7, 6-6 and 7-3).

The decreases in NOx emissions that resulted from the shutdown of the coke oven batteries and elimination of COG in 2015 are contemporaneous with any increases in NOx emissions due to the accompanying use of more natural gas. However, these emissions decreases are not contemporaneous relative to the Project, which was undertaken in 1996. In addition, an application for revisions to Permit 95010001 is not an appropriate venue to address the use of more natural gas due to the shutdown of the coke oven batteries. The Project involved increases in production of iron and steel. The Project-affected fuel burning units do not include four slab furnaces that also used COG and now must use more natural gas. Lastly, the consequences of the shutdown of the coke oven batteries on the facility's NOx emissions, including the consequences for the slab reheat furnaces, are the subject of a separate construction permit application, Application 15030001, received March 5, 2015, which application is still pending.

[10] It should be noted that for purposes of applicability of NSR, for the same reasons that the 2022 application understates the net increase in emissions of NOx from Project-affected fuel burning units, the application also understates the increases or net increases in emissions of the Project for purposes of NSR for particulate matter (PM), particulate matter$_{10}$ (PM_{10}) and volatile organic material (VOM), i.e., pollutants other than NOx for which the requested revised permit for the Project would rely upon the increase or net increase in emissions not being significant.

[11] With the requested revisions of Permit 95010001, it is unclear how the "future NOx emissions" of fuel burning units indicated in the 2022 application are NOx emissions that could have been allowed by this permit in 1996. The future NOx emissions of affected fuel burning units indicated in the 2022 application are less than the baseline NOx emissions, i.e., proposed future emissions of 706 tons/year compared to the claimed baseline of 956 tons/year. However, the Project did not include any elements that would lower the NOx emissions of fuel burning units. Rather, the production of more iron and steel would be accompanied by increased utilization of the blast furnace stoves and boilers as more blast air and steam are generally needed for blast furnaces to produce more iron. Accordingly, in 1996, the NOx emissions of fuel burning units allowed by Permit 95010001 must necessarily be more than the baseline emissions, as this permit addresses a project that involves use of more BFG and natural gas by Project-affected fuel burning units. (Use of COG was not expected to be affected by the Project because production of COG was constrained by the design and operation of the existing coke oven batteries, which were not being modified as part of the Project.)

Indeed, the future NOx emissions of the fuel burning units for purposes of any revised netting analysis should be expected to be substantially greater than their baseline emissions. If one assumes that the increases in emissions would be proportional to the permitted increase in iron production, future NOx emissions of the fuel burning units would be expected to increase by roughly 40 percent. If the baseline

2. THE DETERMINATION OF BASELINE NOx EMISSIONS IN THE REVISED NETTING ANALYSIS CANNOT BE INDEPENDENTLY CONFIRMED

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d) and 39(a)*.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152**, 201.152*** and 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include data and information supporting the determinations of baseline NOx emissions for certain emissions units in the revised NSR applicability analysis for NOx. In this regard, it is noteworthy that the revised NSR applicability analysis does more than seek increases in permitted NOx emissions of the blast furnace casthouse and BOFs to correct errors in the original application for the Production Increase Project. As explained in the discussion below, the revised NSR applicability analysis now also addresses NOx emissions from burning coke oven gas (COG) in Project-affected units, which the Illinois EPA did not require be addressed in 1996. For the continuous casting operations, the analysis also takes a different approach to use of natural gas and associated NOx emissions. Lastly, the analysis does not reflect a reevaluation of the NOx emission factor used for ladle preheaters. For these units, an emissions factor for use of natural gas in boilers, which likely is not appropriate for the simpler burner systems in preheaters, continues to be used.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* As there are deficiencies in the data and information that is provided in the 2022 application for the baseline NOx emissions of fuel burning units, the revised NSR applicability analysis cannot be relied upon. Separate from Denial Point 1 concerning reliance on NOx emission decreases that are not contemporaneous and creditable, deficiencies in the emission data presented in this analysis are also a reason why this analysis cannot serve as proof that the Production Increase Project would not become a major modification for NOx under NSR with the increases in permitted NOx emissions that are now being requested. Likely or possible deficiencies in the emission data in the revised NSR applicability analysis for NOx in the application need to be resolved or corrected before any revised version of Permit 95010001 is issued that would be based upon a revised NSR applicability analysis for the Project.

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emissions of these units should have been 956 tons/year, as indicated in the 2022 application, this suggests future emissions of these units with the Project should be about 1,340 tons/year (956 tons/year x 1.4 = 1.338 ~ 1,340 tons/year). Alternatively, absent any decreases in NOx emissions from the twelve boilers and the discontinuation of COG, and disregarding increased use of natural gas in place of COG, the NOx emissions from the Project-affected fuel burning units for purposes of NSR applicability, as of 1996, would be on the order of 1,420 tons/year (Proposed future emissions of 706 tons/year + 131.8 tons/year attributable to use of BFG by the boilers + 123.2 tons/year attributable to use of natural gas by the boilers + 461 tons/year from the discontinuation of the use of COG in the stoves and Boilers 11 and 12 ~ 1,420 tons/year). If so, the calculated change in NOx emissions from Project-affected fuel burning units for purposes of NSR applicability would be a net increase on the order of 460 tons/year (1,420 – 956 = 464), rather than a net decrease of about 250 tons/year.

Discussion

The new determination of baseline NOx emissions of Project-affected fuel burning units provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not show that all Project-affected fuel burning units have been addressed. For units that are addressed, the application does not show that appropriate emission factors and operating data have been used to estimate emissions. As specific concerns exist with the determination of baseline NOx emissions for certain emission units, as discussed below, concerns exist with the determination of the overall baseline NOx emissions for the Project.

Baseline Usage of Coke Oven Gas (COG)

As already discussed, the use of coke oven gas (COG) in Project-affected fuel burning units is introduced in the 2022 application for revisions to Permit 95010001.[12] This application does not include supporting documentation or explanation for the baseline usage of COG utilized in the revised netting analysis. The annual usage of COG in the blast furnace stoves (374 million cubic feet/year) and in boilers (2,211 million cubic feet/year) is simply presented in the revised netting analysis for NOx. (2022 application, Appendix B - Emission Calculations, USS Granite City - 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis). The indicated usages of COG are not accompanied by any documentation or explanation.

Emission Factor for Use of COG in Boilers 11 and 12:

For COG, the 2022 application utilizes a NOx emission factor for Boilers 11 and 12[13] of 404 pounds/million cubic feet of COG.[14] The application states that this factor is based on emission testing conducted on the stack of A Coke Battery (2022 application, Table 6-4, "NOx Emission Factors for Fuel Burning"). The application does not show that it is appropriate to utilize an

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[12] It should be noted that the introduction in the revised netting analysis for the Project of NOx emissions from use of COG in Project-affected fuel burning units is not acknowledged in the section of the 2022 application in which historical production and operating rates are discussed. Section 6.2.1 of the application, "Historical Throughput Rates," states that "The pre-project actual emissions were calculated using the same production and operating rates as the 1995 Application shown in Table 6-3 [Pre-Project Production and Operating Rates for NOx]." This statement is clearly not accurate as the usage of and NOx emissions from COG were not quantified in the 1995 application. Moreover, Table 6-3 does not include information for the historical or baseline usage of COG.

[13] In the 2022 application, there is an inconsistency in the information for the baseline NOx emissions of boilers. In Table 6-5, "Pre-project Actual Emissions and Summary of Changes to Pre-Project NOx Emissions Factors for Affected Emissions Units," baseline NOx emissions of Boilers 1 through 10 do not appear to be addressed since this table shows that baseline emissions are provided for B11 and B12 (Boilers 11 and 12). In Appendix B, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis, baseline NOx emissions appear to be provided for all boilers, as information is shown as being for "boilers."

[14] For the stoves, the revised netting analysis utilizes a lower NOx emission factor of 80 pounds/million cubic feet of COG. The application states that this factor is based on an emission test for which the date is unknown (2022 application, Table 6-4, p. 6-3). As this factor is identical to the NOx emission factor in USEPA's WebFIRE database for burning COG in industrial boilers, this factor can be considered appropriate. (USEPA, Clearinghouse for Inventories & Emission Factors, Emission Factors & AP42, WebFIRE, with search conducted using the term "coke oven gas" in the field under Select options under Source Classification Code. .

emission factor developed from the results of emission testing on the combustion stack of a coke oven battery to calculate emissions of a boiler. There are significant differences between combustion of COG as occurs at coke ovens and combustion of fuel in a boiler. At a fundamental level, a combustion stack emits the products of combustion from the heating of coke ovens to the high temperature needed to convert coal into coke. Regenerative heat exchangers are utilized to efficiently achieve this temperature. Boilers 11 and 12 emit the products of combustion from burning fuel to achieve the temperature needed convert water into process steam.[15]

Emission Factor for Use of Natural Gas in Ladle Preheaters:

For use of natural gas, the 2022 application utilizes a single emission factor for NOx emissions from all Project-affected fuel burning units. This factor, 306 pounds/million cubic feet of natural gas reflects the results of emission testing conducted on Boiler 12 when using natural gas. The application does not show that it is appropriate to utilize this emissions factor for ladle preheaters, which are different types of emissions units than boilers. Moreover, the revised netting analysis for NOx in the application erroneously indicates that the estimated baseline NOx emissions of ladle preheaters were "Revised to use current AP-42 emission factor." (2022 application, Appendix B, Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase Analysis.) The current AP-42 NOx emission factor for small boilers (<100 million Btu/hour heat input) without low NOx burners or flue gas recirculation is only 100 pounds/million cubic feet of natural gas. (USEPA, *Compilation of Air Pollutant Emission Factors*, AP-42, Table 1.4-1.)

Emissions from Use of Natural Gas on the Continuous Casting Lines:

Unlike the original application, the 2022 application does not directly address NOx emissions associated with use of natural gas in continuous casting operations.[16] In this regard, this application states:

> The pre-project actual emissions for the Continuous Caster Mold – Caster #1 and Caster 2 process, as presented by National Steel Corporation in the 1995 Application listed NOx emissions from this operation. USS Granite City evaluated this analysis and determined that there is no NOx formation from this operation. Any NOx emissions from this operation are due to combustion of natural gas and are already accounted for under the gaseous fuel burning activities listed above [Section 6.2.2.1, Fuel Burning Emissions Units

[15] Application 15030001, the pending application for a construction permit for use of more natural gas with the shutdown of the by-product coke oven batteries, utilizes an emission factor for use of COG of 80 pounds/million cubic feet for baseline NOx emissions of Boiler 12. This is the NOx emission factor in FIRE for use of COG in boilers. This factor is much lower than 404 pounds/million cubic feet, the factor for COG used in the 2022 application for the baseline emissions of Boilers 11 and 12.

It should be noted that Application 15030001 does not include a NOx emission factor for Boiler 11 for COG. This is likely because Boiler 11 did not use COG in the baseline period used for Boilers 11 and 12 (January 2013 through December 2014) for the net increase analysis in this application.

[16] As reflected in Permit 95010001, the original permitting of the Project accounted for NOx emissions of 89.5 tons/year from Caster Molds – Casting but did not account for any NOx emissions from Slab Cut-Off and Slab Ripping, for which only particulate emissions were addressed.

> Emissions (Revised)]. Therefore, in the revised analysis, NOx emissions are not included from this operation.
>
> 2022 application, Section 6.2.2.7, "Continuous Caster Mold Process Emissions (Revised)."

This is problematic for several reasons. First, the 2022 application does not address the NOx emissions of the natural gas-oxygen torches used in the slab cutting and slab ripping processes, which are part of the continuous casting lines.[17] Second, as the application indicates that NOx emissions are present from the mold processes on the casting lines, the application does not show that the same NOx emission factor is appropriate for this use of natural gas as utilized for ladle preheaters or, alternatively, separately account for the NOx emissions from use of natural gas in the casting process. Lastly, the 2022 application does not identify either the caster processes or the torches as units whose use of natural gas and resulting NOx emissions would be addressed with the emissions of other Project-affected fuel burning units (e.g., 2022 application, Table 6-5, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-project NOx Emission Factors for Affected Emissions Units").

[17] Alternatively, if NOx is not formed by the torches given they are supplied with oxygen, the application does not confirm that usage of natural gas by the torches was not considered when the baseline NOx emissions from use of natural gas in Project-affected fuel burning units were determined.

3. THE APPLICATION LACKS INFORMATION FOR THE ACTUAL NOx EMISSIONS OF PROJECT-AFFECTED FUEL BURNING UNITS (LACK OF INFORMATION RELEVANT TO NETTING)

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152***, 201.160(a), 203.123, 203.128, 203.208*, 204.400, 204.550* and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The revised Netting Analysis for NOx in the 2022 application does not show that the value for the maximum future NOx emissions from certain fuel burning units, 706 tons/year, in aggregate, is appropriate for purposes of NSR. That is, the 2022 application does not show that 706 tons/year represents the post-project NOx emissions of these units as could have been addressed when Permit 95010001 was originally issued in 1996 if emissions from burning of COG in these units when operating at the levels of iron and steel production that were permitted had been considered. The 2022 application also does not show that the actual NOx emissions of the subject units in the period from 1996 to the present have not exceeded 706 tons/year. In other words, the application does not show that a value for future NOx emissions of the subject units of 706 tons/year does not really represent "future" emissions beginning at the present time. Otherwise, the value for future NOx emissions in the application improperly takes credit for reductions in the NOx emissions of the Production Increase Project (Project) that were not originally part of the Project. When the Project was initially issued in 1996, the NOx emissions from use of blast furnace gas (BFG) and natural gas in 12 boilers at the Granite City Works was addressed. When revaluating applicability of NSR for the Project for NOx with the increases in permitted emissions requested by the application, it is not appropriate to only address the potential NOx emissions of the two boilers that now remain. Although the other ten boilers are now shutdown, they were operating and emitted NOx in 1996. Similarly, in 1996, coke oven gas (COG) was used as a fuel and burned at the facility. With the shutdown of the two by-product recovery coke oven batteries at the facility, COG is no longer being produced. The NOx emissions of the fuel-burning units that formerly burned COG are now lower than they were in 1996 since natural gas is used to make up for the heat input to the units previously provided by COG. (Compared in terms of pounds of NOx per million Btu of fuel heat input, the NOx emissions from use of natural gas as a fuel are generally lower than those from use of COG.) However, when revaluating applicability of NSR for the Project for NOx with the increases in permitted emissions now requested, it is not appropriate to evaluate the NOx emissions of the units that formerly used COG as they now exist and to ignore the fact that in 1996 these units did use COG and their potential NOx emissions were higher. Again, as touched on in Denial Point 1, the difficulty is not that the future NOx emissions of the subject units may be lower compared to

what may have been possible for their permitted NOx emissions in 1996. The difficulty is that the revised NSR applicability analysis for NOx in the 2022 application attempts to rely on this "post-project" reduction in the NOx emissions of these units to make up for the increases in permitted NOx emissions of the blast furnace casthouse and BOFs that are requested.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* It would be improper for the Illinois EPA to issue a revision to Permit 95010001 that is based on the NSR applicability analysis for NOx in the 2022 application that is not consistent with the provisions of the NSR rules governing such analyses. This would be the case if the value/proposed limitation for maximum future NOx emissions of the subject units in the application was relied upon for issuance of a revision to Permit 95010001 and this value/proposed limitation does not reflect the potential emissions from the subject units with the Project, as required by 35 IAC 203.208 and 204.550 In other words, it would be improper for a revised permit to be issued that reflects current circumstances for the subject units if this reflects NOx emissions that are lower than could have properly been allowed in 1996.

Discussion

The 2022 application does not include a demonstration that the actual NOx emissions of Project-affected fuel burning units would not have exceeded the "future amount" or post-project emissions indicated in the revised netting analysis for the Project for NOx since Construction Permit 95010001 was issued if the production of iron and steel by the source was at the levels allowed by this permit.

3A. THE APPLICATION LACKS INFORMATION FOR THE ACTUAL NOx EMISSIONS OF PROJECT-AFFECTED FUEL BURNING UNITS (LACK OF SUPPORTING INFORMATION)

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*, *201.152*****,35 IAC 201.160(a). 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The amount in the 2022 application for the maximum future NOx emissions from certain fuel burning units, 706 tons/year, in aggregate, is not accompanied by supporting information but is simply presented. The application does not explicitly list the various units whose NOx emissions are being addressed and describe the nature of the various units relative to the emissions of NOx from burning fuel in the units. Data is not provided for the maximum annual amounts of fuels burned in these units. Data is also not provided for the emission factors used to calculate annual emissions, the sources or basis of those factors, and why those factors should be considered representative of the NOx emissions of the various types of units that are being addressed.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include information that is necessary to allow the Illinois EPA to rely upon the future maximum NOx emissions of the subject units, presumably the fuel burning units affected by the Production Increase Project, being no more than the stated amount, or issue a revised permit that limits NOx emissions to the stated amount. The missing information is needed so that the Illinois EPA and other interested parties can independently review the methods, data and calculations by which the representation in the 2022 application for maximum future NOx emissions of the subject units was determined. This information is also necessary if the Illinois EPA is to place appropriate conditions in a revised permit requiring US Steel to track the NOx emissions of the subject units, so as to verify that that the future NOx emissions do not exceed the amount stated in the application or other appropriate amount. In this regard, it is significant that the emissions of many of the Project-affected fuel burning units at the facility, i.e., the blast furnace stoves, the BFG gas flares, and various process heaters, cannot be directly determined because these units are not amenable to emission testing.
Note that this denial point addresses the lack of supporting information for the maximum future NOx emissions of the subject units that is stated in the 2022 application. Denial Point 3, above,

addresses the time period that should be reflected in the determination of maximum future emissions for purposes of evaluating applicability of NSR.

(A further discussion is not provided for this denial point, as it was not present in the Initial Draft Denial Letter. Following the close of the public comment period on the Initial Draft Denial Letter, the Illinois EPA realized that the 2022 application is also deficient as the value it provides for future NOx emissions of Project-affected fuel burning units is not accompanied by supporting information.)

4. FOR THE BASIC OXYGEN FURNACES, THE 2022 APPLICATION DOES NOT ADDRESS THE POTENTIAL FOR UNCAPTURED EMISSIONS OF NOx, VOLATILE ORGANIC MATERIAL (VOM) AND CARBON MONOXIDE (CO) THROUGH THE ROOF MONITOR FOR THESE FURNACES

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*** and 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include information for the uncaptured emissions of NOx, volatile organic material (VOM)_ and carbon monoxide (CO) for the BOFs that occur through the roof monitor on the BOF shop, i.e., the building in which the BOFs are located. The existences of emissions of NOx, VOM and CO from the BOFs is well-established from testing of the stacks of the control systems for the particulate emissions of the BOFs. This testing shows emissions now occur through both the older ESP control system for the BOFs and the baghouse that was installed within the last ten years to improve control of particulate emissions from charging and tapping of the BOFs. These control systems may capture most of the emissions of the BOFs, achieving overall capture efficiencies that engineering design suggests may approach 100 percent. However, the 2022 application does not contain technical or engineering information showing that all emissions of the BOFs are now being captured and no emissions occur through the roof monitor or other openings in the BOF shop. Complete capture of the emissions of the BOF is also not required by applicable regulations. For example, under the National Emission Standards for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities ("Iron and Steel NESHAP" or "NESHAP"), 40 CFR 63 Subpart FFFFF, Table 1, the opacity of emissions from the roof monitor and other openings in the BOF shop at the facility is only limited to no more than 20 percent, on a 3-minute average.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information addressing uncaptured emissions of NOx, VOM and CO from the BOFs, the 2022 application would not provide complete information about the emissions of the BOFs. For NOx, absent information for these uncaptured emissions, if US Steel were to submit a corrected, revised NSR applicability analysis to show that the Project would not be a major modification for NOx with increases in permitted emissions as requested, that analysis would not be complete. For VOM, for which the 2022 application also requests an increase in permitted emissions, the revised NSR applicability analysis to support such a revision is not complete. For CO, for which revisions to the PSD approval provided by Permit 95010001 are requested for emission units other than the BOFs, the updated air quality impact analysis for

CO required under the PSD rules would not reflect a complete emissions inventory for the existing sources of CO emissions at the Granite City Works.

Discussion

For the basic oxygen furnaces, consistent with the original permitting of the Project, the 2022 application only quantifies stack emissions of NOx, VOM and CO. For these furnaces, the application does not address uncaptured emissions of these pollutants. (For these furnaces, the 2022 application does address uncaptured emissions of particulate and lead[18] for which Permit 95010001 limits emissions of these pollutants from the "BOF [Basic Oxygen Furnace] Roof Monitor," (Permit 95010001, Condition 18 and Table 2, Item 2)).

The revised netting analyses for NOx and VOM in the 2022 application assume that all emissions of these pollutants from the basic oxygen furnaces are now captured. That is, with the installation of the new baghouse control system on the furnaces to improve control of particulate emissions from the charging and tapping processes, all NOx and VOM emissions of these furnaces that originally were not captured and were emitted through the roof monitor now are captured and are emitted through the stack on the baghouse system. For example, as related to emissions of NOx, the application explains,[19, 20]

> At the time of the 1995 Application, the BOF Shop did not include a baghouse to capture secondary emissions. Secondary emissions were released to the atmosphere through the BOF Shop roof monitor. No information was available at the time about the NOx emissions from the BOF Shop roof monitor. Since then, the BOF Shop includes a capture system for secondary emissions that are routed to a baghouse. NOx emissions testing for the BOF Shop

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[18] The uncaptured lead emissions of the basic oxygen furnaces are summarily addressed by the 2022 application. In Section 2.2, this application states that changes to the current limits for lead emissions set by Permit 95010001 are not requested. As such, this application acknowledges the current limits for lead emissions in Permit 95010001, including the limits for uncaptured emissions from these furnaces that are emitted through the roof monitor (Permit 95010001 Condition 18 and Table 2, Item 2). Revisions to these limits are not requested.

[19] The 2022 application addresses uncaptured emission of VOM of the basic oxygen furnaces in a similar manner in Part 7 of the application. Refer to the second Section 7.2.2.1 in the application on p. 6-4, "BOF Baghouse – Secondary Emissions (New)."

[20] As reflected in this excerpt, the 2022 application refers to the NOx and VOM emissions of the baghouse system as "secondary emissions." This is inconsistent with the meaning of this term under the NESHAP for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, which only restricts this term to emissions of particulate matter. It is also misleading as it does not distinguish between captured and uncaptured emissions and suggests that capture of these emissions with a baghouse is sufficient to eliminate concerns for the existence of uncaptured emissions.

In this regard, as defined at 40 CFR 63.7852, "*Secondary emissions* mean **particulate matter** emissions (emphasis added) that are not controlled by a primary emissions control system, including emissions that escape from open and closed hoods, lance hole openings, and gaps or tears in the primary emission control system." For secondary emissions, 40 CFR 63 Subpart FFFFF recognizes the existence of both captured or stack emissions and uncaptured emissions, as would occur through a roof monitor. For basic oxygen furnaces, as well as setting emission limits for particulate emissions from primary control systems, this NESHAP also sets separate emission limits for 1) the particulate matter emissions from a control device used for the collection of secondary emissions, and 2) the opacity of secondary emissions that exit any opening in the furnace shop or other building housing a basic oxygen furnace.

> baghouse completed in the 2019-2020 time frame shows an average NOx rate of 0.0075 lb/ton for the BOF Shop Baghouse Stack. USS Granite City added the BOF Shop secondary NOx emission baseline based on the result of the stack test for the BOF Shop Baghouse stack.
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> 2022 application, Section 6.2.2.6. "BOF Baghouse – Secondary Emissions (New)."

This assumption made by the 2022 application for uncaptured emissions of NOx and VOM of the basic oxygen furnaces, i.e., that all emissions that were formerly uncaptured are now emitted through the baghouse system, is not appropriate. At a fundamental level, the application does not include any support for this assumption. A rigorous analysis for and quantification of the uncaptured emissions of NOx and VOM from these furnaces is warranted as these emissions were overlooked in the original permitting for the Project.[21]

Then, the data for NOx and VOM emissions from the baghouse stack, which is now available from testing of the baghouse, does not support this assumption and, if anything, shows that this assumption is unsound. This is because this testing does not address the level of capture being achieved by the baghouse system. Rather it shows that there are emissions of these pollutants from charging and tapping and, as such, data for the uncaptured emissions of these pollutants is also appropriate. In this regard, the results of emission testing for the NOx and VOM emissions from the new baghouse system on these furnaces, as cited by the application, indicate more than negligible levels of emissions. (2022 application, Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised NOx PSD Net Emissions Increase

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[21] In the original permitting of the Project, the uncaptured emissions of NOx and VOM from the basic oxygen furnaces appear to have been considered negligible. This was likely because the emissions of NOx and VOM of the furnaces were all attributed to the refining process, rather than to charging and tapping. During the refining step in a basic oxygen furnace, oxygen is injected into the molten iron charged to a furnace, which removes carbon from the iron by oxidation, converting the iron into steel. The oxidation of the carbon also provides heat to facilitate the melting of the scrap metal that is also charged to the furnace, so molten metal in the appropriate temperature range can be tapped from the furnace.

In 1996, the basic oxygen furnaces were only controlled by the electrostatic precipitator (ESP) system. While the ESP system only reduces or controls emissions of particulate and not emissions of NOx or VOM, the ESP system does capture NOx and VOM from these furnaces. As the capture efficiency for particulate emissions from refining is assumed to be at least 99.9 percent, it was also reasonable to assume that the ESP system also would achieve at least 99 percent capture for NOx and VOM. With these assumptions, i.e., that NOx and VOM are only generated during the refining step and at least 99.9 percent capture of these emissions is achieved by the ESP system, given the limits on emissions of NOx and VOM from the stack of the ESP set by Permit 95010001, i.e., 69.63 and 10.74 tons/year, respectively, the uncaptured emissions of NOx and VOM from these furnaces would have been projected to be no more than 0.07 and 0.01 tons/year, respectively,. (For example, for NOx, 69.63 tons/year ÷ (99.9 ÷ 100.0) x (100.0 – 99.9) ÷ 100.0 = 0.07 tons/year.) For purposes of determining applicability of NSR to the Project, the increases in NOx and VOM emissions of the furnaces with the Project would be less because these calculations for uncaptured emissions address all emissions of the furnaces, both baseline emissions and the increases in emissions from the Project.

Even with the correction to the emission data for the basic oxygen furnaces indicated in the 2022 application, if all NOx and VOM emissions of these furnaces were actually attributable to the refining step, uncaptured NOx and VOM emissions would still be very small. For example, the potential NOx emissions from the stack of the ESP are now shown to be 380.0 tons/year. With capture of at least 99.9 percent of the NOx by the ESP system, the potential uncaptured NOx emissions from these furnaces would still only be an additional 0.38 tons/year.

Analysis and Revised VOM PSD Net Emissions Increase Analysis.) For NOx, the application indicates baseline captured emissions of 179.8 tons/year, of which, based on the measured emissions from the new baghouse system, as much as 5.1 percent, i.e., 9.1 tons/year, would have been uncaptured in 1996; captured VOM emissions are 26.6 tons/year, of which as much as 15.8 percent, i.e., 4.2 tons/year, would have been uncaptured emissions in 1996. However, instead of assuming that all NOx and VOM emissions are now captured, it would not be unreasonable to assume that the new baghouse system improved capture of the emissions from charging and tapping such that the levels of captured emissions from the baghouse stack and the uncaptured emissions through the roof monitor are now identical.[22, 23]

Finally, the assumption that all NOx and VOM emissions of these furnaces is now captured is inconsistent with the approach taken in the 2022 application to the particulate and lead emissions of these furnaces, for which it is assumed that there are uncaptured emissions that still occur through the roof monitor. In particular, the 2022 application requests that the revised permit establish prescribed emission factors for the particulate emissions of the basic oxygen furnaces

[22] It is reasonable to assume that the new baghouse that was installed to improve control of particulate emissions from charging and tapping of the basic oxygen furnaces reduced these emissions to less than half of their previous amounts. For example, the nominal control efficiency for charging and tapping went from 95 percent with only the ESP control system to 97.5 percent with the addition of the baghouse system. With this assumption, the potential NOx and VOM emissions from the baghouse stack from charging and tapping would be estimated to be about the same as the potential uncaptured emissions from charging and tapping that still occur through the roof monitor, with both being about 2.5 percent of the total emissions from the furnaces. The remainder of the NOx and VOM emissions from charging and tapping continue to occur through the ESP stack (95 percent of the total emissions of the furnaces).

[23] With this assumption, the potential NOx emissions of the basic oxygen furnaces with the Project would become 420.4 tons/year, rather than 400.0 tons/year (400.0 tons/year x (100% ÷ 5.1%) ÷ 100% = 420.4 tons/year. The potential VOM emissions of these furnaces with the Project would become 52.1 tons/year, rather than 45.0 tons/year (45.0 tons/year x (100% ÷ 15.8%) ÷ 100% = 52.1 tons/year.

that occur through the roof monitor.[24] For example, for pre-project actual emissions of the roof monitor, Section 5.2.2.7 of the application explains the following, [25]

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing prescribed emission factors for the BOF Shop Roof Monitor for which emissions testing is not feasible.[Footnote 33] For BOF Roof Shop Monitor, use PM emissions factor of 0.0296 lb/ton and filterable PM_{10} emission factor of 0.0198 lb/ton.
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> Footnote 33: PM and PM_{10} emissions factors are appropriately determined from the results of emission testing per 40 CFR 63 Subpart FFFFF to determine PM and PM_{10} emission rates for the BOF ESP and baghouse, Desulf/Soda Ash and Hot Metal Charging Baghouse, Slag Skimming Baghouse, and Baghouse 2 for Argon Stirring and Ladle Metallurgy.
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> 2022 application, Section 5.5.2.2. "Prescribed Emission Factors for Certain BOF Shop Operations."

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[24] The 2022 application requests that Permit 95010001 be revised to set "prescribed emission factors" for the emissions of certain emissions units or their uncaptured emissions (e.g., the uncaptured particulate emissions of the basic oxygen furnaces, which are also referred to as the emissions through the roof monitor of the basic oxygen furnace shop). For those units or emission points, the prescribed emission factors would effectively replace the provisions currently in Permit 95010001 that address emissions in pounds/ton of input or production or in pounds/hour. For convenience, these provisions in the permit are generally referred to as "emission factor limits." The usage of this term extends to the provisions of the permit that address emission of lead that are in pounds per hour. In this regard, in Permit 95010001, Table 2, these limits for lead emissions are listed under the heading of "Emission Factor," along with the limits in pounds per ton of production for emissions of other pollutants.

Unlike the emission factor limits currently in Permit 95010001, which the Illinois EPA considers to be directly enforceable against US Steel, prescribed emissions factors that would be established in a revision to Permit 95010001 would not be enforceable. Instead, prescribed emission factors would be specific values for emission rates that US Steel would have to use for normal operation when determining compliance with the limits on annual emissions set by the revised permit. The appropriateness of the various prescribed emissions factors that are selected would be a matter that would be considered during the processing of the revisions to Permit 95010001. Given the role of prescribed emission factors in determining compliance with annual emission limits set by the permit, it is expected that prescribed emission factors would only be set for units for which emissions testing is not feasible or is not warranted given the low levels of annual emissions predicted by engineering analysis and calculations. It is also expected that, as it is practical to do so, prescribed emission factors would be conservative, reflecting the maximum rates of emissions that could occur during the routine, compliant operation of emissions units.

[25] For pre-project actual emissions of particulate matter of the basic oxygen furnace through the roof monitor, Section 5.2.2.7 of the 2022 application explains the following,

> The BOF roof monitor actual emissions were calculated using the information from AP-42 Chapter 12.5 and AIRS (Aerometric Information Retrieval System) database. For pre-change actual PM and PM_{10} emissions, National Steel used 90% capture efficiency during the charging and tapping steps and 99% capture efficiency during the refining step for BOP operations. A detailed description of the baseline roof monitor PM and PM_{10} emission factors is provided in Appendix C of the 1995 Application. For the BOF operations, per particle size distribution in AP-42 Table 12.5-2, 67% of PM is PM_{10}. No changes are necessary for this emission factor.
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> 2022 application, Section 5.2.7.7, BOF Roof Monitor Emissions (No Change)

The fact that there are emissions of NOx and VOM from the basic oxygen furnaces that now occur from the stack of the new baghouse system but were previously not captured and were not originally quantified raises concern that similar circumstances are present for emissions of CO. [26] In this regard, the 2022 application requests various revisions to Permit 95010001 to correct issues that are posed for the original permitting of the Project with respect to CO emissions, but the application does not propose any such revisions for the basic oxygen furnaces or explain why such revisions are not needed.[27]

[26] For the basic oxygen furnaces, uncaptured emissions of CO should generally be expected to be much greater than the uncaptured emissions of NOx or VOM because the permitted stack emissions of CO of these furnaces are much greater. In this regard, Permit 95010001 limits the CO emissions from the stack of the ESP system for these furnaces to 16,097 tons/year. (The 2022 application does not request an increase in this limit.) If only 99.9 percent capture of CO is assumed by the ESP system, the potential uncaptured CO emissions of these furnaces would be 16.1 tons/year. (16,097 tons/year ÷ {99.9 ÷ 100.0} x {100.0 – 99.9} ÷ 100.0 = 16.1 tons/year CO.) Of course, the capture efficiency of the ESP system for CO could be higher than the efficiency for NOx or VOM if CO is only formed during the refining step when oxygen is actually being injected into the furnace and not during the entire refining step. However, one approach to the revision of Permit 95010001 would be to conservatively assume that the capture efficiency of the ESP system for CO is the same as its capture efficiency for particulate.

[27] The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the basic oxygen furnaces, addressing the combined stack emissions of the ESP and the new baghouse, to the current limits for the CO emissions of the furnaces in Permit 95010001, which limits currently apply only to emissions from the stack of the ESP.

5. THE EMISSION INVENTORY FOR THE SOURCE USED IN THE AIR QUALITY ANALYSIS FOR CARBON MONOXIDE (CO) OMITS CERTAIN CO EMISSIONS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152***, 201.160(a), 204.330, 204.1110 and 204.1130.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The "Air Quality Modeling Report," Appendix C of the 2022 application, which provides the "Source Impact Analysis" required under PSD, is deficient because it does not address certain CO emissions of units that are at or were at the Granite City Works. In particular, the uncaptured CO emissions of the blast furnace cast house and the BOFs (i.e., the emissions that occur from the roof monitors and other openings in structures) are not addressed. The CO emissions of the two by-product recovery coke oven batteries formerly at the Granite City Works, which were in operation in 1996, are also not addressed.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* As the source impact analysis in the 2022 application does not address certain CO emissions, it does not fully address the impact of the Production Increase Project, with increases in permitted CO emissions as now requested, on ambient air quality for CO. This analysis also does not address the impact of the Project on CO air quality as would have been determined in 1996 if the Project had been permitted for more CO emissions, as is now being requested by the 2022 application.

Discussion

The results of the analysis of the impacts of the Project on ambient air quality for carbon monoxide (CO) cannot be relied upon because the inventory for the CO emissions of the source with the Project does not address all CO emissions or otherwise explain why the CO emissions of certain units need not be considered. The 2022 application includes an air quality analysis because the Project was originally permitted as a major modification for CO under the Prevention of Significant Deterioration (PSD) program and the application requests revisions to Permit 95010001 to increase the CO emissions for which the Project is permitted.[28] To support

[28] The 2022 application requests that Permit 95010001 be revised to address an additional 25,334 tons/year of CO. This would include emissions of 320 tons/year of CO from the casthouse on the blast furnaces, for which CO was not addressed in the original permitting for the project (2022 application, Section 4.4, p. 4-4) . This would also include an additional 25,014 ton/year from Project-affected fuel burning units, other than Boilers 1 through 10, which are now retired (2022 application, Sections 4.2 and 4.3, pp. 4-2 and 4-3). For the fuel burning units, US Steel has determined that the emission factors for CO

this request, an air quality analysis for CO must be part of the application pursuant to Illinois' PSD rules, 35 IAC 204.1130, Air Quality Analysis, since the request involves revisions to the provisions in Permit 95010001 that involve the Project as it is a major modification for CO under the PSD program.

Uncaptured Emissions from the Casthouse on the Blast Furnaces

The air quality analysis in the 2022 application does not address the uncaptured emissions of the casthouse (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs"). The application indicates potential CO emissions of 13.6 tons/year from the roof monitor on the casthouse on the blast furnaces (2022 application, Section 4.4). These "uncaptured" CO emissions, which are not captured by the baghouse systems on the casthouse, must be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to provide for more CO emissions from the Project.

Uncaptured Emissions from the Basic Oxygen Furnaces

The air quality analysis in the 2022 application does not address uncaptured emissions of the basic oxygen furnaces. (2022 application, Appendix C – Air Quality Modeling Report, Table for "US Steel Granite City Volume Source Inputs.") As discussed earlier, the 2022 application does not address uncaptured emissions from these furnaces. The application also does not explain why uncaptured emissions would not be present as the application does not show 100 percent capture of the emissions of these furnaces by the control systems for emissions of particulate. As there are uncaptured CO emissions from these furnaces, these emissions must also be addressed in the air quality analysis submitted to support revisions of Permit 95010001 to accommodate additional CO emissions from the Project.

By-product Coke Oven Batteries

The 2022 application does not explain why the air quality analysis in the application should not consider the CO emissions of the former by-product coke oven batteries at the source. These batteries were in operation when the Project was originally permitted in 1996 and did not cease operation until 2015. Accordingly, the analysis does not address CO ambient air quality with the Project as would have been predicted by the original air quality analysis for the Project if it had addressed the additional CO emissions now being requested for the Project. On the other hand, the analysis addresses CO emissions of emission units that did not exist in 1996, as this analysis addresses the emissions of the heat recovery coke ovens adjacent to the Granite City Works, which were built and are now operated by Gateway Energy & Coke. [29]

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utilized in the original permitting of the Project, particularly the emission factor for blast furnace gas used in the blast furnaces stoves, understated CO emissions.

[29] The modelling in the air quality analysis did address certain newer units, which came into operation after the Project in 1996. In particular, the analysis addressed the CO emissions of the new coke oven batteries adjacent to the Granite City Works that are owned and operated by Gateway Energy & Coke. However, modeling of the CO emissions of new units would only compensate for the CO emissions of existing units if the new batteries were direct, in-kind replacements of the shutdown units, which is not the case. This is not the case. The batteries that were shut down by US Steel were by-product recovery batteries. They recovered chemicals from the off-gas from the coking process (e.g., benzene, toluene and naphthalene, with the gas then used as fuel for heating the coke ovens and in certain other units at the source. Gateway's batteries are heat recovery batteries, in which the off-gas from coking is combusted in

the ovens and the heat is used to make steam and generate electricity. Moreover, the new batteries and the old batteries both operated for a period of several years before US Steel shut down its batteries.

5A. ISSUES WITH THE BACKGROUND AIR QUALITY USED IN THE AIR QUALITY ANALYSIS THE EMISSION INVENTORY FOR THE SOURCE USED IN

(Note: In the Initial Draft Denial, this denial point, Denial Point 5A, was not addressed separately but was instead addressed as part of Denial Point 5. This deficiency is now being addressed separately for ease of understanding. This deficiency relates to the value for background ambient air quality used in the CO air quality analysis rather than deficiencies in the inventory of sources (i.e., the compilation of emissions units and emission data) used in the dispersion modeling in the air quality impact analysis for CO.)

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d) and 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 204.330, 204.1110 and 204.1130.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The "Air Quality Modeling Report," Appendix C of the 2022 application, which also provides the "Air Quality Analysis" required under PSD, is deficient. As related to baseline ambient air quality for CO, this report does not address baseline ambient air quality as existed at the time that the Production Increase Project was initially permitted. It also does not address ambient air quality as it presently exists. Rather, a value for background air quality from ambient monitoring conducted in 2016 through 2018 is used. This does not represent either air quality in the period before the Project was initially permitted or air quality at the present time. While the monitoring station in East St. Louis that was the source for the value selected for background air quality ceased operation in 2019, the Missouri Department of Natural Resources continues to conduct ambient monitoring for CO at a site in St. Louis. (In this regard, the 2022 application, p. 4-5, indicates that "There are many existing ambient CO monitors within the 100 miles of the facility (Figure 4).") The 2022 application does not justify use of a value for background ambient air quality that is not representative of the period when the Project was initially permitted. Then, if this can be justified, the 2022 application does not explain why it is appropriate to use a value for background air quality taken from ambient monitoring conducted over five years ago.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Because of the issues with the value for baseline air quality used in the "Air Quality Modeling Report" in the 2022 application, as discussed above, it would not be proper to rely on the results of this report to issue a revised permit what would provide for increases in permitted CO emissions as requested by the 2022 application.

Discussion

In addition [to the deficiency addressed in Denial Point 5], the air quality analysis in the application uses a value for CO background air quality on an 8-hour average that is based on ambient air quality data collected for a three year period consisting of 2016, 2017 and 2018. As such the value used for background air quality is not necessarily appropriate as a representation of either current ambient air quality or the historic air quality at the time that the Project was originally permitted.[30]

[30] Under the PSD program, the air quality analysis for a project whose modelled maximum impact(s) by itself on air quality for a pollutant are above certain specified concentration(s) or "significant impacts levels" under the PSD program must also consider "background air quality." This accounts for the contribution to ambient air quality of mobile sources (e.g., cars, trucks and buses) and of other sources (e.g., residential and commercial heating), which contribution cannot be determined as part of the computerized dispersion modelling for discrete emission units performed as part of the analysis. The air quality analysis in the 2022 application shows that the maximum air quality impact of the Project with the requested increases in CO emissions would continue to be above the significant impact level for CO on an 8-hour average. (In the original air quality analysis, the Project's impacts were significant for CO on both a 1-hour and an 8-hours average.) The value for background in the current air quality analysis is based on data collected at an ambient air monitoring station in East St. Louis operated by the Illinois EPA. If US Steel shows that the air quality analysis for the revision to Permit 95010001 should address current ambient air quality for CO, the value for background air quality in the analysis should be updated. Since the Illinois EPA discontinued ambient monitoring for CO at its East St. Louis monitoring station in 2020, the new value for background would likely need to be based on data collected at an appropriate monitoring station in Missouri operated by the Missouri Department of Natural Resources.

It should be noted that the values for background used in the original air quality analysis were likely conservative, as they were based on data from a now retired monitoring station in Granite City that was less than a third of a mile from the Granite City Works. Given the location of that station, the ambient air quality data collected at that station may have included the contribution to air quality of units for which modelling was also conducted, so that the original analysis effectively counted the impacts of those units twice. Thus, it is reasonable for the current air quality analysis to use value(s) for background air quality based on data collected at a monitoring station other than the one that was originally used.

6. SCOPE OF PROPOSED GROUP EMISSION LIMITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not show that certain proposed collections of emission units for the "group limits" for annual emissions of particulate, NOx and VOM that are generally requested are appropriate. In this regard, the 2022 application does not propose limitations that would only apply to the annual emissions of particulate of the casthouse for the two blast furnaces. The application also does not propose limitations that would apply only to the annual particulate emissions of the two BOFs. These are principal emission units at the Granite City Works. For the casthouse, the 2022 application does not show that that it would be unreasonable or inappropriate for Permit 95010001 to continue to have limitations for annual emissions of particulate that are directly enforceable independent of emissions of the other, lesser units involved in production of iron (i.e., the charging of the blast furnaces and slag pit operations). (As the application does not indicate any NOx or VOM emissions from these lesser operations, it is unclear whether group limits are actually being requested for blast furnace operations for NOx and VOM.) Similarly, for the BOFs, the 2022 application does not show that it would be unreasonable or inappropriate for Permit 95010001 to continue to have limitations for annual particulate emissions that are directly enforceable independent of the emissions of other, lesser units involved in making steel (i.e., the removal of sulfur from the molten iron, the skimming of the resulting slag from the surface of the iron in the ladle, and the ladle metallurgy operations after the BOFs). (The application does not actually indicate any NOx emissions from these lesser operations; for VOM, the only lesser unit identified with emissions is the skimming of slag.) While the 2022 application points to three construction permits for facilities issued by other permitting authorities as support for the proposition that limitations on annual emissions that apply to both principal units and lesser units are appropriate, the 2022 application does not show that the circumstances of the Granite City Works are such that those other permits should serve as precedents for the requested revisions of Permit 95010001. Variability in utilization or activity was an inherent aspect in the basic design or purpose of those three facilities and led to the approach to the emissions limitations that were set for those facilities. In this regard, one facility involved a fleet of sea-going vessels engaged in exploration for petroleum. The second facility, "the first of its kind," would be developed to make fuel ethanol from processed municipal waste and sewage sludge. (It may also be relevant that the construction permit for this facility, and as well as the permit for a fleet of vessels that would conduct offshore exploration for petroleum, both limited emissions so that the facilities would not be major sources for purposes of NSR.) The third facility was being developed as a peaking power plant, to operate mainly when other

sources of electricity, including wind and solar power, could not fully satisfy the demand for electricity. Moreover, this last permit sets limitations for the annual emissions of a group of identical generating units. As such, this permit does not provide support for setting limitations for a collection of disparate emission units. In summary, the 2022 application does not request revisions to Permit 95010001, that would continue to separately limit the annual particulate emissions of the blast furnace casthouse and the annual emissions of the two BOFs by themselves.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* If a revision to Permit 95010001 were issued without limits that independently apply to the emissions of the blast furnaces casthouse and to the emissions of the two BOFs, the 2022 application would not show the limits on annual emissions established in such revised permit would serve to restrict the emissions of the casthouse and the two BOFs as a practical matter. In this regard, as US Steel is applying for revisions to emission limits that are currently in Permit 95010001, it is obliged in its application to adequately explain and justify the revisions to the current emission limits that it is requesting. The three permits cited by US Steel in the 2022 application do suggest that permit limitations for the annual emissions of emission units that are accompanied by appropriate operational and/or emissions monitoring may now be considered acceptable as being enforceable as a practical matter without associated emission factor limits, i.e., limits on emission of pollutant(s) in pounds per ton of production or throughput, pounds per million Btu fuel heat input or pounds per hour. However, these permits do not show that the stringency of the current limits for the annual emissions of principal emissions units at the Granite City Works, a facility with substantial emissions in an urban area, should generally be relaxed by setting revised limits that would now apply to emissions of both principal unit(s) and other lesser units, as is proposed by the 2022 application.

Discussion

The application does not show that the proposed collections of emission units for the requested group limits for annual emissions of particulate, NOx and VOM are appropriate.[31, 32] In particular, the application does not propose limits that would only apply to the annual emissions of the casthouse on the blast furnaces and to the annual emissions of the two basic oxygen furnaces. These are principal emission units at this facility. It would be reasonable and appropriate for both the annual emissions of the casthouse and the annual emissions of the two basic oxygen furnaces to be directly limited separately from the emissions of any other units. The construction permits issued by permitting authorities in other jurisdictions cited in the application as support for

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[31] For PM, PM_{10}, NOx and VOM (i.e., pollutants other than sulfur dioxide (SO_2), carbon monoxide (CO) and lead), the 2022 application requests that the revised permit not include the provisions in Permit 95010001 that the Illinois EPA considers would limit emissions of individual "processes" in pounds/ton of production or throughput and in tons/year. These provisions were set to ensure that the Project would not be a major modification for purposes of New Source Review (NSR). The removal from Permit 95010001 of the "emission factor limits" which limit emissions of various process operations relative to their production or throughput, would facilitate resolution of two permit appeals filed by US Steel with the Illinois Pollution Control Board (PCB), PCB 2013-53 and PCB 2013-62. Both appeals indirectly address the emission factor limits in Permit 95010001. PCB 2013-53 concerns the revised Clean Air Act Permit Program (CAAPP) permit for the facility (Permit 96030056) issued in 2013. US Steel appealed this permit as it repeats the emission factor limits as originally set by Permit 95010001. PCB 2013-62 concerns the construction permit for the addition of the baghouse system to improve control of particulate emissions from charging and tapping of the BOFs, Permit 11050006, as reissued in 2013. For the BOFs, this permit also repeats the emission factors limits for the BOFs set by Permit 95010001. US Steel appealed the subject emission factor limits in these permits because, prior to issuing the revised CAAPP permit for the facility in 2013, the Illinois EPA had explicitly explained that the provisions in the permit containing emission factors were considered to constitute enforceable limits on emissions. This was done in the Illinois EPA's "Statement of Basis for a Planned Revision of the Clean Air Act Permit Program (CAAPP) Permit for: U. S. Steel Corporation, Granite City Works, 20th and State Streets, Granite City, Illinois," of March 2011, pages 20 through 26. That these provisions set enforceable limits was then recognized by the USEPA in the Administrator's subsequent order of December 3, 2012, "In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056," Petition Number V-2011-2, pages 7 through 9).

[32] With regard to the current limits for the annual emissions of PM, PM_{10}, NOx and VOM of individual processes, the 2022 application requests "group limits" for the annual emissions of groups of related emission units. For example, the application requests that the revised permit limit the overall emissions of a group of units that includes the casthouse for the blast furnaces and other, ancillary units involved in production of iron. The permit currently sets separate limits for the emissions of the casthouse, the emissions from charging the blast furnaces, and the emissions from slag pit activities. Unlike the current limits for annual emissions, which apply on a calendar year basis, the proposed new limits for annual emissions would be rolled monthly, restricting emissions over each consecutive 12 month period. The requested limits would theoretically be less stringent than the current limits as US Steel could potentially compensate for any "overage" of emissions by unit(s) in a group of units with lower levels of emissions from other units in the group.

Incidentally, in these appeals, US Steel only challenges the emission factor limits for "processes," such as the casthouse, the basic oxygen furnaces, continuous casting operations, and discrete material handling operations. These appeals do not challenge the emission factor limits for fuel burning units affected by the Project. Those limits do not restrict the emissions of individual units or groups of similar units. Instead, they separately restrict the emissions from use of different fuels, i.e., blast furnace gas, natural gas and oil.

emission limits that apply to groups of emission units do not show that the annual emissions of the casthouse and the basic oxygen furnaces should not both continue to be limited individually.[33]

In this regard, the 2022 application points to USEPA policy and practice concerning how the potential emissions of a source may be restricted (2022 application, Section 3, "Discussion of Permit Conditions used to Restrict PTE [Potential to Emit]). The application shows that USEPA has found that construction permits may be issued that restrict potential emissions by means of limits on annual emissions that are practically enforceable. Accordingly, the current provisions in Permit 95010001 that limit emissions of process units in pounds/ton of production of throughput, which apply on a short-term rather than annual or long-term basis, are not essential to restrict potential emissions. In addition, the application points to several construction permits issued outside of Illinois since 2000 for which the permitting authority determined that annual emission limits that apply to groups of emission units that are practically enforceable were determined to be sufficient to restrict potential emissions without need for accompanying limits that address emissions on a short-term basis.[34, 35] However, the 2022 application does not show that the

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[33] In light of the construction permits issued by other permit authorities cited by the application as support for group limits, it would seem acceptable for a revised permit to set group limits for the emissions units or operations that do not qualify as principal units. For example, for the production of iron, a revised permit could set limits for the overall emissions from charging the blast furnaces and the slag pits. Alternatively, limits specifically for the emissions of the casthouse for the blast furnaces and the basic oxygen furnaces, i.e., the principal units at the facility for iron and steel production, could be accompanied by group limits for the overall emissions of these principal units and the other, "non-principal" units in these areas of the facility. For example, limits could be set for both emissions of the casthouse and for the emissions of the casthouse, charging of the blast furnaces, and the slag pits.

[34] The 2022 application, Appendix E - "Copies of EPA Determinations," contains two decisions by the USEPA's Environmental Appeals Board (EAB):

- The 2012 decision of the EAB for an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit issued by Region 10 of USEPA to Shell Offshore, Inc. (USEPA, EAB, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2012).
- The 2018 decision of the EAB for a PSD permit issued by the Department of Environmental Quality for Pima County, Arizona, to Tucson Electric Power (USEPA, EAB, *In Re Tucson Electric Power*, PSD Appeal No. 18-02, Order Denying Review, Decided December 3, 2018).

[35] In a footnote, the 2022 application also refers to the USEPA's order responding to a petition to object to a Title V permit issued for a facility in Middletown, New York proposed by Masada (USEPA, Order, May 2, 2001, *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00001, Issued by the New York State Department of Environmental Conservation, Petition No.: II-2000-07.) As explained by US Steel in the application, in this order, the USEPA upheld the,

> …use of annual emission caps with a rolling cumulative total methodology and rejected petitioners' "concerns that the permit appears to rely on after-the-fact monitoring, rather than engineering practices, test data or vendor guarantees" to establish restrictions on PTE. U. S. EPA based its findings on the fact that "[i]f the source has no room to operate under the PTE emission limiting cap, it must cease operation or face a violation" and that "all PTE limits rely on after the fact monitoring of some kind."
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> 2022 application, Footnote 11.

specific circumstances of the Project are such that the current limits for annual emission of the principal emission units should be replaced with group limits that apply to the combined emissions of principal emission units and other lesser emission units.[36] The circumstances of the Granite City Works are not the same as those presented by the cited permits. US Steel's Granite City Works is a manufacturing facility at which iron is produced from iron ore in blast furnaces and steel is produced from molten iron and scrap metal in basic oxygen furnaces. The processes that generate emissions at the Granite City Works are different than the oil-fired engines that are generally addressed by the permit for Shell Offshore and the natural gas-fired engines addressed by the permit for Tucson Electric. The permit for Shell Offshore, Inc., addresses a marine drilling unit, the "Kulluk," and an associated fleet of support vessels that may be used during July through November of each year to conduct exploratory drilling operations in areas of the Beaufort Sea north of Alaska. The permit for Tucson Electric Power addressed a new peaking electrical generating facility with ten engine-generating units at Tucson Electric's Irvington Station. The utilization of the individual generating units in the new facility would vary from day to day and season to season as the use of the units would be tied to the inability of other electrical generating facilities to meet the demand for electricity.[37]

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[36] For the casthouse on the blast furnaces, Permit 95010001 currently sets separate limits for the emissions of various pollutants from the casthouse baghouse (i.e., the main baghouse for the casthouse), the iron spout baghouse, and the roof monitor (uncaptured emissions). If Permit 95010001 were to be revised, it would be reasonable for each pollutant for which emissions are limited, other than CO, for the permit to restrict the overall emissions of the pollutant from the casthouse, rather than to individually limit the stack emissions of each control system and uncaptured emissions. The application also does not suggest that it would be inappropriate for any revised permit to simply limit the stack emissions of CO from the BOFs.

For the basic oxygen furnaces, the current permit separately addresses emissions of particulate and lead from the stack of the ESP and the roof monitor (uncaptured emissions.) For these furnaces, it would also be reasonable in a revised permit to set limits for different pollutants for the overall emissions of the pollutant from these furnaces. In particular, the revised permit would not set limits specifically for the emissions of the new baghouse system that was installed to improve control of particulate emissions from charging and tapping of these furnaces. Instead, the revised permit would address emissions that occur from this baghouse with limits for different pollutants for the overall emissions of these furnaces.

[37] At the Shell Off-Shore and Masada facilities, variability of utilization or operation of different emission units was a consideration in the permitting of these facilities. In its response to comments on the draft permit for Shell Offshore, USEPA Region 10 explains,

> The commenters are correct that EPA guidance does express a general preference for shorter time periods rather than 12-month rolling limits. See 1989 PTE Guidance at 9. As the commenter acknowledges, however, EPA has also recognized that longer rolling limits are appropriate for sources with substantial and unpredictable variations in emissions, as well as for those sources that curtail operation during part of a year on a regular seasonal cycle. Id. at 9 – 10. Such is the case here. Shell's planned exploratory operations are atypical as compared to other sources because emission units consist of multiple engines and generators with variable emission on the Kulluk and a fleet of numerous support vessels. Operations will vary from hour-to-hour, day-to-day month-to-month, and season-to-season based on factors such as the number of wells drilled, the activity being undertaken (drilling mud cellar lines, other drilling activity, or activity that does not involve drilling), the depth of wells drilled, whether emergency engines are being run for testing, and ice conditions. Given the variability in operations, and thus emissions expected from the source, and after considering a full

7. INADEQUATE JUSTIFICATION FOR ELIMINATION OR REVISION OF CURRENT LIMITS FOR PROJECT-AFFECTED FUEL BURNING UNITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

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range of options for limiting the source's potential to emit, Region 10 determined that it was appropriate to establish longer-term rolling limits.

USEPA, Region 10, "Response for Comments for Outer Continental Shelf Permit to Construct and Title V Air Quality Operating Permit: Conical Drilling Unit Kulluk," October 2011, p. 26.

In the USEPA's order for Masada of April 8, 2002, USEPA observes that,

Masada's operations will have significant fluctuations due [sic] the variability of the processed waste, making an operating parameter-based PTE limit less appropriate. The emissions-based PTE limit discussed below recognizes this fact and provides Masada with operational flexibility accordingly. Moreover, Masada will be measuring its emissions on a real-time basis using CEMS [continuous emissions monitoring systems], obviating the need to limit and monitor operating parameters as a surrogate for emissions.[Footnote 6] Thus the petitioners have not demonstrated that it was inappropriate for the NYSDEC [New York State Department of Environmental Conservation] to restrict Masada's emissions directly, rather than its operation or production.

Although it is generally preferable that PTE limitations be as short-term as possible (e.g., not to exceed one month), EPA guidance [USEPA, "Guidance on Limiting Potential to Emit in New Source Permitting," June 13, 1989] also allows permits to be written with longer term limits if they are rolled (meaning recalculated periodically with updated data) on a frequent basis (e.g., daily or monthly). The 1989 guidance recognizes that such longer rolling limits may be appropriate for sources with 'substantial and unpredictable annual variation in production." 1989 Guidance at 9.

Footnote 6. This is consistent with prior EPA practice in appropriate circumstances. See e.g., Memorandum entitled "3M Tape Manufacturing Division Plant, St. Paul, Minnesota," from John Rasnic to David Kee, dated July 14, 1992 ("a federally enforceable emission limit may be used …to limit the potential to emit as long as a continuous emissions monitor (CEM) or an acceptable alternative is used."); and Memorandum entitled "Policy Determination on Limiting Potential to Emit for Koch Refining Company Clean Fuels Project," from John Rasnic to David Kee, dated March 13, 1992 ("Use of an emission limit to restrict potential to emit …is acceptable provided that emissions can be and are required to be readily determined or calculated.")

USEPA, Order, April 8, 2002, "*In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Permit ID: 3-3309-00101/00003, Issued by the New York State Department of Environmental Conservation," Petition No.: II-2001-05, p. 6)

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency*: The 2022 application does not include information that would support revisions to Permit 95010001 to revise or eliminate current limitations for usage of fuels by the Project-affected fuel burning units, as is requested by the application. With regard to the elimination of the current limitations, the 2022 application does not quantitatively demonstrate that this would not result in an increase in the potential emissions of the subject units. This is of particular concern as Permit 9501001 does not limit the usage of COG, which was not quantitatively addressed in 1996 during the initial permitting of the Production Increase Project. Moreover, with the shutdown in 2015 of the two by-product recovery coke oven batteries at the facility, more natural gas must now be used as fuel in certain subject units (e.g., the blast furnace stoves), to replace the COG that was previously used. With regard to the revisions of the current limitations, the 2022 application does not include information that would be necessary for the Illinois EPA to set values for revised limitations that would be appropriate. As discussed above in Denial Point 3A, the 2022 application does not include the data and calculations underlying the representations in the 2022 application for future maximum emission of the Project-affected fuel burning units. This data would include the maximum usages of fuels as would be needed for the Illinois EPA to appropriately set revised limitations for future usages of fuel.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would eliminate or revise the current limitations in Permit 95010001 for the usage of fuel by Project-affected fuel burning units.

Discussion

The justification provided in the 2022 application for revisions to Permit 95010001 to eliminate or revise limits on usage of fuel and, presumably, emissions by Project-affected fuel burning units is not adequate. Although this application indicates that the revised permit should not contain the limits for usage of natural gas and BFG currently set by Permit 95010001, it does not propose any new limits in their place.

> USS Granite City is also requesting revision/elimination of gaseous fuel usage limits for project-affected combustion units. In 2015, USS Granite City shutdown its by-product coke oven batteries. This eliminated the ability to use coke oven gas ("COG") as a fuel at the mill. In addition, ten of the twelve boilers at the time of the Project in 1996 have been retired. These actions have greatly reduced the emissions from fuel combustion in project-affected emissions units and obviate the need to preserve limits to restrict PTE of the remaining units.
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> 2022 application, Section 2.2.3, p. 2-4.

This rationale is deficient because it does not consider that the 2022 application also requests that the revised permit address an increase in the usage of natural gas at the facility as a consequence of the shutdown of the by-product coke oven batteries. While the limits for fuel usage and emissions currently in Permit 95010001 may no longer be relevant, as generally addressed

above,[38] this does not mean that other limits for fuel usage and emissions are not appropriate. In this regard, the 2022 application does not show that new limits for fuel usage and emissions would not now be needed and those limits should address fuel burning units other than the Project-affected units currently addressed by the permit. In this regard, limits for usage of fuels and emissions should not extend to Boilers 1 through 10, as they are no longer in operation, having been shut down a number of years before the coke oven batteries were shutdown. As the four slab reheat furnaces at the facility were affected by the elimination of COG, new limits may be needed that also extend to these furnaces. It may also be appropriate for the cogeneration boiler to be addressed by the new limits as this boiler began operation several years before the by-product coke oven batteries at the facility were shutdown.

[38] It is noteworthy that the 2022 application does not address what an appropriate limit for usage of COG would have been in Permit 95010001 if the permit had originally addressed use of COG by Project-affected fuel burning units. In the absence of such information, it is unclear how the shutdown of the two by-product coke ovens at the facility and elimination of COG led to decreases in NOx emissions relative to the limits for NOx emissions of fuel-burning units set by Permit 95010001.

8. THE APPLICATION DOES NOT SHOW THAT EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS WOULD BE REPRESENTATIVE

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* Relative to the revisions to Permit 95010001 that are requested to establish certain "prescribed emission factors," the 2022 application does not include information justifying the future use of such proposed factors for the purpose of determining compliance with the revised limitations for the emissions of the project that are requested. In particular, the 2022 application does not include information showing that the proposed factors should be considered representative, accurate and appropriate. For example, for the uncaptured emissions of particulate of the BOFs, which occur through the roof monitor and, possibly, other openings in the BOF shop building, the application does not include any explanation for the emission factors that are proposed as prescribed emission factors. These factors are lower than the factors that were used for the calculations in the application for the baseline emissions of uncaptured particulate from the BOFs. This is generally reasonable as improvements have been made that have improved capture and control of the particulate emissions of the BOFs and should lower uncaptured emissions. Notably, a baghouse control system has been installed to improve control of emissions from charging and tapping the BOFs. However, the 2022 application does not explain how the proposed prescribed factors were developed. It also does not lay out the practices for control of particulate emissions of the BOFs that would accompany the proposed factors.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would determine future emissions of the subject emission units and emission points based on the factors proposed in the 2022 application. The 2022 application does not show that the proposed prescribed factors would appropriately be relied upon for the purpose of enforceably limiting the future emissions of the emission units and emission points for which they are proposed.

Discussion

To calculate baseline emissions of certain emission units for which emission testing is not feasible or practical, the 2022 application necessarily relies on use of emission factors that are

not based on source-specific emissions testing. Likewise, for the ongoing determination of the emissions of these units, the application requests that revised Permit 95010001 "prescribe" or specify the emission factors that are to be used. As explained in the 2022 application, where a permit relies on a limit on annual emissions or an "annual emission cap" to restrict potential emissions, USEPA policy and precedent provide that:

> Where the permit prescribes an emission factor to be used in conjunction with operational data in demonstrating compliance [with an annual emission cap], the permitting authority should describe the basis for its determination that the emission factor is representative.
>
> 2022 application, Section 3, p. 3

This summary of relevant USEPA policy in the 2022 application is consistent with the statements made by the EAB and the Administrator of USEPA in various orders responding to petitions that request it object to Title V permits or, in Illinois, CAAPP permits), issued by a permitting authority. In its decision in *Shell Offshore, Inc.*, the EAB also considered the use of prescribed emission factors in the permit that was appealed. The EAB did not object to this practice. It found that the use of prescribed emission factors may be appropriate for a permit to prescribe use of specific emission factors published by USEPA in its *Compilation of Air Pollutant Emission Factors* (AP-42) for certain emission units for the purpose of determining emissions for purposes of compliance with annual emission limits set by the permit.[39]

> The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or factors derived from source test data Shell submitted to the Region in support of two separate, previously OCS [Outer Continental Shelf] PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discover* drillship.
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> USEPA, Environmental Appeals Board, *In Re Shell Offshore, Inc.*, OCS Appeals Nos. 11-05, 11-06 & 11-07, Order Denying Petitions for Review, Decided March 30, 2013.

For US Steel, Granite City Works, the USEPA specifically addressed the use of emission factors for determining compliance with emission limits in an order of December 3, 2012. Note that relative to prescribed emission factors, the USEPA's finding, as is provided below, should be considered *dicta*. This is because the permit that was the subject of the appeal did not provide for use of prescribed emission factors. In addition, as the order addresses the possibility of using of

[39] The EAB did observe that it is preferable that compliance with emission limits set by a permit be determined using source-specific emission factors, as would be developed by emissions testing required by the permit. The EAB did not address prescribed emission factors from sources other than AP-42 since the permit that was appealed only prescribed use of emission factor from AP-42. Given the general nature and limited scope of AP-42, the EAB's decision should not be interpreted to preclude use of emissions factors from source other than AP-42. There are emission units and pollutants for which use of prescribed emissions is appropriate for which emission factors are not present in AP-42 or better emission factors are available from other sources.

prescribed emission factors in terms of the actions that the Illinois EPA would need to take when issuing a permit that prescribed emission factors, the order serves to identify the underlying information that a source must provide in an application if it seeks a permit that would provide for use of prescribed emission factors is sought. The Illinois EPA would then be responsible for assuring that the emission factors that are prescribed would be appropriate and sufficient for compliance or noncompliance with the associated emission limits to be reasonably determined.[40]

> …IEPA [Illinois EPA] must include in the permit itself the monitoring methodology for determining compliance with these limits [emission factor limits and annual emission limits]. If using emission factors, IEPA must propose the actual emission factors in the permit or supporting permit record, and provide supporting documentation for the accuracy and appropriateness of these emission factors, such as historical source test data or other available information. If source test data are not readily available for a specific emission unit, as IEPA asserts, other sources of emission factors (including published literature and material and energy balances) must be reviewed and cited for acceptable emission factors before issuing the permit.
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> USEPA, Order Responding to Petitioner's Request that the Administrator Object to Issuance of State Operating Permit, Petition Number V-2011-2, *In the Matter of United States Steel Corporation – Granite City Works, CAAPP Permit No. 96030056*, Petition Number V-2011-2, dated December 3, 2012, p. 12.

Roof Monitor on the Basic Oxygen Furnace Shop – Particulate Emissions:
The 2022 application does not include support for the particulate emission factors that are proposed as prescribed factors for the roof monitor on the basic oxygen furnace shop (i.e., the uncaptured emissions from these furnaces). The application does include support for the baseline

[40] In an order concerning a Title V permit issued by the Texas Commission on Environmental Quality (TCEQ), the Administrator of USEPA stated the following when addressing the use of emission factors in the permit:

> …Moreover, the justification provided by a permittee in a permit application should not substitute for the judgment of the permitting authority (TCEQ) with responsibility for ensuring that a Title V permit contains sufficient monitoring to ensure compliance. If TCEQ wishes to adopt and incorporate an applicant's technical justification for specific monitoring into the current Title V permit record, it must, at minimum, identify specifically where such a justification is to be found (just as it would be required to do it if [sic]wished to incorporate by reference a requirement located elsewhere.)
>
> USEPA, Administrator, Order Responding to Petition Requesting Objection to the Issuance of Title V Operating Permit, Petition No. VI-2017-6, *In the Matter of BP Amoco Chemical Company, Texas City Chemical Plant, Galveston County, Texas, Permit No. 01513*, dated July 20, 2021, p. 18.

particulate emission rates for the roof monitor on the basic oxygen furnace shop.[41, 42] However, the permitting of the Project in 1996 relied upon various changes that were made to improve capture and control of emissions of particulate from the basic oxygen furnaces and decrease the uncaptured emissions of particulate. For example, a fourth section was added to the ESP in 1995, increasing the volume of air that it could handle. As such, the baseline particulate emission rates of the Project are not representative of future emissions with the Project. Moreover, the emission factors actually proposed in Section 5.5.2.2 in the 2022 application are lower than emission factor limits now contained in Table 2 of Permit 95010001 for the roof monitor on the basic oxygen furnace shop. For PM, an emission factor of 0.0296 ~~0.01986~~ pounds/ton is proposed as a prescribed factor, compared to the current emission factor limit of 0.0987 pounds/ton; for filterable PM_{10}, an emission factor of 0.0198 ~~0.0296~~ pounds/ton is proposed, compared to the current emission factor limit of 0.06614 pounds/ton. The 2022 application does not show that the emission factors for the roof monitor on the basic oxygen furnace shop that are proposed as prescribed emission factors in Section 5.5.2.2 of the application are representative.[43]

Caster Mold, Slab Cutoff/Ripping Processes in Continuous Casting:
For the caster mold, slab ripping and slab ripping processes on the continuous casting lines, prescribed emission factors are proposed in Section 5.5.3 of the 2022 application that are identical to the baseline particulate emission rates for these emission units as generally discussed in Section

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[41] The baseline emission rates for the roof monitor are based on emissions factors from AP-42 for uncontrolled emission with application of 90 and 99 percent capture efficiencies for the refining process and the charging and tapping processes, respectively, being provided by the ESP control system on the furnaces in the baseline period before 1996 (2022 application, Section 5.5.2.2). While the application cites to Appendix C in the original application for the Project as support for these values for capture efficiency, this appendix only uses these assumed values of capture efficiency when calculating baseline emission rates for the Project. This appendix does not actually provide technical support for these values for capture efficiency being representative of the levels of capture efficiency that were achieved for particulate emissions of the basic oxygen furnaces in the baseline period for the Project. Appendix C also does not provide support for the higher levels of capture efficiency (95% and 99.9%) that it uses for operation and emissions for the basic oxygen furnaces with the Project.

[42] It should generally be noted that the sections of the 2022 application that provide the explanation or basis for the emission factors used in the application are not the sections in which prescribed emission factors are proposed for certain units. The basis for the different emission factors is typically provided earlier in the application in the sections of the application where baseline emission rates are addressed. For example, the particulate emission rates or factors for the roof monitor on the blast furnace casthouse are discussed in Section 5.2.3.3 (2022 application, p. 5-3); the proposed prescribed emission factors for this emission point, which are the same numerically, are provided later in Section 5.5.1.2 without further discussion (2022 application, p. 5-14 and 5-15).

[43] The emission factors that the 2022 application proposes to be prescribed for particulate emissions from the roof monitor on the basic oxygen furnaces may be appropriate at the present time given the installation of a baghouse control system on these furnaces. Nonetheless, for a revised permit to be issued that prescribes emission factors for emission from the roof monitor, the application must show that those factors are representative with the emission control measures that are required by the permit. It must also be recognized that those prescribed factors would not be representative of emissions before the new baghouse system was installed and operation of this system was required. As such, particulate emissions factors that are representative of particulate emissions circa 1996, before installation of the baghouse system on the furnaces, should be used in the revised netting analyses for PM and PM_{10}.

5.2.2.11, 5.2.2.13 and 5.2.2.14 of the application. In these sections, the application explained that these emission factors reflect emission factors from a report prepared by the Illinois EPA in 1991, i.e., "Illinois EPA 1991 EIS PM/PM_{10}." This is not sufficient to show that the emission factors that are proposed as prescribed factors are representative. In this regard, the statement that these factors were taken from a historic report prepared by the Illinois EPA does not show that this report included information showing why these factors should be considered representative and can be prescribed by a revised permit.

Mag-Lime Silo:

For the Mag-Lime Silo, a prescribed emission rate of 0.009 pounds/hour is proposed (2022 application, Section 5.5.4.2). As explained in the application, this unit, which stores the reagent used in desulfurization of iron in the basic oxygen furnace shop, was overlooked in the original permitting of the Project (2022 application, Section 5.4.4 and Footnote 34, p. 5-16 and 5-17). US Steel elected not to address its baseline emissions in the revised netting analyses for PM and PM_{10} because emissions are low, i.e., potential annual emissions less than 0.1 tons. However, the application does not include calculations explaining how US Steel determined that potential particulate emissions of this unit are less than 0.1 tons/year, much less information showing that a prescribed emission rate of 0.009 pounds/hour should be considered representative of the emissions of this unit.[44]

[44] The application also does not explain how US Steel determined that the potential annual particulate emissions of the Mag-Lime Silo are less than 0.1 tons. In this regard, the application does not include calculations that identify any assumptions about operation of this unit or the control of its emissions made by US Steel when calculating the potential emissions of this unit. For example, for particulate matter, was the outlet emission rate of the filter that is part of this unit assumed to be less than the regulatory limit of 0.03 grains per dry standard cubic foot pursuant to 35 IAC 212.308 and 212.313?

9. FOR THE ROOF MONITOR OF THE CASTHOUSE, THE APPLICATION DOES NOT SHOW THAT THE METHODOLOGY THAT IS PROPOSED TO BE PRESCRIBED FOR THE DETERMINATION OF NOx AND VOM EMISSIONS WOULD BE REPRESENTATIVE

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a). 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* Relative to the revision to Permit 95010001 that is requested to establish a certain "prescribed emission determination methodology" for the uncaptured NOx and VOM emissions of the blast furnace casthouse, the 2022 application does not include information justifying the future use of such proposed methodology for the purpose of determining compliance with the revised limitations for the NOx and VOM emissions of the blast furnace casthouse that are requested. In particular, the 2022 application does not include information showing that the proposed methodology should be considered representative, accurate and appropriate. In this regard, the 2022 application does not show that changes in the levels of captured NOx and VOM emissions, as measured by emission testing, would be due to actual changes in the overall level of NOx emissions from the casthouse rather than other causes. For example, changes in the levels of measured NOx or VOM emissions could be due to changes in the manner of operation of either the iron making/tapping processes or the baghouse control systems as they function to capture NOx and VOM emissions. Changes in the levels of measured emissions could also be due to the variation in the results of emission testing that may be present with the applicable reference test methods.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would determine future uncaptured NOx and VOM emissions of the blast furnace casthouse based on the methodology proposed in the 2022 application. The 2022 application does not show that the proposed prescribed methodology would appropriately be relied upon for the purpose of addressing the future uncaptured NOx and VOM emissions of the blast furnace casthouse.

Discussion

For the NOx and VOM emissions of the roof monitor on the casthouse on the blast furnaces (i.e., uncaptured emissions, which do not pass through a control device), the 2022 application proposes a prescribed emission calculation methodology that involves the results of emission testing for the main baghouse for the casthouse and an assumed capture efficiency of 95 percent.[45] For example, for NOx emissions from the roof monitor, the application requests that,

> Prescribed emissions factors consistent with the approach described in Section 3 [Discussion of Permit Conditions Used to Restrict PTE] are provided herein. USS Granite City is proposing a prescribed emissions calculation methodology for NOx emissions from the blast furnace casthouse roof monitor based on application of 95% capture emissions to the NOx stack test result for the blast furnace casthouse baghouse.
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> 2022 application, Section 6.5.1.2, Prescribed Emission Factors for Blast Furnaces Operations, p 6-9.

The application does not show that the "proposed methodology" would result in NOx and VOM emissions rates for the roof monitor that would be representative. In this regard, the proposed methodology would yield emission rates for the roof monitor that would be related directly to the measured emissions of the main baghouse on the casthouse. However, it would not address the effect of variation in capture efficiency on emissions. That is, with the proposed methodology, if emissions from the baghouse measured by a particular test were "lower," the calculated emission rate of the roof monitor would also be lower. The methodology would not address a situation in which the emissions measured by testing are lower because the capture efficiency of the baghouse system during testing was also lower. In this situation, there would actually be more emissions through the roof monitor. As such, unlike specific emission rates for NOx and VOM that would be prescribed in a revised permit, the "proposed methodology" would not address the NOx and VOM emissions from the roof monitor in a way that can reasonably be considered to be representative on an ongoing basis.[46, 47]

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[45] With the proposed methodology, the NOx or VOM emission rate for the uncaptured emissions of the casthouse would be derived from the emission rate of the main baghouse measured by periodic testing using the following formula:

[{Measured rate of the baghouse (lbs/ton) ÷ 0.95} x 0.05] = Calculated rate for the monitor (lbs/ton)

[46] This issue would not be present with an appropriate prescribed emission factor. As such, a factor would not change based on the results of periodic testing, the factor could be reviewed when processing the application to confirm that it was conservatively developed so as to be representative on an ongoing basis.

[47] Section 7.5.1.2 of the 2022 application, which addresses the proposed calculation methodology for the VOM emissions from the roof monitor on the casthouse, erroneously refers to the results of emissions testing of the main baghouse system on the casthouse for NOx rather than testing for VOM.

10. THE APPLICATION DOES NOT INCLUDE NECESSARY SUPPORT FOR THE EMISSION FACTORS THAT ARE PROPOSED AS PRESCRIBED FACTORS FOR CERTAIN UNITS.

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a), 203.123, 203.128, 204.400 and 204.560.

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* Relative to the revisions to Permit 95010001 that are requested to establish certain "prescribed emission factors" as specifically proposed by the 2022 application, the application does not include information justifying the future use of such proposed factors for the purpose of determining compliance with the revised limitations for the emissions of the Project-affected units that are requested. In particular, as the proposed factors are derived from emissions factors developed by USEPA, the 2022 application does not include information showing that the factors that were derived and are now proposed should be considered representative, accurate and appropriate. For example, for the blast furnace casthouse, the application proposes a prescribed emission factors for uncaptured emissions of particulate that are based on factors in USEPA's *Compilation of Air Pollutant Emission Factors*, AP-42, and achievement of at least 95 percent capture efficiency by the particulate control systems on the casthouse (i.e., 5 percent of the particulate emission being uncaptured). However, as support for reliance on these systems achieving at least 95 percent capture efficiency, the application only refers to a single memorandum by USEPA staff and a consultant.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include necessary information to allow a revised permit to be proposed for the Project, much less issued, that would determine future emissions of the subject emission units and emission points based on the factors proposed in the application. The application does not show that the proposed prescribed factors would appropriately be relied upon for the purpose of enforceably limiting the future emissions of the emission units and emission points for which they are proposed.

Discussion

The 2022 application does not include relevant supporting information for certain emission factors used in the application, as follows. Absent this information the Illinois EPA cannot assess whether the prescribed emission factors proposed for these units should be considered representative.

Blast Furnace Casthouse Roof Monitor:
The prescribed particulate emission factors proposed for the roof monitor on the blast furnace casthouse (i.e., the uncaptured emissions from the casthouse) are identical to the baseline emission rates. These rates are based on emission factors from AP-42 for uncontrolled emissions with application of a 95 percent capture efficiency for the baghouse control systems on the casthouse. The application only references a single memorandum from 2019 by various USEPA staff and a consultant as support for achievement of 95 percent capture efficiency (2022 application, Section 5.2.3). Further support is needed for a prescribed emission factor based on achievement of 95 percent capture.

Slag Pits:
For particulate emissions from quenching of slag, the 2022 application does not include a copy of the "EPA assessment" that is the basis of the emission factors and material showing how the selected emission factors were derived from this assessment. For emissions from transfer of slag, the application does not include a copy of the calculations by which the emission factors were developed from the formulas provided in AP-42, Section 13.2.4. The application also does not address whether the emission factors rely on control by the application of water or the presence of residual moisture and, if so, the basis for the assumed levels of control efficiency. (2022 application, Section 5.2.2.5, p 5-4).

Iron Pellet Screen:
For the Iron Pellet Screen, the proposed prescribed emission factor for PM and PM_{10} emissions is identical to the baseline emission rates (2022 application, Section 5.2.2.16). While the emission factor for uncontrolled emissions for screening of crushed stone in Table 11-19.2-2 in AP-42 is identified as the basis of this emission rate, a control efficiency of 85 percent is applied, reducing the factor that is actually used to 15 percent of the cited AP-42 factor. The application does not describe the means by which the particulate emissions of this screen are controlled or reduced to show that 85 percent control of particulate emissions is achieved for the Iron Pellet Screen.[48] In addition, AP-42 lists two emission factors for screening of crushed stone, one for PM and one for PM_{10}. The emission factor for PM is about three times the factor for PM_{10} (0.025 pounds/ton ÷ 0.0087 pounds/ton = 2.87, ~ 3). The 2022 application does not show that for screening of iron ore pellets, an emission factor that was developed for PM_{10} is directly transferable to PM emissions.

[48] The CAAPP permit, Condition 7.4.2 indicates that the Iron Pellet Screen is not served by emission control equipment.

11. THE DETERMINATIONS OF PARTICULATE EMISSIONS FROM HANDLING OF COKE, IRON PELLETS AND LIMESTONE ARE NOT SUPPORTED AND CANNOT BE CONFIRMED

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*,35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* For handling of coke, iron pellets and limestone, the baseline emissions of particulate matter (PM) and particulate matter-10 (PM-10) provided in the 2022 application are both 17.2 tons/year. The information for baseline emissions from handling these materials is not accompanied by supporting information. The application does not explicitly list the various units whose emissions are being addressed and describe the nature of the various units relative to their emissions of PM and PM-10. Data is not provided for the annual amounts of various materials that were handled by these units. Data is also not provided for the emission factors used to calculate annual emissions, the sources or basis of those factors, and why those factors should be considered representative of the emissions of the various types of units being addressed.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include the necessary information to allow a revised permit to be proposed for the Project, much less issued, that would restrict future PM and PM-10 emissions of the subject units. The issuance of a revised permit with limitations for the future emissions of these units that are practically enforceable necessarily requires that the application include supporting information as discussed above. For example, the Illinois EPA needs information on how baseline emissions were determined to confirm that the baseline emissions were reasonably determined. This information is also needed to determine what limitations on emissions should be set in the revised permit and if the permit should require any specific practices to assure emissions are controlled to levels relied upon in the calculations of baseline emissions. Finally, this information is needed so appropriate permit conditions can be developed setting forth how compliance with the limitations is to be demonstrated.

Discussion

With regard to baseline particulate emissions, the determination of baseline emissions from handling of coke, iron pellets and limestone provided in the revised netting analysis cannot be independently confirmed. In this regard, the 2022 application does not provide needed supporting information for the "corrected" determinations of baseline particulate emissions of

these operations as it is not accompanied by detailed calculations for the emissions from handling each material. (2022 application, Table 5-5. "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM Emissions Factors for Affected Emission Units" and Table 5-6, "Pre-project Actual Emissions and Summary of Proposed Changes to Pre-Project PM_{10} Emissions Factors for Affected Emission Units.")[49]

With regard to emissions with the Project, the 2022 application does not include information for particulate emissions from handling of coke, iron pellets and limestone. Since the by-product coke oven batteries were not shut down until 2015, emission information is needed for handling of coal for the period of operation with the Project before the batteries were shut down. Likewise for coke, emission information is needed to address handling of coke before US Steel constructed the conveyor system to receive coke directly from the heat recovery coke production facility built by Gateway.[50]

[49] Tables 5-5 and 5-6 do refer to "Table F-3 of the 1995 application" for these material handling operations. A copy of this table is provided in Appendix B of the 2022 application. However, this table only appears to address PM_{10} emissions, for which it provides annual emissions in tons/year. This table does not include calculations and background information showing how the annual emissions of PM_{10} were determined. Finally, the data for annual emissions of material handling operations appears to rely on the "PM10 SIP" requiring a 90 percent reduction from uncontrolled emissions without providing any support for this assumption.

[50] As this new system was constructed as part of a different project, i.e., the construction of the Gateway facility, rather than the Production Increase Project, US Steel should not address emissions that are specifically associated with this new system.

12. THE REQUESTED CHANGES TO THE GROUPING OF UNITS IN THE PERMIT FOR CONSISTENCY WITH THE GROUPINGS OF UNITS IN THE CAAPP PERMIT WOULD NOT ADDRESS ALL DIFFERENCES IN THE GROUPINGS OF UNITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152* and 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application requests certain changes to Permit 95010001 because the areas or sections of the CAAPP permit for the Granite City Works, Permit 96030056, in which certain emission units are addressed are not the same as those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with the units with which they are associated. For example, handling of fluxes and alloy materials for the BOFs is addressed with the provisions of the permit for the BOF Shop. In the CAAPP Permit, handling of fluxes and alloy materials for the BOFs and other discrete material handling and processing operations are addressed in a separate section of the permit (Section 7.1) rather than with Blast Furnace Operations (Section 7.4), the BOF Shop (Section 7.5), or Continuous Casting Operations (Section 7.6). While it is reasonable for Permit 95010001 to be revised so that the placement of units in this permit is the same as their placement in the CAAPP permit, several concerns are posed by the specific changes to Permit 95010001 that are requested to accomplish this. In particular, the 2022 application requests that Permit 95010001 be revised to address the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" with other ancillary operations in the BOF Shop, rather than with the Continuous Casting Operations. This change would be appropriate as these units would be placed with other units that are subject to the Iron and Steel NESHAP, 40 CFR 63 Subpart FFFF, as they are BOF Shop ancillary operations. However, the application also requests that the permit be revised to refer to these units as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." This change would not be appropriate as it would refer to the baghouse serving these units and its emissions rather than to the units themselves and their emissions. The application also does not request any changes to Permit 95010001 for the "Deslagging Station and Material HS [Handling System]." In the CAAPP permit, these units are currently addressed twice, both with the discrete material handling operations (Section 7.1) and with continuous casting operations (Section 7.6). More importantly, the placement of these units in Permit 95010001 should be directed by the emission standards that apply to these units. These units would be appropriately addressed with BOF Shop Operations (Section 7.5) as they entail either a "skimming station" or "ladle metallurgy" for purposes of the Iron and Steel NESHAP. Finally, for "Ladle Drying/Preheating," the application does not request revisions to Permit 95010001 although the CAAPP permit addresses these emission units both with BOF Shop Operations (Section 7.5) and with other Project-affected fuel burning units (Condition 5.6.2(a)(ii)). In Permit 95010001, these units are currently only addressed as Project-affected fuel burning units.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* As related to the location in permits where certain emission units are addressed, the 2022 application does not request all revisions that are known to be appropriate to Permit 95010001, and, by means of Integrated Processing of the revisions to Permit 95010001, are appropriate to the CAAPP permit for the facility. For certain units, the application would not address differences in where the units are addressed by the two permits and the related emission standards and requirements that may apply to those units. As related to the naming of units, the Applicant requests a change that is improper as well as unnecessary. As such, if Permit 95010001 were revised with the placement of units in the permit shifted as requested by the 2022 application, it would preclude Integrated Processing of the revised permit. This is because the revision of Permit 95010001 would otherwise allow discrepancies or errors in the provisions for certain units in the current CAAPP permit, which have now been identified and are within the potential scope of the revisions to Permit 95010001, to be perpetuated by the amendments to the CAAPP permit that would be authorized.

Discussion

As addressed in Section 2.2.2 of the 2022 application, US Steel generally requests changes to the organization of Permit 95010001 because the areas or sections of the CAAPP permit in which certain units are addressed are different than those in Permit 95010001. Most notably, in Permit 95010001, discrete material handling and processing operations are addressed with either the blast furnace operations, operations in the basic oxygen furnace shop or the continuous casting operations, based upon the area with which they were considered to be associated. In the CAAPP permit, these discrete material handling and processing operations are generally addressed in a separate section of the permit, Section 7.1, "Material Handling and Processing Operations." In addition, in the CAAPP permit, the "Argon Stirring Station and Material Handling Tripper" was addressed with units in the basic oxygen furnace shop in Section 7.5 of the CAAPP permit rather than with the continuous casting operations as in Permit 95010001.

While it is reasonable for there to be consistency in the groupings or categorization of emission units in Permit 95010001 and the CAAPP permit, as generally requested by US Steel, several concerns are posed, as discussed below, by the specific changes to Permit 95010001 that have been requested.

Requested Changes for the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)":

As explained in Section 11.1.2 of the 2022 application, US Steel requests that the "Argon Stirring Station and Material Handling Tripper (Ladle Metallurgy)" now be addressed in Permit 950100001 with operations in the Basic Oxygen Furnace Shop. The application also requests that this unit be identified as "Baghouse 2 for Argon Stirring and Ladle Metallurgy Facility." However, the application does not actually identify the specific units that would be addressed by the proposed new term. In this regard, the application is not accompanied by an itemized list of the equipment and activities that would be covered by this new term or a diagram that identifies this equipment and activities. US Steel's request also does not explain how the requested revision to Permit 95010001 would do what has generally been requested as the proposed new

term would refer to a "Material Handling Tripper." As the 2022 application requests changes to terminology in Permit 95010001, the changes should act to better identify the emission units that would be addressed, improving the specificity and clarity of the revised permit.[51, 52]

Absence of A Request for Revisions for the "Deslagging Station and Material HS":
The 2022 application does not request any revisions to Permit 95010001 with respect to the Deslagging Station and Material HS (Handling System).[53] These emission units are currently addressed in Permit 95010001 with continuous casting operations (Permit 95010001, Condition 20 and Table 3). In the CAAPP permit, a "Steel Deslagging Station" is identified as one of the continuous casting operations (CAAPP permit, Condition 7.6.2(a)).[54] The 2022 application does not explain why this steel deslagging operation should not appropriately be categorized as slag skimming and addressed with the other slag skimming operations in the basic oxygen furnace shop. In this regard, for the argon stirring station, US Steel does explain in Section 11.1.2 of the 2022 application that this station should be addressed with operations in the basic oxygen furnace shop rather than with continuous casting operations. This is because this station is a "BOPF shop ancillary operation" for purpose of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF (2022 application, Section 11.1.2). US Steel does not explain why the current placement in Permit 95010001 of the steel deslagging station with continuous casting is appropriate and this station should not also be addressed with other BOPF shop ancillary operations. Alternatively, US Steel does not request that this station be addressed with other

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[51] For example, the proposed new term would not make clear that the basic oxygen furnace shop actually has two ladle stirring stations and one ladle metallurgy furnace, all served by Baghouse 2.
[52] The requested change to the terminology for these emission unit(s) is also problematic as it would refer to a control device, Baghouse 2, rather than to the equipment or activities that generate emissions. Applied literally, the proposed term would only address captured emissions; it would not address the uncaptured emissions, which clude capture for control by the baghouse.
[53] For example, in Section 5.2, the 2022 application does not identify any updates or revisions to the pre-project actual emissions of the steel deslagging station and associated material handling system. Likewise, Appendix B – Emission Calculations does not identify any changes from the 1996 netting analyses that involve these units (Appendix B – Emission Calculations, USS Granite City – 1996 Production Increase Project: Revised PM PSD Net Emissions Increase Analysis and Revised PM10 PSD Net Emissions Increase Analysis).
[54] The presence of a deslagging station that is physically located in the continuous casting building is indicated in the pending application for renewal of the CAAPP permit. This application indicates that the particulate emissions of this station are controlled.

> Deslagging Station:
> Molten steel from the BOF is transferred directly from the BOFs to the continuous casting building. The first operation carried out in this building is the skimming of slag from the surface of the molten steel. Slag removed by this operation is skimmed into slag pots for disposal. Baghouse #1 is used to control emissions from this process.
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> CAAPP Renewal Application, Appendix D: Process Descriptions, Section 7.6 Continuous Casting, Deslagging Station, p. D-56.

BOPF shop ancillary operations.[55] Slag skimming is one of the operations that 40 CFR 63.7852 defines as being "Basic oxygen process furnace shop ancillary operations."[56, 57]

For the "Deslagging Station and Material HS," the 2022 application also does not request revisions to Permit 95010001 as the CAAPP permit currently limits particulate emissions of this operation twice, once as a continuous casting operation and again as a material handling operation. In this regard, the CAAPP permit limits the particulate emissions of a "Deslagging Station and associated Material Handling System (Condition 7.6.6(a). As indicated by a reference in this condition, the CAAPP permit also limits emissions of a "Material HS and Deslagging Station" (Condition 7.1.6(b)(i)) in Section 7.1 of the CAAPP permit, where discrete material handling and processing operations are addressed. The 2022 application does not request revisions to Permit 95010001 to facilitate amendment of the CAAPP permit to appropriately address the emissions of this deslagging station and the associated material handling system. In the absence of such revisions, the current CAAPP permit would suggest that the revised netting analyses for particulate should address the emissions of these units twice, once as deslagging and once as material handling. On the other hand, if Permit 95010001 would address emissions of these units in this way, the consolidated emission limits for continuous casting and discrete material handling operations would be inappropriate as emissions of the deslagging station and the associated material handling system would be accounted for twice.[58]

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[55] The proper categorization of this steel deslagging station is important when considering US Steel's request for consolidation of the emission limits currently set by Permit 95010001. As a general matter, any new, "consolidated" limits set by a revised permit must be developed to apply to sensible groupings of units. The groupings of units should facilitate identification in the revised permit of the regulatory requirements that apply to various units. This is especially true as the consolidated limits would rely on certain applicable regulatory requirements, e.g., the work practices and operational monitoring requirements under 40 CFR 63 CFR Subpart FFFFF, to assure consistent operation of emission units so as to keep short-term emissions at or below the established emission rates for the units.

[56] For this steel deslagging station, there is a potential compliance issue relative to the NESHAP, 40 CFR 63 Subpart FFFFF. The CAAPP permit indicates that the emissions of this station are not controlled (CAAPP permit, Condition 7.6.2). On the other hand, if its emissions are controlled by Baghouse 2, the direct applicability of the NESHAP to this station becomes a minor matter. This is because Baghouse 2 is directly subject to requirements of 40 CFR 63 Subpart FFFFF as it controls emissions from "ladle metallurgy." Ladle metallurgy is defined by 40 CFR 63.7852 as "... a secondary steelmaking process that is performed typically in a ladle after initial refining in a basic oxygen furnace to adjust or amend the chemical and/or mechanical properties of steel. This definition does not include vacuum degassing."

[57] It is also noteworthy that as the steel deslagging station is identified as a continuous casting operation by Permit 95010001, the permit applies 35 IAC 212.458(b)(8), which sets a limit of 5 percent, 6-minute average, for the opacity of emissions from the various continuous casting operations (Permit 95010001, Condition 19). However, Permit 95010001 omits the introductory language for this standard that provides that it does not apply to fugitive emissions. The introductory language is present in the CAAPP permit, which addresses the standards that apply to both fugitive and non-fugitive emissions of continuous casting operations (Permit 96030056, Conditions 7.6.3((b), (b)(ii) and (c)).

[58] If there was not actually a material handling system associated with the steel deslagging station, this could be readily addressed in the application for revisions of Permit 95010001. The application could acknowledge the error in the original application, as reflected in the permit that was issued, accompanied by an accurate diagram for the deslagging station as it existed in 1995 and as it now exists. In this regard,

For "Ladle Drying/Preheating," Absence of Any Request for Changes:
For "Ladle Drying/Preheating," the 2022 application does not request any changes to Permit 95010001 to maintain consistency with the approach to these units in the CAAPP permit. In Permit 95010001, these emission units are addressed with other Project-affected fuel burning units (Permit 95010001, Table 4, Certain Fuel Combustion Units). In the CAAPP permit, these units are addressed in Section 7.5 as "Basic Oxygen Processes" with other units in the Basic Oxygen Furnace Shop, as well as elsewhere in the permit with other Project-affected fuel burning units (e.g., Conditions 5.6.2((ii) and (iii)). In addition, the CAAPP permit sets a limit for the total NOx emissions of the BOF Shop (Condition 7.5.6(b)). In the absence of appropriate changes to the CAAPP permit, since the ladle drying/preheating takes place in the basic oxygen furnace shop, the limit for the NOx emissions of the basic oxygen furnace shop would apply to the sum of the NOx emissions of the basic oxygen furnaces and the ladle dryers/preheaters.

it is perhaps noteworthy that Permit 95010001 does not identify the material(s) that are handled by the material handling operations associated with the steel deslagging station.

13. THE 2022 APPLICATION DOES NOT REQUEST REVISIONS TO PERMIT 95010001 AND, INDIRECTLY, TO THE CAAPP PERMIT THAT WOULD ALSO BE NECESSARY AS THIS APPLICATION REQUESTS THAT THE REVISED PERMIT PRESCRIBE EMISSION FACTORS FOR CERTAIN UNITS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not request that the revision to Permit 95010001 add condition(s) generally setting forth how compliance with annual emission limitations set by Permit 95010001 is to be determined. While revisions are requested to establish certain "prescribed emission factors" and "prescribed emission determination methodology," the application does not request related revisions to Permit 95010001 to generally address the procedures that are to be followed when determining compliance with the limitations on annual emissions set by Permit 95010001. In this regard, it is noteworthy that, if it were not stayed, Condition 5.13 of the CAAPP permit for the Granite City Works, Permit 96030056, would address the general procedures for how compliance with limitations on annual emissions set by Permit 95010001 is to be determined. (That condition is currently stayed following an appeal to the Pollution Control Board, PCB 2013-53.) That condition would generally require that compliance with limitations on annual emission be determined using "appropriate emission factors." However, that condition does not address nor would it provide for use of prescribed factors or methodology to determine compliance with limitations on annual emissions, as is being requested by the 2022 application.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* If a revised version of Permit 95010001 were issued that provided for use of prescribed emission factors and methodology without condition(s) generally setting forth how compliance with limitations for annual emissions in Permit 95010001 is to be determined for emission units which the permit establishes prescribed emission factors and methodology (similar to CAAPP Condition 5.13 as it currently addresses use of appropriate emission factors), the limitations on annual emissions in the revised permit would not be enforceable as a practical matter. In this regard, at this time, CAAPP Condition 5.13, which addresses the use of appropriate emission factors in determining compliance with annual emission limitations, cannot be relied upon for this purpose. As well as currently being stayed, that condition only provides for use of appropriate emission factors. It does not provide for the use of prescribed emissions factors or prescribed emission determination methodologies. Moreover, in the absence of a request in the 2022 application for suitable condition(s) generally addressing how compliance with limitations on annual emissions is to be determined, the

application does not show that the revision to Permit 95010001 that is requested would meet the criteria for Integrated Processing, as the application also specifically requests. That is, the 2022 application would not show that the request for a revised permit would provide for compliance requirements substantially equivalent to those provided for by the CAAPP since the application does not request that the revised permit include requirements substantially equivalent to those that would have been provided by CAAPP Condition 5.13 if it were not stayed.

Discussion

The 2022 application does not request revisions to general provisions in Permit 95010001 that would enable revisions to the CAAPP permit for the Granite City Works, Permit 96030056, to be made by administrative amendment to allow prescribed emission factors to be used to determine ongoing emissions of certain emission units. In this regard, the CAAPP permit currently provides that "appropriate emission factors" shall be used when determining emissions to evaluate compliance with the emission limits for process units set by Permit 95010001. Permit 95010001 does not specify how emissions are to be determined for this purpose, much less specify that, for certain emission units and pollutants, prescribed emission factors are to be used.[59] Accordingly, the procedures to determine compliance with the emission limits set by Permit 95010001 were established in the CAAPP permit for the Granite City Works. This was necessary because the emission limits set by Permit 95010001 are applicable requirements under the CAAPP. The procedures that were established in the current CAAPP permit do not provide for the use of prescribed emission factors. Rather, the CAAPP permit generally requires US Steel to use "appropriate emission factors," i.e., emission factors that do not understate emissions, with the primary responsibility for the appropriateness of the factors that are used placed on US Steel.[60] The CAAPP permit also provides for recordkeeping and reporting by US Steel so that the Illinois EPA and interested parties can know and may review for the emission factors that are being used. However, the 2022 application simply requests revisions to Permit 95010001 to require use of prescribed emission factors for certain units. The application does not address the fact that the CAAPP permit currently does not accommodate the use of prescribed emission factors to calculate emissions but instead requires use of "appropriate emission factors."[61]

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[59] Condition 39(a) of Permit 95010001 did require "one-time testing" for various pollutant for certain emission units within 270 days of the date that this permit was initially issued. Additional time was subsequently provided to complete testing for the particulate emissions of a boiler when burning blast furnace gas. Unfortunately, the permit did not require testing of the NOx and VOM emissions of the BOFs. That testing was subsequently required by the CAAPP permit issued for the facility.

[60] This approach is consistent with a basic principle of the Title V permit program, as reflected in the CAAPP, that the responsibility for showing compliance with applicable air pollution control requirements for a facility lies with the source or Permittee for the facility, and not with the permitting authority.

[61] It should also be noted that in PCB 2013-53, the appeal that is pending before the Pollution Control Board for CAAPP permit 96030056, US Steel challenged Condition 5.13, General Procedures for Certain Permit Limits on Emissions. Condition 5.13 is relevant to the requested revisions of Permit 95010001 as it specifies procedures by which compliance is to be generally determined with the emission factor limits and annual emission limits set by Permit 95010001for process units. In addition to not proposing revisions to Permit 95010001 to accommodate use of prescribed emissions factors, the 2022 application does not address related revisions to Condition 5.13 of Permit 96030056 to potentially facilitate resolution of PCB 2013-53 as Condition 5.13 is challenged in this appeal.

14. THE 2022 APPLICATION DOES NOT ADDRESS THE AMENDMENT TO THE CAAPP PERMIT AUTHORIZED BY CONSTRUCTION PERMIT 11050006, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application was not accompanied by an application for an administrative amendment to incorporate changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are authorized by Construction Permit 11050006, issued April 1, 2013. That construction permit addresses the baghouse control system installed on the BOFs to improve control of the particulate emissions of these furnaces from charging and tapping. As that construction permit was subject to Integrated Processing, it provides for certain changes to then be made in the CAAPP permit to the requirements for the BOFs as needed to accommodate the use of both this new baghouse control system and the existing electrostatic precipitator (ESP) system for control of emissions. However, US Steel has not initiated a revision to the CAAPP permit to incorporate changes as authorized by Permit 11050006 by submitting an application for an administrative amendment of the CAAPP permit.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent the administrative amendment of the CAAPP permit as authorized by Construction Permit 11050006, as the 2022 application requests Integrated Processing, the application requests that revision of Permit 95010001 authorize changes to the current CAAPP permit. As such, the application effectively requests that separate from the revisions that are specifically requested by the application, the Illinois EPA reissue a CAAPP permit that, as related to the BOFs, contains provisions that are no longer accurate. For example, the description of the BOFs in CAAPP Conditions 7.5.1 and 7.5.2 does not indicate the use of the baghouse control system on the BOFs; only the ESP system is addressed. In addition, CAAPP Condition 7.5.5-1 does not address the corrective action procedures for baghouses required by 40 CFR 63.7800(b)(4). The addition of the baghouse system would be appropriately addressed in the CAAPP permit by the earlier amendment authorized by Construction Permit 11050006. As such, it would be contrary to the CAAPP to authorize further revisions to the CAAPP permit by means of Integrated Processing, as is requested by the 2022 application, without first making the revisions to the CAAPP permit authorized by Permit 11050006. Otherwise, the amendment of the CAAPP permit authorized by means of the revision of Permit 95010001 would be deficient. For the BOFs, as such a CAAPP permit, would not address certain applicable requirements, the

permit would not contain provisions to assure compliance with all applicable requirements. It would also continue to include requirements that, as addressed by Permit 11050006, would have become obsolete with the addition of the baghouse control system.

Discussion

The 2022 application does not identify the version of the Clean Air Act Permit Program (CAAPP) permit for the Granite City Works, Permit 96030056, that would be eligible for administrative amendment pursuant to the Integrated Processing of the revisions to Permit 95010001 that are requested. This is relevant because the Illinois EPA has already issued a construction permit with Integrated Processing, i.e., Construction Permit 11050006, issued April 1, 2013. This permit addresses the addition of a baghouse system to improve control of particulate emissions of the basic oxygen furnaces from charging and tapping of the furnaces. With the addition of this new system, the furnaces have three points of emissions, i.e., the new baghouse, the historic ESP, and the roof monitor on the furnace shop.[62] Certain work practices that were required by Permit 95010001 for control of particulate emissions of the furnaces with only an ESP system conflicted with the use of the baghouse system or would no longer be appropriate when emissions were also controlled with the new system. To address the fact that these work practices were also present in the CAAPP permit for the facility, Construction Permit 11050006 was subject to Integrated Processing and allowed certain changes to be made to the CAAPP permit by administrative amendment.[63] This was intended to enable use of the new baghouse system for improved control of particulate emissions in compliance with the CAAPP permit without the need for a subsequent permit proceeding to modify the CAAPP permit. However, US Steel has not initiated action for the Illinois EPA to actually issue an amended CAAPP permit with changes as authorized by Permit 11050006.[64]

Section 39.5(13)(a) of the Illinois Environmental Protection Act provides that "The Agency shall take final action **on a request** for an administrative permit amendment within 60 days after **the**

[62] The new baghouse system required a construction permit because this system would affect the requirements that then existed for control of particulate emissions of the basic oxygen furnaces, including their emissions of lead. For purposes of NSR, the construction permit was issued based on the new baghouse system being a project that would reduce the emissions of particulate and lead from these furnaces rather than increase these emissions. The permit was also based on this new system not increasing the emissions of other pollutants from these furnaces. As such, the construction permit for the new baghouse system, Permit 11050006, did not set limits for emissions from the baghouse system. This permit also did not lower the existing limits for the emissions of the basic oxygen furnaces.

[63] To address the changes to the CAAPP permit that would be needed for use of the new baghouse system, Permit 11050006 provides for replacement of Section 7.5 of the CAAPP permit, which addresses the basic oxygen furnace shop, including the basic oxygen furnaces, in its entirety. The new version of Section 7.5 addresses the basic oxygen furnace shop with the new baghouse system. Given the extent of the changes to Section 7.5 that were needed to accommodate addition of a baghouse to the particulate control system for the basic oxygen furnaces, this approach was taken to Permit 11050006 to provide accuracy, clarity and simplicity in the revisions to the CAAPP permit that were being authorized.

[64] The 2022 application does address the addition of the baghouse control system for the basic oxygen furnaces as related to the emission of the furnaces. US Steel does not propose separate limits set for the individual emission points for these furnaces. Instead, the application requests that the revised permit set overall limits for the emissions from the control systems of the basic oxygen furnaces.

receipt of the request." (Emphasis added.) Accordingly, in the absence of a formal request from US Steel to the Illinois EPA to initiate the administrative amendment of the CAAPP permit contemplated by Permit 11050006, the 2022 application can only request Integrated Processing to allow administrative amendments of the current CAAPP permit, as has actually been physically issued by the Illinois EPA.[65, 66]

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[65] The timing of the physical issuance of a revised CAAPP permit by the Illinois EPA is critical as a procedural matter because it starts the period within which the Permittee may appeal such action to the Pollution Control Board. Moreover, in PCB 2013-62, US Steel has already appealed certain elements of the changes to the CAAPP permit that are addressed by the administrative amendment to the CAAPP permit authorized pursuant to Permit 11050006.

Given this appeal, the Illinois EPA would not "reinstate" those provisions when issuing the amended CAAPP permit. Instead, it is expected that the amended CAAPP permit would contain notes that explain that the appealed provisions continue to be present in the that existing CAAPP permit as they were appealed. Nevertheless, it is possible that US Steel would appeal those notes in the amended permit as they would acknowledge the continued existence of the appealed provisions.

[66] Concerns are posed by certain conditions in existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 that it authorizes. The 2022 application is not accompanied by a request for changes to Permit 11050006 or a proposal for how to address these concerns so that they would not be perpetuated in the amended CAAPP permit. One concern is that the deadlines in Permit 11050006 for performing emission testing on the new baghouse and completing certain other actions were based on the basic oxygen furnaces being in routine use once the construction of the new baghouse system was completed. The permit did not contemplate the over two yearlong interruption in production that began in December 2015. US Steel undertook this interruption in production in response to the poor markets for domestic steel at that time. As such, although failures to meet certain deadlines in Permit 11050006 likely were reasonable, it is not clear that they would be excused as being due to *force majeur* (i.e., event(s) that could not reasonably be anticipated or controlled by the source).

The other concern with existing Construction Permit 11050006 and the related amendments to CAAPP Permit 96030056 is that they overlook the role of the existing ESP control system in controlling particulate emissions from charging and tapping of the basic oxygen furnaces. Instead, Permit 11050006 incorrectly indicates that the new baghouse system will control emissions from charging and tapping of the furnaces and the existing ESP system will control emissions from the refining process. In fact, the new baghouse system was constructed to improve control of emissions from charging and tapping, with capture hoods to collect particulate emissions that are not captured by the hoods that serve the ESP system. This is perhaps most clearly shown in the 2010 Memorandum of Understanding between US Steel and the Illinois EPA (MOU) as this MOU addresses improvement in the control of emissions from charging of the furnaces. Section 4(d) of the MOU acknowledges the presence of the existing control for charging with the ESP. It also indicates that control of emissions from charging could be improved by ducting either some or all of these emissions to a new baghouse system. In any case, the errors in the description of the new baghouse system for the basic oxygen furnaces in Permit 11050006 should also be corrected so that erroneous information is not perpetuated in the amendments to the CAAPP permit.

15. THE 2022 APPLICATION WOULD NOT CLARIFY THE RELATIONSHIP BETWEEN FUGITIVE DUST CONTROL MEASURES REQUIRED BY PERMIT 95010001 AND MEASURES REQUIRED BY 35 IAC PART 212 SUBPART K

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* As related to practices to reduce emissions of fugitive dust from roadways, parking areas and open areas at the Granite City Works and certain public roadways near this facility, the 2022 application does not propose revisions to clarify the interplay between the associated recordkeeping and reporting that are required by Permit 95010001 and the associated recordkeeping and reporting that are required by Board rules. In this regard, except for Condition 25, Permit 95010001 does not address the Board's rules for control of emissions of fugitive dust. (Condition 25 addresses 35 IAC 212.316(e)(1), which limits the opacity of emissions from roadways and parking areas at the facility to no more than 5 percent, average of four vehicle passes, 3 opacity readings for each pass.) While the CAAPP permit for the facility addresses requirements in Board rules for control of fugitive dust, it is unclear whether the requirements for recordkeeping and reporting in 35 IAC 212.316(g) are applicable for the public roadways for which specific measures to reduce emissions of fugitive dust are required by Permit 95010001. This is because Condition 7.13.9(a) in Part 7.0 of the CAAPP permit, which contains "Unit Specific Conditions for Specific Emission Units," provides that the requirements of 35 IAC 212.316(g) apply for "… any fugitive particulate matter emission unit subject to 35 IAC 212.316," without further elaboration on whether public roads are subject to 35 IAC 212.316. However, Condition 5.3.2(c)(ii) in Part 5.0 of the CAAPP permit, which contains "Overall Source Conditions," explicitly applies the requirements for Fugitive Particulate Matter Operating Programs, 35 IAC 212.309, 212.310 and 212.312, to the public roadways for which measures to reduce emissions of fugitive dust are required. Accordingly, for the subject public roadways, the CAAPP permit indirectly indicates that the requirements of 35 IAC 212.316(g) also apply.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent clarifying information as described above, the 2022 application does not include the necessary information to allow a revision to Permit 95010001 to be proposed, much less issued, for the Project with Integrated Processing, as is also requested by the application. This is because the amendment of the CAAPP permit that would be authorized by means of the requested revision of Permit 95010001 would be deficient. For roadways, parking areas and other open areas, such an amended CAAPP permit, would not clearly delineate the standards for opacity of emissions pursuant to Board rules that apply to the different

categories of emission units (e.g., 5 percent for roadways and parking areas at the facility, 10 percent for storage piles, and 20 percent for the on-site landfill). In addition, if provisions of 35 IAC 212.316 should not be applied to public roadways, as they are not part of the Granite City Works, such an amended CAAPP permit would improperly perpetuate errors in the current CAAPP permit regarding applicability of Board rules.

Discussion

For roadways, parking areas, and open access areas, Conditions 23, 24, 26, 27, 28, 29 and 30 of Permit 95010001 require implementation of control measures for emissions of fugitive dust. The 2022 application does not make clear the relationship between these requirements established by permit and state regulatory requirements for fugitive emissions in 35 IAC Part 212 Subpart K.[67] In particular, Condition 29 requires daily recordkeeping for the implementation of required measures for on-site dust control. However, it does not address the relationship between these permit-mandated records and the recordkeeping required by 35 IAC 212.316(e)(2).[68] At the same time, Permit 95010001 does address one requirement of 35 IAC Part 212 Subpart K as Condition 25 restates the requirement of 35 IAC 212.316(e)(1), which provides that the opacity of fugitive particulate matter emissions from any roadway or parking area at the Granite City Works shall not exceed 5 percent.[69] That Permit 95010001 does not currently deal with regulatory

[67] Incidentally, the CAAPP permit for the Granite City Works appears to erroneously apply the requirements of 35 IAC Part 212 Subpart K, to the requirements for off-site dust control in Permit 95010001. These regulatory requirements, including that subject sources must be operated under the provisions of an operating program designed to significantly reduce fugitive particulate matter emissions, are applicable to US Steel for sources of fugitive dust at the Granite City Works. However, 35 IAC 212.302 appears to provide that the various emission standards and control requirements in 35 IAC Part 212 Subpart K, other than the general standard for the opacity of fugitive emissions in 35 IAC 212.301, apply for emission units for fugitive dust at certain types of facilities, including manufacturing facilities. Accordingly, these regulatory requirements would not apply to off-site roadways and the compliance procedures for the control measures for off-site roadways should instead be established by permit.

[68] For example, for roadways and parking areas at a steel mill in Granite City (i.e., the Granite City Works), 35 IAC 212.316(g)(2) requires the owner or operator to keep the following detailed records related to the application of control measures for these units:

> 35 IAC 212.316(g)(2) …
>
> D) For each application of water or chemical solution to roadways by truck: the name and location of the roadway controlled, application rate of each truck, frequency of each application, width of each application, identification of each truck used, total quantity of water or chemical used for each application and, for each application of chemical solution, the concentration and identity of the chemical;
> E) For application of physical or chemical control agents: the name of the agent, application rate and frequency, and total quantity of agent, and, if diluted, percent of concentration, used each day;
> F) A log recording incidents when control measures were not used and a statement of explanation.

[69] In Condition 31, Permit 95010001 also refers to 35 IAC Part 212 Subpart U, which also addresses fugitive emissions. For certain facilities, including the Granite City Works, it requires that the owner or operator prepare a contingency measure plan for reductions in particulate emissions that could be implemented in the event of an exceedance of the NAAQS for PM10, 24-hour average. Incidentally, Illinois has never needed to implement the contingency plans required by 35 IAC Part 212 Subpart U.

requirements for fugitive dust is an issue as Integrated Processing of a revision of this this permit requires that the compliance procedures in the revised permit be consistent with those required by the CAAPP.

16. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT ARE NEEDED DUE TO REVISIONS TO 40 CFR 63 SUBPART FFFFF, AS COULD BE EXPEDITED BY INTEGRATED PROCESSING OF PERMIT 95010001

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a) .

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not address or identify changes to Permit 95010001 and, by means of Integrated Processing of the revision to Permit 95010001, the changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are appropriate as a result of certain revisions of the Iron and Steel NESHAP, 40 CFR 63 Subpart FFFFF. Those revisions, which took effect in January 2022, provide that the emission standards in 40 CFR 63 Subpart FFFFF apply at all times. The prior exemptions from these standards for a subject unit during periods of startup, shutdown and malfunction no longer apply. The provisions of 40 CFR 63 Subpart FFFFF are relevant to Permit 95010001 as it directly or indirectly relies on these rules for the compliance procedures that accompany the permit limitations for the particulate emissions of the NESHAP-subject units, as needed to make those limitations enforceable as a practical matter. For the BOFs, Permit 95010001 directly relies on 40 CFR 63 Subpart FFFFF as Condition 9 refers to applicable provisions of 40 CFR 63 Subpart FFFFF for the work practices, opacity limits, operational limits, emission testing, operational monitoring, recordkeeping and reporting that are required. For the blast furnace casthouse and units other than the BOFs that are subject to 40 CFR 63 Subpart FFFFF, the applicable compliance provisions of this NESHAP are currently indirectly relied upon as those requirements are addressed in the CAAPP permit for the facility,. (For the BOFs, the CAAPP permit also addresses the applicable compliance procedures of 40 CFR 63 Subpart FFFFF.)

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent explicit recognition in the 2022 application of the recent revisions to 40 CFR 63 Subpart FFFFF, the version of Permit 96030056 that would be authorized by means of the Integrated Processing of revised Permit 95010001 could continue to reflect the historic version of 40 CFR 63 Subpart FFFFFF, prior to the revisions related to startup, shutdown and malfunction. For example, the current CAAPP permit addresses provisions of 40 CFR 63 Subpart FFFFF that required startup, shutdown and malfunction plans that were removed in the revision of these rules. (Refer to CAAPP Condition 7.4.5-2(a) for the "affected blast furnaces and casthouses [sic]" and CAAPP Condition 7.5.5-2(a) "for BOF [sic]."") This would be an impediment to Integrated Processing of a revision to Permit 95010001 if the revised permit would not provide for compliance requirements that are substantially equivalent to those

required by the CAAPP. It would clearly be contrary to the compliance requirements of the CAAPP if for the casthouse and the BOFs, the amended CAAPP permit that would be authorized be issued by means of Integrated Processing would still include provisions of the historic version of 40 CFR 63 Subpart FFFFF that have ceased to apply.

Discussion

The 2022 application does not address revisions to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Integrated Iron and Steel Manufacturing Facilities, 40 CFR 63 Subpart FFFFF, made by USEPA in July 2020. (85 Federal Register, pages 42,074 – 42,130, July 13, 2020). Among other revisions to 40 CFR 63 Subpart FFFFF, USEPA acted to remove exemptions from the emission and opacity limits in this NESHAP for periods of startup, shutdown and malfunction (SSM). Accordingly, effective January 12, 2022, the emission and opacity limits of this NESHAP became applicable at all times. The requirements of this NESHAP that formerly dealt with SSM ceased to be applicable. Notably, subject sources would no longer be required to keep startup, shutdown and malfunction plans detailing the procedures for operating and maintaining subject emission unit(s) during periods of SSM, as had been required by 40 CFR 63 Subpart FFFFF as it had applied 40 CFR 63.6(e)(3) in the general provisions of the NESHAP regulations to subject sources,

These revisions to 40 CFR 63 Subpart FFFFF are relevant for Permit 95010001 and the revisions to this permit requested by the 2022 application. This is because Permit 95010001 relies on the applicable compliance procedures of 40 CFR 63 Subpart FFFFF (i.e., requirements for emission testing, opacity observations operational monitoring and recordkeeping), to verify consistent operation of the casthouse, the basic oxygen furnaces and other NESHAP-subject units and their emission controls, for the purposes of assuring compliance with the emission limits set by this permit for their emissions of particulate. This reliance occurs as the emission limits that are set or would be set by a revised permit would be restated in the CAAPP permit for the Granite City Works, Permit 96030056. The provision currently in CAAPP Permit 96030056 that reflect the exceptions to the requirements of 40 CFR 63 Subpart FFFFF for SSM create a break or interruption in this reliance on the NESHAP for purposes of enforceability of permit limits for emissions, even if the actual nature and effect of this break or interruption is uncertain. Any concern over such interruptions would be eliminated if the former provisions of the NESHAP regulations, which USEPA acted to strike in July 2020, were also no longer present in the CAAPP permit.[30]

[30] From a legal and practical perspective, the continued presence of the former provisions of 40 CFR 63 Subpart FFFFF in the CAAPP permit would be problematic. Would US Steel have to maintain startup, shutdown and malfunction plans as related to particulate emissions of NESHAP-subject units relative to permit limits for particulate emissions? Would the continued presence of these provisions in the CAAPP permit throw Integrated Processing of Permit 95010001 into question as the compliance procedures that would accompany the limits for particulate emissions in revised Permit 95010001 would not be consistent with the procedures required by the CAAPP? Would US Steel and the Illinois EPA have to delineate and then implement a secondary version of the compliance procedures that would deal with emissions of particulate from NESHAP-subject units during SSM events?

17. THE 2022 APPLICATION DOES NOT ADDRESS CHANGES TO THE CAAPP PERMIT THAT HAVE RESULTED FROM SHUTDOWN OF EMISSION UNITS, AS IS RELEVANT FOR THE REQUESTED INTEGRATED PROCESSING OF THE REVISION TO PERMIT 95010001

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not identify or address changes to the CAAPP permit for the facility, Permit 96030056, that result from the permanent shutdown of certain emission units at the facility. US Steel has also not taken other action to initiate issuance of a revision of Permit 96030056 that would remove provisions for emission units that are now permanently shutdown. In this regard, for example, Permit 96030056 currently includes provisions addressing the two by-product recovery coke oven batteries at the facility that were permanently shut down in 2015.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information in the 2022 application or other appropriate action by US Steel, as addressed above, the application does not include the necessary information to enable a revision to Permit 95010001 to be issued with Integrated Processing. This is because the application would not show that such a revision to Permit 95010001 would meet the criteria for Integrated Processing, as is specifically requested by the application. That is, the 2022 application would not show that the revisions to Permit 95010001 would provide for procedural and compliance requirements in Permit 96030056 that are substantially equivalent to those provided for by the CAAPP. The application would not support subsequent amendment of Permit 96030056 by means of Integrated Processing that would remove provisions for units that are now shutdown. Instead, absent an appropriate request, the application, would only support issuance of an amended CAPPP permit that would include the current provision for units that are now shut down. In this regard, the Integrated Processing of a construction permit only allows for subsequent amendments to a CAAPP permit as provided for by the construction permit. The Illinois EPA is not given independent authority to revise a CAAPP permit to remove provisions for units that are now shut down but are not otherwise the subject of the construction permit application.

Discussion

The 2022 application does not identify changes to the CAAPP permit for the Granite City Works, Permit 96030056, that are a consequence of permanent shut down of emission units, as generally addressed by Condition 9.11 of the CAAPP permit.

> Condition 9.11 Permanent Shutdown
> This permit only covers emission units and control equipment while physically present at the indicated source location(s). Unless this permit specifically provides for equipment relocation, this permit is void for the operation or activity of any item of equipment on the date it is removed from the permitted location(s) or permanently shutdown. …

While the 2022 application acknowledges that the by-product coke ovens at the Granite City Works have been shut down, this application does not separately address the consequences for the current CAAPP permit. The shutdown of these batteries was accompanied by the shutdown of coal and coke handling operations, the coke by-products plant, the handling of coke by-products, and possibly certain wastewater treatment processes.[71, 72] In addition, although not shut down, Boilers 11 and 12, Ladle Dryer/Preheaters and Slab Reheat Furnaces are no longer able to use COG as fuel since COG is no longer produced at the facility. As such, provisions in the CAAPP permit that identify or address the use of COG in these units are no longer necessary.[73] It would be improper for the revised version of the CAAPP permit authorized by means of the Integrated Processing of a revision to Permit 95010001 to still physically include provisions that should no longer be present in the revised CAAPP permit given the permanent shutdown of the emission units that were subject to those provisions.[74] The responsibility to identify provisions in

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[71] The elimination of COG also affected the applicability of emission standards to certain units. For example, 35 IAC 212.458(b)(23) is no longer applicable, to ladle dryers/preheaters, contrary to what is stated in Condition 7.5.3-1 of the CAAPP permit.

[72] US Steel's current application for renewal of CAAPP Permit 96030056, which was received by the Illinois EPA on December 3, 2013, also does not address shut down of the by-product coke oven batteries and other related operations at the facility. This application only acknowledges that changes to the CAAPP permit will be needed in the future to address the addition of the baghouse to the particulate control system for the basic oxygen furnaces when construction of the baghouse is complete.

> The existing equipment descriptions for the individual processes at GCW (Granite City Works) in the CAAPP permit sections 7.1 to 7.4 and 7.6 to 7.13 are generally accurate. However, the Basic Oxygen Furnace process described in the CAAPP permit condition 7.5 will eventually need to be updated with the new secondary baghouse added as part of the Emission Reduction Project (Construction Permit No. 11050006) once construction is complete.
>
> Application for Renewal of CAAPP Permit 95030056, Section 2.2.2, "Process Changes."

[73] Irrespective of whether certain provisions in the CAAPP permit related to use of COG are still necessary, Condition 5.6 of the CAAPP permit limits the SO_2 emissions of these units from use of COG. (This condition restates limits from Federally Enforceable State Operating Permit 94120017, originally issued December 12, 1994.) The absence of COG does not act to excuse US Steel from required recordkeeping and periodic reporting for emissions of SO_2 and PM_{10} from these units from use of COG (CAAPP permit, Conditions 5.9(c) and 5.10.3). It also does not excuse US Steel from required operational monitoring for the use and sulfur content of COG (CAAPP permit, Conditions 5.6(a) and 7.3.9(f)). In this regard, the emission units addressed by CAAPP Condition 5.6, which are addressed by these requirements for operational monitoring, recordkeeping and reporting, have not been shut down.

[74] A fundamental requirement of the CAAPP is that applications for CAAPP permits must be truthful, accurate and complete. In this regard, Section 39.5(5)(e) of the Environmental Protection Act provides that "Each submitted CAAPP application shall be certified for truth, accuracy, and completeness by a

the CAAPP permit that should not be carried forward initially falls on US Steel as it is the CAAPP Permittee for the Granite City Works.[75] Moreover, as the 2022 application requests Integrated Processing of the requested revisions to Permit 95010001, the subsequent revisions to the CAAPP permit that would be authorized by the revisions to Permit 95010001 must fulfill the requirement that a CAAPP permit issued for a source accurately identify or address the emission units that constitute the source is being permitted.

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responsible official in accordance with applicable regulations." Section 10(a)(i) of the Act provides that one of the standards of issuance for a CAAPP permit by the Illinois EPA is that "… the applicant has submitted a complete and certified application for a permit, permit modification, or permit renewal consistent with subsection 5 and 14 of this Section [Section 39.5 of the Act], as applicable, and applicable regulations." The requirement for an application to be truthful, accurate and complete is applicable to US Steel's current request for revisions to Permit 95010001 as it includes a request for Administrative Amendment to the CAAPP permit for the Granite City Works by means of Integrated Processing under the CAAPP. The scope of this requirement's applicability is not limited to only certain types of CAAPP applications, such as applications for initial CAAPP permits or renewals of CAAPP permits.

[75] As US Steel is the Permittee for a CAAPP source, it must periodically report compliance or noncompliance with each of the requirements set forth in the CAAPP permit. If US Steel believes that it is "in compliance" with regard to certain requirements in the CAAPP permit because those requirements have been affected by Condition 9.11 of the CAAPP Permit, it is appropriate for US Steel to request appropriate changes to the CAAPP permit by means of an appropriate application for amendment or modification of the CAAPP permit. This is especially true as certain requirements in the CAAPP permit that relate to use of COG apply to emission units that have not been shut down.

18. THE EVALUATION OF BEST AVAILABLE CONTROL TECHNOLOGY (BACT) IN THE 2022 APPLICATION FOR CARBON MONOXIDE (CO) IS NOT SUFFICIENT AND DOES NOT ADEQUATELY SUPPORT US STEEL'S PROPOSAL FOR BACT

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were ranted as requested:* Sections 9(a), 9(b)(2), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*, 201.152***, 201.160(a), 204.280, 204.330, 204.810, 204.820 and 204.1100(c).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* For the blast furnace casthouse, for which BACT for CO must now be set as it has been realized that the casthouse emits CO, the BACT demonstration in the 2022 application does not show that options for BACT for CO other than add-on control devices were considered. For the blast furnace stoves, for which BACT for CO must now be reevaluated as increases in permitted emissions are requested, the application is not accompanied by diagrams and cost data supporting the claim that it is not feasible to conduct emission testing by USEPA reference methods for the CO emissions of the stoves. This information is necessary for the stoves if BACT for CO is to not be set as a numerical standard. (The 2022 application requests that the revised permit recognize CO emissions from the casthouse of about 300 tons/year, of which about 100 tons/year would be the increase from the Production Increase Project; the requested increase in permitted CO emissions from burning blast furnace gas (BFG) in the blast furnace stoves is almost 10,000 tons/year, with an overall increase, also considering the BFG flares and boilers, of more than 20,000 tons/year.) For both the casthouse and the blast furnace stoves, the BACT demonstrations in the application do not include descriptions or documentation for the investigations that were conducted into available options for control of CO.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as addressed above, the BACT demonstrations in the 2022 application for CO are not complete. They do not show that BACT would be utilized for CO with changes in permitted CO emissions of the Project as requested by the application. As such, they cannot be relied upon to conclude that BACT is utilized for CO for the casthouse and blast furnace stoves, much less, for the Illinois EPA to set appropriate requirements as BACT for CO in a revision to Permit 95010001.

Discussion

The evaluation of Best Available Control Technology (BACT) for CO in Section 8 of the 2022 application lacks necessary information to support US Steel's proposal for BACT for CO for the emissions units for which this must be determined or redetermined under the PSD program as a consequence of the requested revisions to Permit 95010001. The evaluation addresses BACT for

CO for the casthouse for which BACT must now be determined as it is now recognized that the casthouse emits CO. It also addresses BACT for CO for the blast furnace stoves as the 2022 application requests that the revision of Permit 95010001 allow for more emissions of CO from these units.

The Scope of the Evaluation

As explained in the 2022 application, consistent with the definition of BACT in Section 169(3) of the Clean Air Act (42 US Code Section 7479(3)) and as confirmed by USEPA guidance, a determination of BACT must consider options to control or reduce emissions of an emission unit besides add-on control devices.

> In the BACT analyses herein, the term "available" is used, consistent with U.S. EPA guidance to refer to any control strategy that is potentially applicable to the source type in question (i.e., a technology or control option that has a practical potential for application to the source category in general). These may include fuel cleaning, inherently lower polluting processes, and end of pipe control devices. All identified control strategies that are not inconsistent with the fundamental purpose and basic design of the proposed [sic] facility are listed in this step.
>
> 2022 application, Section 8.2.1.4, "Available Control Options," p. 8-4.

For the casthouse, when identifying control options, the BACT evaluation only identifies end-of-pipe or "add-on control" control options. The evaluation does not identify other process-related control options such as work practices (2022 application, Section 8.2.3.3). In contrast, for the blast furnace stoves, the evaluation identifies both add-on control options and a process-related control option, i.e., "Work Practice Standards, including good combustion practices" (2022 application, Section 8.2.2.3). The evaluation does not explain why process-related control options are not available for the casthouse.[76]

Support Provided for the Scope of the BACT Evaluation

[76] Incidentally, with regard to the blast furnace stoves, the evaluation does not explain why "good combustion practices" are considered to be a type of work practice standard rather than a separate control option. In Section 8.2.2.6 "Step 5 - Establish CO BACT," the evaluation proposes operational monitoring for temperature and oxygen levels to confirm operation of the stoves for efficient combustion of fuel, thereby maintaining CO emissions within the level that is achievable given the nature of the physical and operational design of the stoves. The evaluation also separately proposes the less prescriptive practices that are more often considered to constitute good combustion practices. For example, Section 8.2.2.6 also proposes to, "Conduct annual adjustment and tune-up to include, **at a minimum**, inspecting, adjusting, cleaning, or replacing instrumentation and operational control system components and inspecting the air-to-fuel ratio control system and adjusting as **appropriate** for **proper** operation." [Emphasis added.]
Moreover, this statement of what would constitute "good combustion practices" for the stoves would be problematic as it would not be enforceable given the various qualifications, as highlighted, on the actions that are required actions to be taken.

For both the casthouse and the blast furnace stoves, the BACT evaluation in the 2022 application is not accompanied by supporting documentation for the investigation that was conducted into available control options. Instead, the evaluation simply states that a review of available control options was conducted. For example, for the casthouse, the evaluation states:

> Based on a review for BACT determinations in U.S. EPA's RBLC (RACT/BACT/LAER Clearinghouse) database and other literature, the control options that are potentially available to control CO emissions from the blast furnace casthouse are:
>
> - Capture system and thermal incineration and
> - Capture system and catalytic incineration.
>
> 2022 application, Section 8.2.3.3, p. 8-8.

When a BACT evaluation is submitted, it may be appropriate or necessary[77] for the application to also include documentary support for the review of available control options that was conducted. In this regard, BACT evaluations commonly include copies of information from the RBLC that is potentially relevant to the determination of BACT that must be made. Further explanation is also provided if some of that information is not considered applicable to the units that are the subject of the BACT determination. Likewise, as there is relevant information in the literature, especially as it is addresses available control options for the subject pollutant, copies of that information should be included in a BACT evaluation. This information enables the Illinois EPA, the USEPA and interested parties to confirm that the review of available control options for a BACT evaluation was thorough and can be relied upon to have reasonably identified potentially available control options for BACT.

Support Provided for Work Practices As BACT for the Blast Furnace Stoves

For the blast furnace stoves, the BACT evaluation for CO in the 2022 application is not accompanied by supporting documentation to support the claim that it is infeasible to measure their CO emissions so that BACT should not be set as a numerical emission standard.[78]

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[77] For the 2022 application, this information is considered necessary. BACT determinations for the CO emissions of casthouses for blast furnaces and blast furnace stoves are uncommon. The Illinois EPA does not have the ability based simply on its own experience and knowledge to confirm that the potential control options for CO BACT were reasonably identified in the BACT evaluations in the application.

[78] The definition of BACT at 35 IAC 204.280 provides that:

> If the Agency [Illinois EPA] determines that technological or economic limitations on the application of measurement methodology to a particular emission units would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set further the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means that achieve equivalent results.

> USS Granite City is proposing work practice requirements rather than numeric limits as BACT. Numeric emission limitations are not proposed because direct measurement of emissions --*i.e.*, use of U.S. EPA reference test methods—is not feasible for any of the fuel emissions units subject to the BACT requirements for CO emissions. In particular, for the stack serving the blast furnace A stoves, there is no sampling port,[45] and for the stack serving the blast furnace B stoves there is no sampling port satisfying the location requirement in U.S. EPA Reference Method 1.[46] Each stack is refractory lined and is believed to be approximately one hundred years old.
>
> For the reasons presented above, numeric CO emission standards are not feasible for the blast furnace stoves.
>
> Footnote 45. For the one-time exhaust gas sampling event discussed in footnote 19 of this permit application, USS Granite City inserted a sampling probe into the stack through a pipe used to inject steam into the stack.
> Footnote 46. Appendix A-1 to 40 CFR part 60.
>
> 2022 application, Section 8.2.2.6 "Step 5 – Establish CO BACT," p. 8-7.

Further support is needed for the claim that measurement or testing of emissions of the blast furnace stoves is infeasible. While certain information about the stoves is provided, the application does not directly address the technological issues or costs that would be entailed to install suitable ports for testing on one or both sets of blast furnace stoves. For example, the application does not include diagrams for the existing ductwork of the stoves to address whether the configuration of this ductwork would accommodate installation of test ports at a location that would satisfy USEPA Reference Method 1. The application also does not show how the refractory lining on the stacks or their age, approximately one hundred years old, would present significant technical challenges and costs so that the installation of test ports at a suitable location should be considered infeasible. The application also does not show that there are other challenges that would need to be addressed or issues that should be considered, such as requirements of the Occupational Safety and Health Administration (OSHA), that would affect the technical feasibility and cost of installing suitable test ports on the stoves.

19. THE APPLICATION DOES NOT ADDRESS BACT FOR SULFUR DIOXIDE (SO_2) AND CO FROM USE OF COKE OVEN GAS (COG) IN THE BLAST FURNACE STOVES

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9.1(d), 39(a)* and 39(a)**.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.152*, 201.152***, 201.160(a), 204.280, 204.330, 204.810 and 204.1100(c).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include demonstrations of BACT for sulfur dioxide (SO_2) and CO from the burning of coke oven gas (COG) in Project-affected fuel burning units.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not allow a revision to Permit 95010001 to be issued for the Production Increase Project (Project)that considers baseline emissions from burning COG. This is because the application does not provide the demonstrations of BACT that is required as the Project is a major modification for SO_2 and CO under PSD. In this regard, unlike the initial permitting of the Project, the 2022 application now quantifies emissions of particulate, NOx and VOM from burning COG and these emissions are included in revised determinations of baseline emissions. (In 1996, the Project was permitted as a major modification for SO_2 and CO but did not quantitatively address emissions from burning COG.) If emissions from burning of COG are to be relied upon for the issuance of a revised permit, the 2022 application must also address the BACT requirements of PSD for the SO_2 and CO emissions from use of COG, as would have been applicable in 1996, when the Project commenced. The fact that the by-product recovery coke batteries at the Granite City Works were shutdown in 2015 and COG is no longer available at the facility, does not alter the applicable requirements under PSD that must be satisfied. PSD would be violated if a revised permit were issued for the Project based on revised NSR applicability analyses that considered use of COG, as contained in the 2022 application, absent demonstrations that the Project utilized BACT for emissions of SO_2 and CO from use of COG.

Discussion

The 2022 application does not demonstrate that Best Available Control Technology (BACT) was utilized as an aspect of the Project for the SO_2 and CO emissions of the blast furnace stoves, as required under the PSD program (e.g., 35 IAC 204.1100(c)). In this regard, unlike the original application, the 2022 application addresses emissions from use of coke oven gas (COG) as fuel in certain Project-affected units. (Refer to the revised netting analyses for the Project for particulate, NOx and VOM and in the 2022 application.) As the 2022 application now addresses emissions of certain pollutants from burning of COG in fuel-burning units, including the blast

furnace stoves, this application must also address the related consequence for emissions of SO_2 and CO under the PSD program from burning COG in the stoves. SO_2 and CO are pollutants for which the Project is a major modification subject to PSD. However, the 2022 application does not address BACT for SO_2 and CO as applied to use of COG in the stoves. As such, the 2022 application does not demonstrate that prior to February 2015, when the by-product recovery coke oven batteries at the Granite City Works were shut down and COG ceased to be available, BACT was being utilized for the SO_2 and CO emissions from use of COG in the stoves.

With respect to CO, it is relevant that the BACT demonstration in the 2022 application focuses on CO emissions from burning of fuels other than COG. For fuel burning units, the 2022 application states that "CO emissions of these units result primarily from incomplete combustion during the firing of BFG and natural gas." This ignores the historic contribution of COG to the CO emissions of the stoves prior to February 2015. The 2022 application also does not state that, as of February 2015, it was no longer necessary to address CO emissions from use of COG because COG was no longer produced and available for use.

20. AS RELATED TO SO_2 EMISSIONS FROM USE OF BFG, THE 2022 APPLICATION IS INCONSISTENT WITH A PENDING 2008 APPLICATION

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 9(b)(2)), 9.1(d), 39(a)*, 39(a)** and 39(a)***.

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* As related to emissions of sulfur dioxide (SO_2) from burning blast furnace gas (BFG), the 2022 application is inconsistent with and conflicts with an earlier application for revisions to Permit 95010001 that was received on February 8, 2008 (the "2008 application"). For the emissions of SO_2 from burning of BFG, the 2008 application requests increases in the emissions that are allowed by Permit 95010001. The 2022 application does not request such increases and does not request any changes to Permit 95010001 related to SO_2 emissions. The 2022 application does not even address the 2008 application to explain why the revisions to Permit 95010001 requested by the 2008 application are no longer needed. US Steel has also not taken other actions that would act to resolve the conflict between the 2022 application, which is being addressed in this proceeding, and the earlier 2008 application, which is still pending. For example, US Steel has not requested withdrawal of the 2008 application. In this regard, it is noteworthy that the approach taken in the 2022 application to SO_2 emissions from burning BFG is different from the approach that is taken for NOx, VOM and particulate. For example, for the BOFs for NOx and VOM, the 2022 application requests revisions to Permit 95010001 to increase permitted emissions so as to facilitate future compliance.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* The conflict between the 2008 application and the 2022 application is an impediment to revision of Permit 95010001 as requested by the 2022 application. Absent resolution of this conflict, either by appropriate information or request in the 2022 application or by other appropriate action by US Steel, the 2022 application should not be considered to show compliance with the SO_2 emission limits for burning BFG that are currently in Permit 95010001. As such, the 2022 application does not meet the standards for issuance of a construction permit.

Discussion

In 2008, US Steel applied for revisions to Permit 95010001 to increase permit limits for the sulfur content of BFG and the SO_2 emissions resulting from the use of BFG. That application (the 2008 application) was received on February 4, 2008. The 2022 application is inconsistent with and conflicts with the 2008 application. As such, these applications, as they currently exist, cannot be processed by the Illinois EPA absent appropriate action by US Steel on one or both of these applications, e.g., changes to the 2022 application so that it requests the same revisions to SO_2 emission limits for use of BFG as the 2008 application. In this regard, the 2022 application "… does not request any changes to the emission limits for SO_2 and lead emissions established in the Construction Permit 95010001." (2022 application, p. 2-2.) The 2008 application does request changes to the provisions of the permit for SO_2., as it is an "Application to modify to correct the emission factors used to develop the original application and permit in light of newly identified information on emissions and emission factors." (October 2008 application, p. 1-1.)

In particular, in the 2008 application:

> …US Steel seeks to revise the Production Increase Permit (95010001) to account for US Steel's revised method for calculating the SO_2 emissions from BFG combustion. This will increase the total allowable SO_2 emissions on an annual basis from combustion of BFG in the Production Increase Permit.
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> 2008 application, pp. 2-2 and 2-3

The 2008 application specifically requests that the SO_2 emission factor limit for BFG be increased from 6.65 to 16.00 pounds/million cubic feet of gas burned. With the revised emission factor, the permitted SO_2 emissions from use of the 185,030 million cubic feet of BFG per year, as allowed by the permit, would increase from 615.22 to 1480.24 tons/year. However, the 2022 application provides that the limits for SO_2 for use of BFG should be unchanged. As such, the 2022 application indicates that for use of BFG the requested revised permit should continue to limit SO_2 emission to 6.65 pounds/million cubic feet burned and 615.22 tons/year.

Moreover, the existence of the 2008 application suggests that the revisions to SO_2 emission limits that it requested were needed at the time of that application. The 2022 application does not show that this was not the case, as it does not address historic SO_2 emissions from use of BFG to show that an SO_2 emission factor of 6.65 pounds/million cubic feet was appropriate when Permit 95010001 was originally issued in 1996 and that annual SO_2 emissions have never exceeded 615.22 tons/year.

21. AS RELATED TO EMISSION LIMITS FOR SO_2, LEAD AND CO, THE 2022 APPLICATION IS INCONSISTENT WITH PENDING BOARD APPEALS

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 9(a), 39(a)*, 39(a)**, 39(a)***, 39.5(5)(i), 39.5(7)(a), 39.5(10)(a)(iv) and 39.5(13)(c)(v).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.160(a).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* For various processes, the 2022 application does not request or propose appropriate changes to the current emission factor limits in Permit 95010001 for SO_2, lead and CO to resolve pending permit appeals (PCB 2013-52 and PCB 2013-62). For these pollutants, Permit 95010001 sets emission factor limits for the blast furnace casthouse and the slag pits for SO_2; for the BOFs for lead and CO; and for desulfurization and reladling for lead. Alternatively, the 2022 application does not indicate that the inclusion of the current emission factor limits in a revised permit is not expected to result in another appeal as these limits are now considered acceptable. For the BOFs for CO, the application also does not indicate that the current emission factor limit, which applies only to the stack emissions from the electrostatic precipitator (ESP), would still be considered acceptable if applied to stack emissions. That is, the current limit would still be acceptable if it applied in aggregate to the CO emissions from the stack of the ESP and the stack of the baghouse, which was subsequently installed to improve control of the particulate emissions of the BOFs (Construction Permit 11050006). This change would be appropriate as particulate emissions of the BOFs are now addressed by two control systems. (Besides particulate, these systems capture emissions of CO and other pollutants from the BOFs but only act to reduce particulate and lead emissions.)

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* Absent information as described above, the 2022 application does not include information necessary for the Illinois EPA to include conditions in a revised permit to prevent noncompliance with certain current emission factor limits that apply to the subject processes. As the subject limits, as they are or, in the case of PCB 2013-62, would be present in the CAAPP permit, are currently the subject of appeals, it is reasonable for these limitations for the review of the application to be based on compliance not being achieved. Moreover, absent information as described above, the 2022 application does not show that, as the subject limits are appealed and could be stayed in any revised CAAPP permit, these limits should be considered to still meet the substantive requirements of the CAAPP. Finally, it is noteworthy that for the subject processes for the various emission factor limits for PM, PM-10, NOx and VOM, the application does request revisions to the emission factor limits. For those requested revisions, the 2022 application, page 2-3, explains that "USS Granite City anticipates that these revisions will

enable settlement of the permit appeals currently before the Board because they involve provisions of the permit addressing emission factors."

Discussion

As already mentioned, the 2022 application does not request any changes to the emissions limits for SO_2 and lead currently set by Permit 95010001. The application states, "This permit application also does not request any changes to the SO_2 and lead emission limits in Construction Permit No. 950100001, so SO_2 and lead emissions will not be discussed further." [2022 application, Section 2.2, "General Description of Requested Permit Revisions." p. 2-2.][79, 80, 81] For CO, the 2022 application does request that the revised permit address emissions of CO from

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[79] In Section 3 of the application, in which support for elimination of emission factor limits and use of group limits is generally provided, the application only addresses limits for particulate, NOx and VOM. For example, the application states that,

> The approach proposed by USS Granite City with respect to the PM, PM_{10}, NOx and VOM emissions caps to be used in any revised Construction Permit No. 95010001, including the proposed revisions to certain emission limitations, compliance demonstration requirements, and other permit conditions as discussed in detail in Sections 5 through 7 of the permit application ["Proposed Changes to Permit Terms for PM and PM_{10} Emissions Increases Analyses," "Proposed Changes to Permit Terms for NOx Emission Increases Analysis, and "Proposed Changes to Permit Terms for VOM Emission Increases Analyses," respectively] is consistent with policy and precedent and will improve the enforceability of the PTE limitations in Construction Permit No, 95010001. In particular, USS Granite City emphasizes that removal of certain conditions and provisions addressing emissions individual emission units or emission points, including both limits on annual emissions and provisions emission addressing emissions factors will not result in impairment of the enforceability of the PTE limitations.
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> 2022 application, Section 3, "Discussion of Permit Conditions Used to Restrict PTE [Potential to Emit]," 3-3.]

[80] For process operations, Permit 95010001 currently limits SO_2 emissions from the casthouse and slag pits associated with the blast furnaces in pounds per ton of iron produced and tons per year. For the casthouse, the SO_2 emissions of the main baghouse for the casthouse, the baghouse for the iron spouts at the casthouse, and the uncaptured emissions from the casthouse are limited, respectively, to 0.2006, 0.0073, and 0.0104 pounds per ton of iron produced. The SO_2 emissions of the slag pits are limited to 0.0100 pounds per ton of iron produced. (Permit 95010001, Condition 5 and Table 1.)

Although the emission factor limits for the SO_2 emissions of the casthouse are not identified as Best Available Control Technology (BACT) by Permit 95010001, these limits are considered to be the determination of BACT for SO_2 and should have been identified as such in this permit. BACT is required for the casthouse for SO_2 because the Project was a major modification for SO_2 under the PSD program, as is stated in this permit. Accordingly, as Project included physical changes to the blast furnaces to increase their production capability, BACT is required for the SO_2 emissions of the casthouse.

[81] For operations in the basic oxygen furnace shop, Permit 95010001 currently limits lead emissions in pounds per hour and tons per year. For the basic oxygen furnaces, the lead emissions from the ESP stack and roof monitor are limited to 0.01934 and 0.0129 pounds per hour, respectively. The lead emissions from desulfurization and hot metal transfer are limited to 0.0133 pounds per hour. (Permit 95010001, Condition 18 and Table 2.) The permit does not address the lead emissions of the basic oxygen furnaces that are now captured and controlled by the new baghouse system nor does the 2022 application request any revisions to the permit to address the lead emissions of these furnaces that now occur from the stack of the baghouse.

the casthouse and raise the limits for CO emissions of Project-affected fuel burning units.[82] However, the application does not request revisions to the emission limits currently in Permit 95010001 for the CO emissions of the basic oxygen furnaces, i.e., the limits in pounds per ton of steel produced and in tons per year for the CO emissions of these furnaces through the ESP stack.[83] As such, the application is not consistent with two pending permit appeals before the Board, PCB 0013-53 and PCB 0013-62, as it does not propose revisions to current permit limits for emissions of SO_2, CO and lead. As previously discussed, in these appeals, US Steel challenged all emission factor limits set by Permit 95010001 for individual process operations. US Steel has not amended these appeals so that they only address emission factor limits for PM, PM_{10}, NOx and VOM and no longer address the t emission factor limits that are set for SO_2, CO and lead. In addition, in the 2022 application, US Steel does not explain why the emission factor limits in Permit 95010001 for SO_2, CO and lead that were appealed are no longer considered to be objectionable. That is, US Steel would not again challenge those limits as it has already done in PCB 0013-53 and PCB 0013-62 if a revision to Permit 95010001 were issued that continued to include the current emission factor limits.[84]

With regard to the CO emissions of the basic oxygen furnaces, the 2022 application also does not request revisions to Permit 95010001 as the current permit only addresses CO emissions from the "BOF ESP Stack." The application does not request that these limits be revised so that they address all stack emissions of the basic oxygen furnaces, e.g., CO emissions from both the stack of the new baghouse system and the stack of the ESP system. Moreover, as the 2022 application does not propose such revisions to the current limits for CO emissions of these furnaces, the application effectively requests a relaxation of the current limits. This is because the revised permit would not address the CO emissions of these furnaces that now occur through the baghouse stack. That is, the limits in the revised permit would not account for any CO emissions that are no longer being captured with the ESP system and are instead now being emitted from the baghouse system.[85]

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[82] In the original application for Permit 95010001, the casthouse was not identified as a source of CO and information for CO emissions was not provided. The application also requests certain updates to the limits for CO emissions from use of blast furnace gas and natural gas in Project-affected fuel burning units to reflect new information for the CO emissions from burning these fuels.

[83] Permit 95010001 currently limits CO emissions of the basic oxygen furnaces through the ESP stack to 8.993 pounds per ton of liquid steel produced and 16,097.47 tons/year. (Permit 95010001, Condition 18, Table 2, Section 1, BOF ESP Stack.) The permit does not address CO emissions that are now captured by the new baghouse system and emitted from its stack or any uncaptured CO emissions, which occur through the roof monitor.

[84] If the subject emission factor limits were included in a revised permit, the Illinois EPA could explain that, if these limits in the revised permit were stayed pursuant to an appeal to the Pollution Control Board, the limits would continue to be enforceable pursuant to Permit 95010001 as issued before the revision of the permit and any appeal of the revised permit to the Board.

[85] The 2022 application also does not request revisions to Permit 95010001 to address uncaptured CO emissions of the basic oxygen furnaces or otherwise address the uncaptured CO emissions of these furnaces. This is not consistent with the approach taken for the casthouse on the blast furnaces. For the casthouse, the application requests that the revised permit limit the overall emissions of CO from the stacks on the control systems serving the casthouse. The application also includes information for the overall CO emissions of the casthouse, including other captured emissions and uncaptured emissions.

22. THE 2022 APPLICATION DOES NOT INCLUDE A SIGNED CERTIFICATION FOR THE ACCURACY AND COMPLETENESS OF THE APPLICATION

Overview of This Denial Point, with Information As Required or Specified by Section 39(a) of the Act for Denial of a Permit

1. *The Sections of the Act which may be violated if a revised permit were granted as requested:* Sections 39(a)* and 39.5(5)(e).

2. *The provision of the regulations under the Act which may be violated if the revised permit were granted as requested:* 35 IAC 201.159 and 270.401(f).

3. *The specific type of information, if any, which the Agency deems the applicant did not provide the Agency:* The 2022 application does not include a certification for the truth, accuracy and completeness of the application, as submitted on October 7, 2022. The certification in the 2022 application is a photocopy of an earlier certification dated February 25, 2020, that accompanied a prior application received on March 2, 2020, several years earlier. That certification cannot serve as the required certification. Also note that the 2022 application replaced the prior 2020 application. The transmittal letter accompanying the 2022 application states that, "Due to the nature of revisions throughout this application, the Illinois EPA should refer to this application for permit processing."

   The 2022 application also was not signed as required by 35 IAC 201.159. Even if Integrated Processing had not been requested so that the procedural requirements of the CAAPP were not applicable, the application still did not meet the procedural requirements for construction permit applications because the application was not signed.

   With respect to the "certification" and "signature" provided in US Steel's Comments responding to the Initial Draft Denial Letter, this was not sufficient to correct these omissions. First, this material, which is dated September 8, 2023, was an attachment to those comments and was not submitted as a supplement to the 2022 application. Second, the certification is not accompanied by an errata or other material correcting erroneous information in the application as either identified by the Illinois EPA in the Initial Draft Denial or identified by US Steel when

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As discussed in Section 8.2.3.7 of this permit application [BACT Evaluation for Blast Furnace Casthouse], USS Granite City is proposing a CO BACT emission limit of 70 lb/hr based on total emissions of these two baghouses [main casthouse baghouse and iron spout baghouse], assuming 95% capture efficiency for the capture system associated with the cast baghouse, as discussed in Section 5.2.3 of this permit application {A&B Blast Furnace Casthouse Roof Monitor Emissions PM_{10} Revised], the fugitive CO emissions from the casthouse roof monitor are 3.1 lb/hr. Total CO emissions from the casthouse roof monitor, including both baghouse and fugitive emissions are 73.1 lb/hr and 320 tons per year ("TPY").

2022 application, Section 4.4, "Updated CO Emissions Information for Blast Furnace Casthouse."

developing its response to the Initial Draft Denial. Thus, even if the certification had been submitted as a supplement to the 2022 application, its truthfulness and validity would be questionable. The fact that the 2022 application was not certified and signed puts the entire application under a cloud.

4. *A statement of specific reasons why the Act and the regulations might not be met if a revised permit were granted as requested:* The 2022 application does not include the certification required by the Act, the Illinois EPA's regulations, and the Board's regulations.

Discussion

The 2022 application does not include a signed certification for the truth, accuracy and completeness of this application as it was actually submitted in October 2022, as required by 35 IAC 201.159 and Section 39.5(5)(e) of the Illinois Environmental Protection Act. In its place, the 2022 application includes a photocopy of an earlier certification, dated February 25, 2020 ~~2022~~, which was submitted with a prior application (2022 application, "Appendix A – Application Forms (Copies of Previously Submitted Versions)"). However, the 2022 application is a revision of the earlier application and US Steel intends the 2022 application to replace the earlier application submitted in March 2020 in its entirety (2022 application, Cover Letter). Accordingly, the 2022 application must include a new certification for its truth, accuracy and completeness.

Appendix A: Listing of Sections of the Illinois Environmental Protection Act (Act) That Are Cited for the Different Denial Points Detailed in Attachment 1 As Sections of the Act Which May Be Violated If a Revised Permit Were To Be Granted As Requested by the 2022 Application

Note: The text of the Act (415 ILCS 5) is available on a website for Illinois Compiled Statutes maintained by the Illinois General Assembly: https://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1585&ChapterID=36

Section 9(a): General prohibition against air pollution as it provides that no person shall "Cause or threaten to allow the discharge or emission of any contaminant into the environment in any State … so as to violate regulations or standards adopted by the Board (Pollution Control Board) under this Act." For various denial points in the Denial Letter, this general provision of the Act is cited as a provision of the Act that may be violated if a revised construction permit were issued as requested in the 2022 application as such permit would threaten to allow violations of Board regulations.

Section 9(b)(2): Prohibition against violating conditions imposed by air pollution control permits. The introductory language of Section 9 and Subsections 9(b) and 9(b)(1) of the Act provide that, "No person shall … Construct, install and equipment, facility … of any type designated by the Board … without a permit granted by the Agency unless otherwise exempt by this Act or Board regulations…." For persons with permits, the prohibition against violating permit conditions is in Subsection 9(b)(2), serving to provide that no such person shall operate any equipment or facility, "In violation of any conditions imposed by such permit."

Section 9.1(d): Prohibition against violations of certain sections of the federal Clean Air Act, including Section 165 (Prevention of Significant Deterioration (PSD)) and Section 173 (Permit Requirements for Nonattainment New Source Review Programs).

Section 39(a)*: Standard under the Act for issuance of permits. The designation "Section 39(a)*" or "39(a)*" is used to refer to the second clause of the first sentence in Section 39(a) of the Act. This clause provides that "…it shall be the duty of the Agency to issue a permit upon proof by that the applicant that the facility, equipment, vehicle vessel, or aircraft will not cause a violation of this Act or regulations thereunder." In the Denial Letter, this provision of the Act is routinely cited as a provision that may be violated because the 2022 application does not include proof that the Act or air pollution control regulations would not be violated if a revised permit were issued as requested by the application.

Section 39(a)**: Permit procedures under the Act. The designation "Section 39(a)**" or "39(a)**" is used to refer to the fifth sentence of Section 39(a) of the Act as it addresses imposition of conditions on permits. In particular, this sentence provides that in granting permits, "In granting permits, the Agency

may impose such other conditions as may be necessary to accomplish the purposes of this Act, and as are not inconsistent with the regulations promulgated by the Board hereunder." (As addressed below, this Section of the Act also provides that the Illinois EPA may impose reasonable conditions in a permit related to an applicant's compliance history as necessary to correct, detect or prevent noncompliance.) For various points in the Denial Letter, this provision of the Act is cited as one that may be violated because the 2022 application does not include information that may be needed for the Illinois EPA to impose necessary permit conditions in a permit that would be revised as requested by the application.

Section 39(a)***: Permit procedures under the Act. The designation "Section 39(a)***" or "39(a)***" is used to refer to the fourth sentence of Section 39(a) of the Act as it provides, "In granting permits, the Agency may impose reasonable conditions in a permit specifically related to an applicant's past compliance history with this Act as necessary to correct, detect or prevent noncompliance." (As discussed above, the Act also provides that permits may include conditions as may be necessary to accomplish the purposes of the Act and as are not inconsistent with Board regulations.) For certain points in the Denial Letter, this provision of the Act is cited as one that may be violated because the 2022 application does not include information that may be needed for the Illinois EPA to impose conditions to enable or facilitate future compliance.

Section 39.5(5)(e): A paragraph in Subsection 39.5(5) of the Act, "Applications and Completeness," in Section 39.5 of the Act, "Clean Air Act Permit Program." This provision requires that "Each submitted CAAPP application shall be certified for truth, accuracy and completeness by a responsible official in accordance with applicable regulations [i.e., 35 IAC 270.102 and the definition of "responsible official at Subsection 39.5(1) of the Act]. This provision is applicable for the review of the 2022 application as US Steel requests in this application that the processing of the revised permit that is requested be subject to Integrated Processing. As a consequence, the procedural and substantive requirements of Section 39.5 of the Act apply to the 2022 application pursuant to Section 39.5(13)(c)(v) of the Act, which provides the authorization for Integrated Processing of a construction permit.

Section 39.5(5)(i): A paragraph in Subsection 39.5(5) of the Act, "Applications and Completeness," in Section 39.5 of the Act. As already explained, the procedural and substantive requirements of the CAAPP are applicable to the Illinois EPA's review of the 2022 application as US Steel has requested that this application and any resulting revised permit prepared pursuant to this application be subject to Integrated Processing. The first sentence in this provision requires that:

> Any applicant who fails to submit any relevant facts necessary to evaluate the subject source and its CAAPP application or has submitted incorrect information in a CAAPP application shall, upon becoming aware of such failure or incorrect submittal, submit supplementary facts or correct information to the Agency."

For several denial points, Subsection 39.5(5)(i) of the Act is identified as a provision of the Act that might be violated if a revised permit were issued as requested by the 2022 application because it does not include "relevant information" necessary for the evaluation of the application. That is, as

related to the particular applicable requirements, the application lacks information addressing the requirements, the information in the application addressing the requirement is insufficient, or the information in the application supports a finding that the requested revisions might not comply with the requirements. Note that as Subsection 39.5(5)(i) of the Act would not be satisfied by an application, a CAAPP permit cannot be issued pursuant to such application. This is because Subsection 39.5(10)(a)(iv), one of the standards for issuance of a CAAPP permit, would also not be satisfied.

Section 39.5(7)(a): A paragraph in Subsection 39.5(7) of the Act, "Permit Content," in Section 39.5 of the Act. This paragraph requires that "All CAAPP [Clean Air Act Permit Program] permits shall contain limitations and conditions and other enforceable terms and conditions, including but not limited to operational requirements, and schedules for achieving compliance at the earliest reasonable date, which are or will be required to accomplish the purposes and provisions of this Act and to assure compliance with all applicable requirements [emphasis added]." For various points in the denial letter, this provision is cited as a provision of the Act that may be violated because the 2022 application does not include information that may be needed for the Illinois EPA to impose necessary permit conditions in a revised version of Permit 95010001 that would be revised as requested by the application. This provision is relevant to the Illinois EPA's review of the 2022 application as US Steel has requested that the application and any resulting permit be subject to Integrated Processing. As provided by Sections 39.5(13)(a) and (a)(iv), as listed below, this makes the application subject to substantive requirements of the CAAPP. It is also noteworthy that, absent Integrated Processing, any revised construction permit that is issued pursuant to the 2022 application would not resolve US Steel's pending appeal of the current CAAPP permit for the Granite City Works (PCB 2013-53) or the related appeal of Construction Permit 11050006 (PCB 2013-62). Resolution of these appeals would require a separate CAAPP permit application and a permit proceeding to revise the CAAPP permit. Moreover, the revised CAAPP permit that would result from the CAAPP proceeding would not necessarily reflect the terms and conditions established in the earlier revision of Permit 95010001. As such, resolution of these appeals could require two more permit proceedings, i.e., a proceeding to modify the CAAPP permit and another proceeding for revisions to Permit 95010001 to address issues identified during the modification of the CAAPP permit.)

Section 39.5(10)(a)(iv): A paragraph in Subsection 39.5(1) of the Act. As Subsection 39.5(5)(i) of the Act would be violated if a revised permit were issued as requested, the 2022 application also would not satisfy Subsection 39.5(10)(a)(iv) of the Act, one of the standards for issuance of a permit under the CAAPP. This is because this application would not include all "relevant information." Subsections 39.5(10)(a) and (a)(iv) of the Act provide that:

> The Agency shall issue a CAAPP permit, permit modification, or permit renewal if all of the following conditions are met:
>
> ...

(iv) The Agency has received a complete application and if necessary, has requested and received additional information from the application consistent with Subsection 5 of this Section and applicable regulations.

Section 39.5(13)(c)(v): Paragraphs (a) and (c)(v) in Subsection 39.5(13) of the Act, "Administrative Permit Amendments," in Section 39.5 of the Act. The designation "Section 39.5(13)(c)(v)" or "39.5(c)(v)" are used to refer to these paragraphs. These paragraphs contain the authorization for the Integrated Processing of a construction permit so as to allow the related revisions to the CAAPP permit to be made by administrative amendment, thereby avoiding the need for a subsequent modification of the CAAPP permit by either a minor or significant modification, as appropriate. These paragraphs of Subsection 39.5(10)(c) of the Act provide:

c. For purposes of this Section [Section 39.5 of the Act] the term "administrative amendment " shall be defined as a permit revision that can accomplish one or more of the changes described below:

...

v. Incorporates into the CAAPP permit the requirements from preconstruction review permits under a USEPA-approved program [i.e., Illinois construction permit program for sources of emissions and air pollution control equipment], provided the program meets procedural and compliance requirements substantially equivalent to those contained in this Section [emphasis added].

For various denial points in the denial letter, these paragraphs are cited as provisions of the Act that may be violated because the 2022 application is not sufficient for the Illinois EPA to impose necessary permit conditions in a new version of Permit 95010001 that would be revised as requested by the 2022 application. That is, this application does not include information that is necessary to enable such a revised permit to meet the compliance requirements, i.e., the substantive requirements, that must be satisfied by a CAAPP permit. For example, for certain emissions units, the Application requests that Permit 95010001 be revised to prescribe the actual emission factors that are to be used to determine compliance with limitations on annual emissions set by this permit. However, the application does not provide the supporting information that USEPA has found necessary for a permitting authority, e.g., the Illinois EPA, to set "prescribed emission factors" when issuing a Title V Permit. Similarly, the 2022 application requests certain revisions to the organization and terminology in Permit 95010001 for consistency with the CAAPP permit. However, the application does not request all such revisions that may be appropriate to reasonably achieve consistency in the organization and terminology of these permits.

Appendix B: Listing of Provisions in Subtitle B of Title 35 of the Illinois Administrative Code (IAC) That Are Cited for the Different Denial Points Detailed in Attachment 1 As Provisions Which May Be Violated If a Revised Permit Were To Be Granted As Requested by the 2022 Application

Note: The text of Illinois' regulations for control of air pollution (Illinois Administrative Code (IAC), Title 5, Subtitle B: Air Pollution, are available on a website maintained by the Board: https://pcb.illinois.gov/SLR/IPCBandIEPAEnvironmentalRegulationsTitle35

35 IAC Part 201, Permits and General Provisions

35 IAC 201.152*, Contents of Application for Construction Permit
This rule requires that applications for construction permits include certain data and information. The designation "201.152*" is used to refer to this rule as it requires this data and information to include "information concerning processes to which the emission unit or air pollution control equipment is related.

35 IAC 201.152**, Contents of Application for Construction Permit
This rule requires that applications for construction permits include certain data and information. The designation "201.152**" is used to refer to this rule as it requires this data and information to include "the quantities and types of raw materials to be used in the emission source or air pollution control equipment."

35 IAC 201.152***, Contents of Application for Construction Permit
This rule requires that applications for construction permit include certain data and information. The designation "201.152**" is used to refer to this rule as it requires this data and information include "… the nature, specific points of emissions and quantities of uncontrolled and controlled air contaminant emissions at the source that includes the emission unit or air pollution control equipment …."

35 IAC 201.159, Signatures
This rule requires applications for air pollution control permit submitted to the Illinois EPA to be signed. It provides that, "All applications and supplements thereto shall be signed by the owner and operator of the source, or their authorized agent, and shall be accompanied by evidence of authority to sign the application."

35 IAC 201.160(a)(1), Standards for Issuance
In 35 IAC 201.160(a) and (a)(1), the Pollution Control Board (Board) restates the standard of issuance in Section 39(a) of the Act for the Illinois EPA to issue a permit as applied specifically to air pollution control construction permits. This rule provides:

> a) No construction permit shall be granted unless the applicant submits proof to the Agency that:
>
> 1) The emission unit or air pollution control equipment will be constructed or modified to operate so as not to cause a violation of the Act or of this Chapter [Title 35, Subtitle B, Chapter I)];

35 IAC Part 203, Major Stationary Sources Construction and Modification

(35 IAC Part 203 is potentially of concern for the Production Increase Project for emissions of NOx, VOM and particulate. This is because, in 1996, when Permit 95010001 was initially issued for this project, the Granite City Works was in areas that were designated nonattainment for the National Ambient Air Quality Stands (NAAQS) for ozone (emissions of NOx and VOM) and particulate matter (emissions of $PM_{2.5}$). The Granite City Works is still in an area that is designated nonattainment for ozone.)

35 IAC 203.123, Federally Enforceable (Definition)
This definition provides that "Federally Enforceable" means enforceable by the United States Environmental Protection Agency [USEPA]." This definition is cited as a basis for certain denial points as the 2022 application requests revisions to Permit 95010001 to set limitations that would take the place of limitations currently in Permit 95010001. However, the application does not include information showing that these proposed limitations should be considered enforceable as a practical matter.

35 IAC 203.128, Potential to Emit (Definition)
This definition of "potential to emit" is cited as a basis for denial points as related to the role of permit limitations, as distinguished from the physical and operational design of a stationary source, in restricting the potential emissions of emission units. 35 IAC 203.128, along with 35 IAC 203.122, are cited as a basis for denial as the 2022 application does not show that certain emission limitations that are proposed, which would replace emission limitations currently in Permit 95010001, should be considered enforceable as a practical matter. In this regard, the second sentence of this definition of "potential to emit" provides that:

> Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable [emphasis added].

35 IAC 203.201, Prohibition
This provision requires an entity that would undertake a project that is "major" for a pollutant in an area that is designated a nonattainment area for the pollutant to comply with the substantive requirements of 35 IAC Part 203 for that pollutant. The various substantive requirements are then addressed later in Subpart C of 35 IAC Part 203. In this regard, the first two sentences of 35 IAC 203.201 provide:

> In any nonattainment area, no person shall cause or allow the construction of a new major stationary source or major modification that is major for the pollutant for which the area is designated a nonattainment area, except as in compliance with this Part [Part 203]for that pollutant. In areas designated nonattainment for ozone, this prohibition shall apply to new major stationary sources or major modifications of sources that emit volatile organic materials or nitrogen oxides.

As the revised NSR applicability analysis for NOx in the 2022 application does not show that the Production Increase Project would not have been a major modification for NOx with the increases in permitted NOx emissions that are being requested, 35 IAC 203.201 is cited as a basis for denial of this application. This is because the application also does not show that the substantive requirements of 35 IAC Part 203 would be fulfilled as the Project is now a major modification. For example, the 2022 application does not address the requirement in 35 IA3.302 that, as related to the role of emissions of NOx on air quality for ozone, an entity undertaking a major project for NOx in an ozone nonattainment area must provide emission offsets for NOx to compensate for the effect of the project's NOx emissions on ozone air quality.

35 IAC 203.203(b), Construction Permit Requirements and Application
For major projects that would be subject to 35 IAC Part 203, this rule sets forth the information that a permit application must contain. This rule provides that:

> Applications for construction permits required under this Section shall contain sufficient information to demonstrate compliance with 35 Ill. Adm. Code 201 [Permits and General Provisions] and the requirements of this Part [Part 203] including, but not limited to, Subpart C [Requirements for Major Stationary Sources in Nonattainment Areas, including the requirements for the Lowest Achievable Emission Rate (LAER) and the requirement to provide emission offsets].

35 IAC 203.208*, Net Emissions Determination – The Increase in Emissions from a Project
Among other aspects of "netting," this rule sets forth how the increases in emissions from a project should be addressed if a source elects to rely on netting with contemporaneous emissions decreases to show that a project would not be a major modification under 35 IAC Part 203. The first paragraph of this rule, referred to as "35 IAC 203 208*" is cited as a basis for denial of the 2022 application as the revised NSR applicability analysis for NOx in the application, which should address NOx emissions of the Production Increase Project, with the increases in permitted NO_X emissions that are now being requested. For certain units, this analysis does not show that the increases in NOx emissions from the Project have been properly addressed. For a project, itself, this rule provides that the increase in actual emissions due to the project should be addressed. However, since the amount of this increase should be determined during permitting,

i.e., before the project is implemented and the modified units begin normal operation with the project, 35 IAC 203.104(c) further provides that the Illinois EPA shall presume that the potential emissions of units with the project are equivalent to their actual emissions for purposes of permitting. (The circumstances are similar for permitting for a project that was improperly constructed without first obtaining a construction permit. This is because such source cannot rely on permit limitations in lieu of potential emissions absent enforceable limitations.) In particular, the first sentence in 35 IAC 203.208 provides:

> A net emissions increase is the amount by which the sum of any increase in actual emissions from a particular physical change or change in method of operation at a source [emphasis added], and any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable, exceeds zero.

35 IAC 203.208**, Net Emissions Determination - The Contemporaneous Time Period and Creditability of Emission Decreases

As discussed above, 35 IAC 203.208 lays out the requirement for a NSR Applicability Analysis if a source elects to rely on netting to show that a project would not be a major modification under 35 IAC Part 203. 35 IAC 203.208(a) and (c)(1), referred to as 35 IAC 203.208**, are also cited as a basis for denial of the 2022 application. This is because the revised NSR applicability analysis for NOx in the application, which addresses NOx emissions with the increases in permitted emissions that are being requested for certain units, would improperly rely on certain decreases in NOx emissions that are neither contemporaneous nor creditable. This is contrary to 35 203.208(a) and (c), which do not allow credit in the revised NSR applicability analysis for NOx based on decreases in emissions due to the shutdown of Boilers 1 through 10 and, due to the shutdown of the two by-product recovery coke oven batteries at the Granite City Works, coke oven gas (COG) no longer being available for use in Project-affected fuel burning units.as a fuel. These actions and the accompanying emission decreases occurred after the implementation of the Production Increase Project and were not contemplated by Permit 95010001. In particular, the introductory paragraph in 35 IAC 203.208 and paragraphs 35 IAC 203.208(a) and (c)(1) provide:

> A net emissions increase is the amount by which the sum of any increase in actual emissions from a particular physical change or change in method of operation at a source, and any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and are otherwise creditable, exceeds zero. The following steps determine whether the increase or decrease in emissions is available.
>
> a) Except for … [alternative provisions for projects in in serious and severe ozone nonattainment areas], an increase or decrease in actual emissions is contemporaneous only if it occurs between the date that an increase from a particular change occurs and the date five years before a timely and complete application is submitted for the particular change. …
>
> …

c) A decrease in actual emissions is creditable to the extent that:

1) It is federally enforceable at and after the time that actual construction on the particular change begins;

35 IAC 203.301, Lowest Achievable Emission Rate
For a project that is a major modification subject to 35 IAC Part 203, 35 IAC 203.301 sets forth the requirements for a permit application related to Lowest Achievable Emission Rate (LAER) for the emissions units for which LAER is required. 35 IAC 203.301(c) sets forth the requirement that LAER be demonstrated for such emission units. (Ongoing operation of LAER-subject units to comply with LAER is required by 35 IAC 203.601 once a permit is issued setting forth what LAER is for those units.) For the emission units and pollutant(s) for which LAER is required, 35 IAC 203.301(d) explicitly requires that the application include a detailed showing that the emission limitations proposed for the LAER-subject units would constitutes LAER. In this regard, these rules provide that:

c) Except as provided in subsection (e) or (f) below [Alternative provisions for projects ozone nonattainment areas that are classified as serious or severe nonattainment] the owner or operator of a major modification shall demonstrate that the control equipment and process measures applied to the major modification will produce LAER. This requirement applies to each emissions unit at which a net increase in emissions of the pollutant has occurred or would occur as a result of a physical change or change in the method of operation.

d) The owner or operator shall provide a detailed showing that the proposed emission limitations constitute LAER. Such demonstration shall include:

1) A description of the manner in which the proposed emission limitation was selected, including a detailed listing of information resources,

2) Alternative emission limitations, and

3) Such other reasonable information as the Agency may request as necessary to determine whether the proposed emission limitation is LAER.

35 IAC 203.302(a), Maintenance of Further Reasonable Progress and Emission Offsets
For a major project that is subject to 35 IAC Part 203 for a pollutant, this rule sets forth the basic requirement that project be accompanied by emission offsets. Emission offsets are enforceable reductions in the emissions of the subject pollutant, usually by existing source(s) other than the source at which the project would take place, that affect the quality of the ambient air that the emissions of the subject pollutant from the project would affect. The role of the offsets is to counterbalance the effect of the emissions of the subject pollutant from the project on ambient air quality that exceeds the applicable National Ambient Air Quality Standard. In this regard, 35 IAC 203.302(a) provides that:

a) The owner or operator of a new major source or major modification shall provide emission offsets equal to or greater than the allowable emissions from the source or the

net increase in emissions from the modification sufficient to allow the Agency to determine that the source or modification will not interfere with reasonable further progress as set forth in Section 173 of the Clean Air Act (42 U.S.C. 7401 et seq.).

35 IAC Part 204, Prevention of Significant Deterioration

(35 IAC Part 204 is of concern or potential concern for the Production Increase Project for emissions of NOx, SO_2, CO and lead. This is because, when Permit 95010001 was initially issued, the Granite City Works was in various areas that were designated attainment or unclassified, rather than nonattainment, for the NAAQS for CO, SO_2 and lead. It was also in an area designated as attainment or unclassified for the NAAQS for nitrogen dioxide (NO_2). The areas in which the Granite City Works is located are still designated attainment or unclassified for these pollutants. (After the NAAQS for lead was revised in 2008, an area that includes the Granite City Works was then designated nonattainment for lead in 2010. This area was later redesignated to attainment for lead in 2018.)

35 IAC 204.280, Best Available Control Technology (BACT) (Definition)
This definition reflects USEPA's guidance at 40 CFR 51.166(b)(12) for the meaning of this term. It is noteworthy that this definition provides that BACT is to reflect the maximum degree of reduction of emissions for the unit(s) and pollutant(s) for which it is required as determined to be achievable ".. through production processes or available methods, systems and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant." As such, in addition to the use of add-on air pollution control equipment, both a BACT demonstration and a BACT determination must consider approaches to reducing emissions other than tradition air pollution control equipment. In addition, this definition provides that while it is preferred that BACT be codified in a permit as an emission limitation or a limitation for visible emissions, "If the Agency determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT."

35 IAC 204.330, Complete (Definition)
For an application for a permit for a major project subject to PSD [Prevention of Significant Deterioration], this definition provides that, "'complete' means, that the application contains all of the information necessary for processing the application."

35 IAC 204.400, Federally Enforceable (Definition)
This definition of "federally enforceable" in 35 IAC Part 204 is similar to the definition at 35 IAC 203.123. This definition also expressly identifies certain limitations that are, by definition, considered enforceable by USEPA (e.g., "…requirements within the SIP, any permit requirements established under 40 CFR 52.21… or this Part [Part 204] or under regulations approved under 40 CFR 51 Subpart I …, including operating permits issued under a USEPA-approved program that is incorporated into the SIP and expressly requires adherence to any permit issued under such

program"). However, it does not provide that limitations in a construction permit are still federally enforceable even if they are not enforceable as a practical matter.

35 IAC 204.550*, Net Emissions Increase (Definition) – The Increase in Emissions from a Project
This provision, which is similar to at 35 IAC 203.208, "Net Emissions Determination," sets forth how the increases in emissions from a project should be addressed if a source elects to rely on netting to show that a project would not be a major modification under 35 IAC Part 204. 35 IAC 204.550(a)(1), referred to as 35 IAC 204.550*, is cited as a basis for denial of the 2022 application as the revised NSR applicability analysis for NOx in the application, which addresses NOx emissions with the increases in permitted emissions that are now being requested for certain units, does not show that certain increases in emissions from the project have been properly addressed. For a project itself, this rule, which did not become effective until October 12, 2021 (86 Federal Register 50459), provides that the increase in actual emissions due to the project should be addressed. However, the application does not address post-project actual emissions. As such, 35 IAC 204.600(a)(4) provides that the potential emissions of units with the project are to be used as their actual emissions for purposes of evaluating applicability of PSD. In 1996, when the Production Increase Project was initially permitted, the requirements for Net Emission Determinations and Net Emission Increase, under the NaNSR and PSD programs respectively, were essentially identical.

35 IAC 204.550**, Net Emissions Increase (Definition) - The Contemporaneous Time Period and Creditability of Emission Decreases
As discussed above, 35 IAC 204.550 lays out the requirement for a NSR Applicability Analysis if a source elects to rely on netting to show that a project would not be a major modification under 35 IAC Part 204. 35 IAC 204.550(b)(2)) and (e)(2), referred to as 35 IAC 203.208**, are also cited as a basis for denial of the 2022 application. This is because the revised NSR applicability analysis for NOx in the application, which addresses NOx emissions with the increases in permitted emissions that are being requested for certain units, would improperly rely on certain decreases in NOx emissions that are neither contemporaneous nor creditable. This is contrary to 35 204.208(b)(2)) and (c)(2), which do not allow credit in the revised NSR applicability analysis for NOx based on decreases in emissions due to the shutdown of Boilers 1 through 10 and the elimination of coke oven gas (COG) with the shutdown of the by-product recovery coke oven batteries at the facility. These actions and the resulting emission decreases occurred after the implementation of the Production Increase Project and were not contemplated by Permit 95010001. In particular, the introductory paragraph in 35 IAC 204.550(b) and (b)(2) and 35 IAC 204.550(e) and (e)(2) provide:

> b) An increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if it occurs between:
>
> ...
>
> 2) The date that the increase from the particular change occurs.
>
> e) A decrease in actual emissions is creditable only to the extent that:
>
> ...

2) It is enforceable as a practical matter at and after the time that actual construction on the particular change begins;

35 IAC 204.560, Potential to Emit (Definition)
This definition of "potential to emit" is cited as a basis for denial points as related to the role of permit limitations, as distinguished from the physical and operational design of a stationary source, in restricting the potential emissions of emission units. 35 IAC 204.560, along with 35 IAC 204.400, are cited as a basis for denial as the 2022 application does not show that certain emission limitations that are proposed, which would replace emission limitations currently in Permit 95010001, should be considered enforceable as a practical matter. In this regard, this definition of "potential to emit" provides that:

> "Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable or legally and practicably enforceable (emphasis added) by a state or local air pollution control agency. Secondary emissions do not count in determining the potential to emit of a stationary source.

35 IAC 204.810(a)(3), Source Information
This rule, with the introductory language in 35 IAC 204.810 and 204.810(a), addresses the information that an applicant must include in a permit application if a determination of BACT is required for the requested permit to be issued. In this regard, they provide that:

> The owner or operator of a proposed major stationary source or major modification shall submit all information necessary to perform any analysis or make any determination required under this Part.
>
> a) With respect to a source or modification to which Sections 204.1100, 204.1110, 204.1130, and 204.1140 apply, such information shall include:
>
> ...
>
> 3) A detailed description as to what system of continuous emission reduction is planned for the source or modification, emission estimates, and any other information necessary to determine that BACT, as applicable, would be applied.

35 IAC 204.820, Source Obligation
Any owner or operator who constructs or operates a source or modification not in accordance with the application submitted under this Part or with the terms of any approval to construct (emphasis added), or any owner or operator of a source or modification subject to this Part [35 IAC Part 204] who begins actual construction after September 4, 2020 without applying for and receiving approval under this Part, shall be subject to appropriate enforcement action.

35 IAC 204.1100(c), Control Technology Review
This rule sets forth the BACT requirement for a project that is a major project for pollutant(s) for purposes of Part 204. It provides that:

> A major modification shall apply BACT for each regulated NSR pollutant for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.

35 IAC 204.1110, Source Impact Analysis
This rule requires that the applicant for a permit for a project that is a major project for pollutant(s) for purposes of Part 204 demonstrate that the project would not cause or contribute to violation(s) of the relevant National Ambient Air Quality Standard (NAAQS). In this regard, this rule provides that:

> The owner or operator of the proposed source or modification shall demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases [emphasis added] or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of:
>
> a) Any NAAQS in any air quality control region; ...

35 IAC 204.1130, Air Quality Analysis
This rule requires that an applicant for a permit for a project that is a major project for pollutant(s) for purposes of Part 204 address the ambient air quality in the area that the project would affect for those pollutant(s). In this regard, 35 IAC 204.1130(a)(1) addresses a "Preapplication Analysis," requiring that:

> 1) Any application for a permit under this Part [35 IAC Part 204] shall contain an analysis of ambient air quality in the area that the major stationary source or major modification would affect for each of the following pollutants:
>
> A) For the source, each pollutant that it would have the potential to emit in a significant amount;
>
> B) For the modification, each pollutant for which it would result in a significant net emissions increase.
>
> ...
>
> 3) With respect to any such pollutant for which such a NAAQS does exist, the analysis shall contain continuous air quality monitoring data gathered for purposes of determining whether emissions of that pollutant would cause or contribute to a violation of the standard or any maximum allowable increase.
>
> 4) In general, the continuous air quality monitoring data that is required shall have been gathered over a period of at least one year and shall represent at least the year preceding receipt of the application. However, if the Agency determines that a

complete and adequate analysis can be accomplished with monitoring data gathered over a period shorter than one year (but not less than four months), the data that is required shall have been gathered over at least that shorter period.

...

35 IAC Part 270 Clean Air Act Permit Program Procedures

35 IAC 270.401(f), General Application Information (Certification)
This rule expands upon the certification that Clean Air Act Permit Program (CAAPP) applications must contain pursuant to Subsection 39.5(5)(f) of the Act, requiring that such certifications by a responsible official for the source must be based upon information and belief after reasonable inquiry. It provides that:

A CAAPP application shall contain a certification by a responsible official that, based on information and belief formed by the responsible official after reasonable inquiry, the statements and information in the application are true, accurate, and complete. This certification shall be dated and signed by the responsible official.

Faculty Bibliography

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Ryan D. Doerfler, *The Scrivener's Error*, 110 Nw. U. L. Rev. 811 (2016).

Abstract: It is widely accepted that courts may correct legislative drafting mistakes, i.e., so-called scrivener's errors, if and only if such mistakes are "absolutely clear." The rationale is that if a court were to recognize a less clear error, it might be "rewriting" the statute rather than correcting a technical mistake. This Article argues that the standard is much too strict. The current rationale ignores that courts can "rewrite," i.e., misinterpret, a statute both by recognizing an error and by failing to do so. Accordingly, because the current doctrine is designed to protect against one type of mistake (false positives) but not the other (false negatives), it systematically underrecognizes errors and results in systematic misinterpretation of the law. Using the example of King v. Burwell, this Article shows that the overly strict scrivener's error doctrine threatens dramatic real-world harm. In King, opponents of the Affordable Care Act exploited a likely, but less than absolutely clear, scrivener's error to nearly bring down the most significant health reform legislation of the past half century. More still, the challenge only failed because six Justices were willing to accept an implausible textual argument. Furthermore, King is far from sui generis. Recent challenges to ambitious executive branch action, for example, try to take similar advantage of the current doctrine.

United States Code, 2013 Edition
Title 42 - THE PUBLIC HEALTH AND WELFARE
CHAPTER 85 - AIR POLLUTION PREVENTION AND CONTROL
SUBCHAPTER I - PROGRAMS AND ACTIVITIES
Part C - Prevention of Significant Deterioration of Air Quality
subpart i - clean air
Sec. 7475 - Preconstruction requirements
From the U.S. Government Publishing Office, www.gpo.gov

§7475. Preconstruction requirements

(a) Major emitting facilities on which construction is commenced

No major emitting facility on which construction is commenced after August 7, 1977, may be constructed in any area to which this part applies unless—

(1) a permit has been issued for such proposed facility in accordance with this part setting forth emission limitations for such facility which conform to the requirements of this part;

(2) the proposed permit has been subject to a review in accordance with this section, the required analysis has been conducted in accordance with regulations promulgated by the Administrator, and a public hearing has been held with opportunity for interested persons including representatives of the Administrator to appear and submit written or oral presentations on the air quality impact of such source, alternatives thereto, control technology requirements, and other appropriate considerations;

(3) the owner or operator of such facility demonstrates, as required pursuant to section 7410(j) of this title, that emissions from construction or operation of such facility will not cause, or contribute to, air pollution in excess of any (A) maximum allowable increase or maximum allowable concentration for any pollutant in any area to which this part applies more than one time per year, (B) national ambient air quality standard in any air quality control region, or (C) any other applicable emission standard or standard of performance under this chapter;

(4) the proposed facility is subject to the best available control technology for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility;

(5) the provisions of subsection (d) of this section with respect to protection of class I areas have been complied with for such facility;

(6) there has been an analysis of any air quality impacts projected for the area as a result of growth associated with such facility;

(7) the person who owns or operates, or proposes to own or operate, a major emitting facility for which a permit is required under this part agrees to conduct such monitoring as may be necessary to determine the effect which emissions from any such facility may have, or is having, on air quality in any area which may be affected by emissions from such source; and

(8) in the case of a source which proposes to construct in a class III area, emissions from which would cause or contribute to exceeding the maximum allowable increments applicable in a class II area and where no standard under section 7411 of this title has been promulgated subsequent to August 7, 1977, for such source category, the Administrator has approved the determination of best available technology as set forth in the permit.

(b) Exception

The demonstration pertaining to maximum allowable increases required under subsection (a)(3) of this section shall not apply to maximum allowable increases for class II areas in the case of an expansion or modification of a major emitting facility which is in existence on August 7, 1977, whose allowable emissions of air pollutants, after compliance with subsection (a)(4) of this section, will be less than fifty tons per year and for which the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur oxides will not cause or contribute to ambient air

quality levels in excess of the national secondary ambient air quality standard for either of such pollutants.

(c) Permit applications

Any completed permit application under section 7410 of this title for a major emitting facility in any area to which this part applies shall be granted or denied not later than one year after the date of filing of such completed application.

(d) Action taken on permit applications; notice; adverse impact on air quality related values; variance; emission limitations

(1) Each State shall transmit to the Administrator a copy of each permit application relating to a major emitting facility received by such State and provide notice to the Administrator of every action related to the consideration of such permit.

(2)(A) The Administrator shall provide notice of the permit application to the Federal Land Manager and the Federal official charged with direct responsibility for management of any lands within a class I area which may be affected by emissions from the proposed facility.

(B) The Federal Land Manager and the Federal official charged with direct responsibility for management of such lands shall have an affirmative responsibility to protect the air quality related values (including visibility) of any such lands within a class I area and to consider, in consultation with the Administrator, whether a proposed major emitting facility will have an adverse impact on such values.

(C)(i) In any case where the Federal official charged with direct responsibility for management of any lands within a class I area or the Federal Land Manager of such lands, or the Administrator, or the Governor of an adjacent State containing such a class I area files a notice alleging that emissions from a proposed major emitting facility may cause or contribute to a change in the air quality in such area and identifying the potential adverse impact of such change, a permit shall not be issued unless the owner or operator of such facility demonstrates that emissions of particulate matter and sulfur dioxide will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area.

(ii) In any case where the Federal Land Manager demonstrates to the satisfaction of the State that the emissions from such facility will have an adverse impact on the air quality-related values (including visibility) of such lands, notwithstanding the fact that the change in air quality resulting from emissions from such facility will not cause or contribute to concentrations which exceed the maximum allowable increases for a class I area, a permit shall not be issued.

(iii) In any case where the owner or operator of such facility demonstrates to the satisfaction of the Federal Land Manager, and the Federal Land Manager so certifies, that the emissions from such facility will have no adverse impact on the air quality-related values of such lands (including visibility), notwithstanding the fact that the change in air quality resulting from emissions from such facility will cause or contribute to concentrations which exceed the maximum allowable increases for class I areas, the State may issue a permit.

(iv) In the case of a permit issued pursuant to clause (iii), such facility shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur oxides and particulates from such facility will not cause or contribute to concentrations of such pollutant which exceed the following maximum allowable increases over the baseline concentration for such pollutants:

	Maximum allowable increase (in micrograms per cubic meter)
Particulate matter:	
Annual geometric mean	19
Twenty-four-hour maximum	37
Sulfur dioxide:	

IN RE SHELL OFFSHORE, INC.

OCS Appeal Nos. 11-05, 11-06 & 11-07

ORDER DENYING PETITIONS FOR REVIEW

Decided March 30, 2012

Syllabus

This decision addresses petitions for review that challenge an Outer Continental Shelf ("OCS") Permit to Construct and Title V Air Quality Operating Permit ("Permit") Region 10 ("Region") of the U.S. Environmental Protection Agency ("EPA" or "Agency") issued to Shell Offshore, Inc. ("Shell"). The Region issued the Permit on October 21, 2011, pursuant to Clean Air Act ("CAA or "Act") section 328, 42 U.S.C. § 7627, and applicable regulations governing air emissions from OCS sources at 40 C.F.R. part 55, and pursuant to Title V of the CAA, 42 U.S.C. § 7661, and implementing regulations at 40 C.F.R. part 71, as well as applicable Alaska code and regulatory provisions. The Permit authorizes Shell to "construct and operate the Conical Drilling Unit *Kulluk* and associated air emission units and to conduct other air pollutant emitting activities" within Shell's lease blocks in the Beaufort Sea off the North Slope of Alaska. The Permit also provides for the use of an associated fleet of support ships, including icebreakers, supply ships, and oil spill response vessels in addition to the *Kulluk*.

The Board received three petitions for review of the Permit. One petition was filed by Resisting Environmental Destruction of Indigenous Lands ("REDOIL"), Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council, Northern Alaska Environmental Center, Oceana, Pacific Environment, Sierra Club, and the Wilderness Society (collectively, "REDOIL Petitioners"). A second petition was filed by the Inupiat Community of the Arctic Slope ("ICAS"). The third petition was filed by Mr. Daniel Lum.

The three petitions collectively raise seven issues for review: (1) Have Petitioners demonstrated that the Region clearly erred in establishing limitations to restrict the *Kulluk* drilling unit's potential to emit? (2) Have REDOIL Petitioners demonstrated that the Region clearly erred in declining to require prevention of significant deterioration ("PSD") increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process? (3) Did REDOIL Petitioners raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance? (4) Have REDOIL Petitioners demonstrated that the Region clearly erred in its ambient air exemption determination? (5) Have Petitioners demonstrated that the Region failed to satisfy its obligation to consider environmental justice under Executive Order 12898 and comply with applicable Board precedent? (6) Has ICAS demonstrated that the Region clearly erred or abused its discretion in providing forty-six days to comment on the draft permit and in denying ICAS's request for non-overlapping comment periods? (7) Has ICAS demonstrated that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review?

Held: The Board denies review of the Permit. Petitioners have not met their burden of demonstrating that review is warranted on any of the grounds presented.

(1) Limitations on Potential to Emit. The Board concludes that Petitioners have failed to demonstrate that the Region erred in establishing limitations to restrict the potential to emit nitrogen dioxide ("NO_2"), carbon monoxide ("CO"), sulfur dioxide ("SO_2"), and greenhouse gases ("GHGs") for emission units located on the *Kulluk* and on the Associated Fleet when operating within twenty-five miles of the *Kulluk* while it is an OCS source. The Region exercised its discretion and applied its technical expertise to establish practically enforceable source-wide emission limits that accommodate the substantial and unpredictable variations in emissions based on the atypical nature of Shell's operations. The Region explained in the record its rationale, based on the Region's technical expertise and applied in certain limited circumstances, for supplementing source-specific emission factors derived for most of the emission units or groups of emission units with either AP-42 emission factors, or emission factors derived from source test data Shell submitted to the Region in support of two separate, previously issued OCS PSD permits authorizing Shell to conduct exploratory activities in the Chukchi and Beaufort Seas using the *Discoverer* drillship.

(2) PSD Increment Consumption Analyses. The Board concludes that REDOIL Petitioners failed to demonstrate clear error in the Region's decision not to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process. The Board holds that the Region provided a reasonable interpretation of CAA section 504(e), which imposes permitting requirements on "temporary" stationary sources, in its Response to Comments document. The Region determined that "PSD major sources are subject to NAAQS and increment in the permitting process, whereas non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the [PSD] increment[s]." The Region concluded that the State of Alaska's minor source preconstruction program does not require permanent minor sources to demonstrate compliance with PSD increments as a condition of construction, so neither would it require such compliance of temporary minor sources. The Board finds REDOIL Petitioners' series of challenges to this basic analysis to be deficient in a variety of ways and therefore upholds the Region's decision.

(3) Ambient Air Quality Analysis. REDOIL Petitioners contend that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance. Upon examination of the administrative record, the Board concludes that REDOIL Petitioners failed to raise this issue during the comment period. This issue, therefore, was not preserved for review.

(4) Ambient Air Exemption Determination. The Board concludes that REDOIL Petitioners have not shown that the Region clearly erred in its decision to exempt the area within a 500 meter radius from the *Kulluk* – the area within the U.S. Coast Guard safety zone – from the definition of "ambient air." The Region, in its Response to Comments, provided a reasonable interpretation of the ambient air regulation and the Agency's longstanding interpretation of that regulation as applied in the OCS context.

(5) Environmental Justice Analysis. The Board concludes that ICAS and Mr. Lum have not demonstrated that the Region failed to satisfy its obligations to comply with Executive Order 12898 and applicable Board precedent. The Region conducted an environmental justice analysis that demonstrated compliance with the NAAQS and endeavored to include and analyze data that is germane to the environmental justice issues raised during the comment period. The Region appropriately determined that it was not required to analyze the mobile source emissions from vessels that operate outside of twenty-five miles from the *Kulluk* while it is an OCS source where, as here, the Title V permit did not address these

mobile source emissions, and the record lacked sufficient data for such an analysis. In addition, in the remaining arguments they put forth in their petitions, ICAS and Mr. Lum do not demonstrate how the Region's responses to comments are inadequate, overcome the particularly heavy burden a petitioner must meet to demonstrate that review of the Region's technical decisions is warranted, or raise issues within the Board's jurisdiction.

(6) Public Comment Period. The Board concludes that ICAS has failed to show that the Region clearly erred or abused its discretion in either selecting a 46-day comment period or in denying ICAS's request for nonconcurrent comment periods. The length of time the Region provided for comment on this permit was 16 days more than the 30-day regulatory minimum and 1 day more than the amount of time ICAS had specifically requested. ICAS's attempt to recalculate the length of the comment period based on an unexplained mathematical formula involving the number and lengths of other comment periods is unconvincing. Furthermore, ICAS has not pointed to any regulations that prohibit the Agency from issuing concurrent permits or that require – or even specify – a different comment period length when the Agency does issue concurrent permits. Finally, it is clear from the administrative record that the Region appropriately balanced conflicting considerations in deciding on the length of the comment period for this permit and in denying the request for nonoverlapping periods, and ICAS has failed to demonstrate otherwise.

(7) Public Hearing. The Board concludes that ICAS has failed to demonstrate that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review. ICAS has not shown that the Region violated any part 71 or 124 procedural regulation. Moreover, the alleged problems ICAS has identified do not, even if the Board were to find them to constitute a deficiency in some way, warrant Board review.

Before Environmental Appeals Judges Charles J. Sheehan, Kathie A. Stein, and Anna L. Wolgast.

Opinion of the Board by Judge Stein:

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I. *STATEMENT OF THE CASE*

A group of conservation petitioners ("REDOIL Petitioners"),[1] the Inupiat Community of the Arctic Slope ("ICAS"), and Mr. Daniel Lum each petitioned[2] the Environmental Appeals Board ("Board") to review an Outer Continental Shelf ("OCS") Permit to Construct and Title V Air Quality Operating Permit ("Permit") that U.S. Environmental Protection Agency ("EPA" or "Agency") Region 10 ("Region") had issued to Shell Offshore, Inc. ("Shell"). *See generally* OCS Permit to Construct and Title V Air Quality Operating Permit, Permit No. R10 OCS030000 (Oct. 21, 2011) (Administrative Record ("A.R.") J-2). The Region issued the Permit pursuant to Clean Air Act ("CAA" or "Act") section 328, 42 U.S.C. § 7627, and applicable regulations governing air emissions from OCS sources at 40 C.F.R. part 55, and pursuant to Title V of the CAA, 42 U.S.C. § 7661, and implementing regulations at 40 C.F.R. part 71, as well as applicable Alaska code and regulatory provisions.[3] *See* Permit at 6 (citing all relevant provisions).

The Permit authorizes Shell to construct and operate the *Kulluk* drilling unit and associated air emission drilling units in certain lease blocks within the Beaufort Sea. *Id.* at 1. The Region and Shell each filed a response to the petitions. Thereafter, both REDOIL Petitioners and ICAS filed motions requesting leave to file reply briefs. These motions are currently pending before the Board and are addressed below in Part V. The Board did not hold oral argument in this case. For the reasons discussed below, the Board denies review of the Permit.

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[1] REDOIL Petitioners include Resisting Environmental Destruction of Indigenous Lands ("REDOIL"), Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council, Northern Alaska Environmental Center, Oceana, Pacific Environment, Sierra Club, and The Wilderness Society.

[2] Mr. Lum's petition was designated as OCS Appeal No. 11-05, REDOIL Petitioners' petition was designated as OCS Appeal No. 11-06, and ICAS's petition was designated as OCS Appeal No. 11-07.

[3] The Permit was issued under multiple CAA and Alaska air pollution provisions because it is a consolidation of three air permits. According to the Region, it consolidated "an OCS/Title V permit under 40 CFR Parts 55 and 71 for operations beyond 25 miles of Alaska's seaward boundary; an OCS/minor permit for air quality protection under 40 CFR Part 55 and 18 Alaska Administrative Code (AAC) 50.502 and for owner requested limitations under 40 CFR Part 55 and 18 AAC 50.508 for operations within 25 miles of Alaska's seaward boundary; and an OCS/Title V permit under 40 CFR Part 55 and 18 AAC 50.326 for operations within 25 miles of Alaska's seaward boundary." Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk at 1 (A.R. J-3).

II. *ISSUES*

The Board has determined that the three petitions filed in this case, collectively, present the following seven issues for review:

A. Have Petitioners demonstrated that the Region clearly erred in establishing limitations to restrict the *Kulluk* drilling unit's potential to emit?

B. Have REDOIL Petitioners demonstrated that the Region clearly erred in declining to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process?

C. Did REDOIL Petitioners raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance?

D. Have REDOIL Petitioners demonstrated that the Region clearly erred in its ambient air exemption determination?

E. Have Petitioners demonstrated that the Region failed to satisfy its obligation to consider environmental justice under Executive Order 12898 and comply with applicable Board precedent?

F. Has ICAS demonstrated that the Region clearly erred or abused its discretion in providing 46 days to comment on the draft permit and in denying ICAS's request for nonoverlapping comment periods?

G. Has ICAS demonstrated that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review?

III. *STANDARD OF REVIEW*

Under the part 124 procedural regulations, which apply to OCS permits,[4] the Board will not ordinarily review a permit unless it is based on a clearly erroneous finding of fact or conclusion of law, or involves a matter of policy or exercise of discretion that warrants review. 40 C.F.R. § 124.19(a); Consolidated Per-

[4] The OCS regulations direct the Agency to follow the applicable part 124 permit regulations in processing OCS permits. 40 C.F.R. § 55.6(a)(3). Accordingly, the part 124 permit appeal provision, 40 C.F.R. § 124.19, applies here. *See In re Shell Gulf of Mex., Inc.*, 15 E.A.D. 470, 476 (EAD 2012) [hereinafter *Shell Discoverer 2012*].

mit Regulations, 45 Fed. Reg. 33,290, 33,412 (May 19, 1980). The Board also applies this standard in reviewing Title V permits issued under part 71.[5] *See* 40 C.F.R. § 71.11(*l*)(1); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 32-33 (EAB 2005). When analyzing permits, the Board is cognizant of the preamble to section 124.19, in which the Agency states that the Board's power of review "should be only sparingly exercised" and that "most permit conditions should be finally determined at the [permit issuer's] level." Consolidated Permit Regulations, 45 Fed. Reg. at 33,412; *accord In re Cardinal FG Co.*, 12 E.A.D. 153, 160 (EAB 2005); *see also Peabody*, 12 E.A.D. at 33 (applying these same principles in the context of a part 71 permit appeal).

The petitioner bears the burden of demonstrating that review is warranted. *See* 40 C.F.R. § 124.19; *id.* § 71.11(l)(1). To meet this burden, the petitioner must satisfy threshold pleading requirements including timeliness, standing, and issue preservation. *See* 40 C.F.R. § 124.19; *id.* § 71.11(l)(1); *In re Russell City Energy Ctr., LLC* ("*Russell City II*"), 15 E.A.D. 1, 10 (EAB 2010), *appeal docketed sub nom. Chabot-Las Positas Cmty. Coll. Dist. v. EPA*, No. 10-73870 (9th Cir. Dec. 20, 2010); *In re BP Cherry Point*, 12 E.A.D. 209, 216 (EAB 2005). For example, a petitioner seeking review must file an appeal of the permit decision within 30 days of service of the decision, and must have filed comments on the draft permit or participated in the public hearing. 40 C.F.R. § 124.19(a); *accord Russell City II*, 15 E.A.D. at 10. In addition, a petitioner must not only specify objections to the permit, but also explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. *See* 40 C.F.R. § 124.13 (requiring that all persons who believe a condition of a draft permit is inappropriate "must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period"); *id.* § 124.19(a) (stating that a petition for review to the Board "shall include * * * a demonstration that any issues being raised were raised during the public comment period"); *see also In re Avenal Power Ctr., LLC*, 15 E.A.D. 384, 387 (EAB 2011), *appeals docketed sub nom. Sierra Club v. EPA*, No. 11-73342 (9th Cir. Nov. 3, 2011), *El Pueblo Para el Aire y Agua Limpio v. EPA*, No. 11-73356 (9th Cir. Nov. 4, 2011); *BP Cherry Point*, 12 E.A.D. at 216-17. The petitioner's burden is particularly heavy in cases where a petitioner seeks review of an issue that is fundamentally technical or scientific in nature, as the Board will typically defer to a permit issuer's technical expertise and experience on such matters if the permit issuer adequately explains its rationale and supports its reasoning in the administrative record. *See, e.g.*, *In re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490, 510 (EAB 2006); *Peabody*, 12 E.A.D. at 33-34; *In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567-68 (EAB

[5] The part 71 regulatory language governing Title V permit appeals is nearly identical to the part 124 regulatory language governing review of other types of permits. *Compare* 40 C.F.R. § 71.11(l)(1) *with* 40 C.F.R. § 124.19; *see also Peabody*, 12 E.A.D. at 33 n.26.

1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3rd Cir. 1999); *see also In re Ash Grove Cement Co.*, 7 E.A.D. 387, 404 (EAB 1997).

When evaluating a permit appeal, the Board examines the administrative record prepared in support of the permit to determine whether the permit issuer exercised his or her "considered judgment." *Ash Grove Cement*, 7 E.A.D. at 417-18; *accord In re Cape Wind Assocs., LLC*, 15 E.A.D. 327, 330 (EAB 2011); *In re GSX Servs. of S.C., Inc.*, 4 E.A.D. 451, 454 (EAB 1992). The permit issuer must articulate with reasonable clarity the reasons supporting its conclusion and the significance of the crucial facts it relied upon when reaching its conclusion. *E.g.*, *In re Shell Offshore, Inc. ("Shell 2007")*, 13 E.A.D. 357, 386 (EAB 2007) (citing *In re Carolina Light & Power Co.*, 1 E.A.D. 448, 451 (Act'g Adm'r 1978)); *Ash Grove Cement*, 7 E.A.D. at 417 (same). As a whole, the record must demonstrate that the permit issuer "duly considered the issues raised in the comments and [that] the approach ultimately adopted by the [permit issuer] is rational in light of all information in the record." *In re Gov't of D.C. Mun. Separate Storm Sewer Sys.*, 10 E.A.D. 323, 342 (EAB 2005); *accord In re City of Moscow*, 10 E.A.D. 135, 142 (EAB 2001); *NE Hub*, 7 E.A.D. at 568.

Finally, the Board endeavors to construe liberally objections raised by parties unrepresented by counsel (i.e., those proceeding pro se), so as to fairly identify the substance of the arguments being raised. *In re Sutter Power Plant*, 8 E.A.D. 680, 687 & n.9 (EAB 1999); *accord In re Shell Gulf of Mex., Inc. ("Shell Discoverer 2012")*, 15 E.A.D. 470, 478 (EAB 2012); *Russell City II*, 15 E.A.D. at 12. While the Board does not expect such petitions to contain sophisticated legal arguments or to utilize precise technical or legal terms, the Board nonetheless expects such petitions "to articulate some supportable reason or reasons as to why the permitting authority erred or why review is otherwise warranted." *Sutter*, 8 E.A.D. at 687-88 (citing *In re Beckman Prod. Servs.*, 5 E.A.D. 10, 19 (EAB 1994)).

IV. *SUMMARY OF DECISION*

For all of the reasons stated below, the Board concludes that: (a) Petitioners failed to demonstrate that the Region clearly erred in establishing limits to restrict the *Kulluk's* potential to emit; (b) REDOIL Petitioners failed to demonstrate that the Region clearly erred in declining to require PSD increment consumption analyses for the *Kulluk's* proposed emissions as part of the Title V permitting process; (c) REDOIL Petitioners failed to raise below their contention that Shell's ambient air quality analysis was flawed in that it failed to conform to applicable Agency guidance; (d) REDOIL Petitioners failed to demonstrate that the Region clearly erred in its ambient air exemption determination; (e) Petitioners have not demonstrated that the Region's environmental justice analysis and related conclusions

failed to satisfy its obligation to comply with Executive Order 12898 and applicable Board precedent; (f) ICAS failed to demonstrate that the Region clearly erred or abused its discretion in providing 46 days to comment on the draft permit and in denying ICAS's request for nonoverlapping comment periods; and (g) ICAS failed to demonstrate that the Region clearly erred in its public hearing procedures or that any alleged procedural deficiencies otherwise warrant review. Accordingly, the Board denies review of the Permit.

V. *RELEVANT PROCEDURAL AND FACTUAL HISTORY*

On July 22, 2011, the Region issued a draft permit consolidating three permits that regulated air pollution from Shell's proposed exploratory drilling operations on OCS lease blocks in the Beaufort Sea off the North Slope of Alaska, as authorized by the United States Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE").[6] The Region solicited public comment on the draft permit from July 22, 2011, through September 6, 2011. *See* Statement of Basis for Draft OCS Permit to Construct and Title V Air Quality Operating Permit ("Statement of Basis") at 10 (A.R. H-4). In addition, the Region held an informational meeting and public hearing on the draft permit on August 23, 2011, in Barrow, Alaska, and a separate public hearing on August 26, 2011, in Anchorage, Alaska. *Id.* at 11. All of the petitioners submitted comments on the draft permit. *See* E-mail from Daniel Lum to EPA Region 10 (Aug. 10, 2011) (A.R. I-31) [hereinafter Lum Comments]; E-mail from Alaska Wilderness League, Audubon Alaska, Center for Biological Diversity, Defenders of Wildlife, Earthjustice, Eyak Preservation Council, Greenpeace, National Wildlife Federation, Natural Resources Defense Council, Northern Alaska Environmental Center, Ocean Conservancy, Oceana, Pacific Environment, REDOIL, Sierra Club, The Wilderness Society, and World Wildlife Fund to EPA Region 10 (Sept. 6, 2011) (A.R. I-53) [hereinafter REDOIL Comments]; Letter from North Slope Borough, AEWC, and ICAS to Doug Hardesty, Air Permits Project Manager, EPA Region 10 (Sept. 6, 2011) (A.R. I-54) [hereinafter ICAS Comments]; *see also* Lum Petition at 1 (noting that he also provided comments at the public hearing).

On October 21, 2011, the Region issued the Permit. *See* Permit at 1. At the same time, the Region issued a response to both the written comments it had received on the draft permit and the oral comments that had been presented at the public hearings. *See generally* Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit Conical Drilling Unit Kulluk ("RTC") (A.R. J-3); *see id.* at 2 (describing comments to which the document responded). The Permit authorizes Shell to conduct air pollutant emitting activities for the purpose of oil exploration with the conical drilling unit *Kulluk* on lease

[6] For a description of the three permits, *see supra* note 3.

blocks in the Beaufort Sea. The Permit provides for the use of an associated fleet of support vessels ("Associated Fleet"), such as icebreakers, oil spill response vessels ("OSRVs"), and a supply ship, in addition to the *Kulluk*.

The Board received three timely petitions for review of the Permit: one from Mr. Lum, one from REDOIL Petitioners, and one from ICAS. The Region and Shell each filed a single response to those petitions. ICAS and REDOIL Petitioners each filed motions requesting leave to file reply briefs and attached their proposed reply briefs. Shell filed an opposition to the motions for leave to file replies. Before addressing the issues raised by the petitions, the Board first considers whether it is appropriate to grant Petitioners' motions.

A petitioner seeking leave to file a reply brief in an appeal of a new source review ("NSR") permit issued pursuant to the CAA, such as the OCS Permit at issue here, must state "with particularity the arguments to which the Petitioner seeks to respond and the reasons the Petitioner believes it is both necessary to file a reply to those arguments * * * and how those reasons overcome the presumption in the Standing Order."[7] *Shell Discoverer 2012*, 15 E.A.D. at 481 (citing Order Governing Petitions for Review of Clean Air Act New Source Review Permits 3 (Apr. 19, 2011) ("Standing Order"), *available at* http://www.epa.gov/eab (click on Standing Orders)).

Upon consideration of Petitioners' motions to file reply briefs and proposed reply briefs, the Board finds that only two select issues within REDOIL Petitioners' and ICAS's reply briefs meet the high threshold required to overcome the presumption against reply briefs that the Board applies in NSR appeals. *See* Standing Order at 3. In particular, in its reply brief, ICAS responds to arguments concerning ICAS's challenge to the public hearing procedures that the Region advances for the first time in the response brief. ICAS could not have responded to these particular arguments prior to the Region's response because a portion of the Region's rationale in its response brief does not appear in the administrative record. In addition, both ICAS and REDOIL Petitioners assert that the Region referenced for the first time in its response a decision by the Administrator as support for the Region's rationale that the Agency has previously concluded that rolling emission limits accompanied by prescribed emission factors and appropriate monitoring and recordkeeping sufficiently restrict a source's potential to emit. *See* Region Response at 17 (citing *In re Pope & Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007) (A.R. B-24)). ICAS and REDOIL Petitioners did not have an op-

[7] In April 2011, the Board issued a standing order in which it adopted certain procedures intended to facilitate expeditious resolution of petitions requesting review of permits issued under the CAA NSR program, including OCS permits. *See* Standing Order at 1 n.2; *see also* 40 C.F.R. § 124.19. Among other things, the Board will apply a presumption against the filing of reply briefs and sur-replies in NSR appeals. *See* Standing Order at 3. However, the Board maintains discretion to modify these procedures as appropriate on a case-specific basis. *Id.* at 6.

portunity to review the Administrator's decision in the context of this appeal or to analyze its relevance to the Region's stated rationale until the Region cited it for support in its response brief. Accordingly, the Board grants, in part, ICAS's and REDOIL Petitioners' motions for leave to file a reply brief. Thus the Board, in reaching its conclusions set forth in this order, has considered the portions of ICAS's reply brief and REDOIL Petitioners' reply brief that address the public process for the permit and the Region's inclusion of the *Pope & Talbot* decision as support for the Region's PTE decisions. *See* ICAS Reply at 3, 6-7; REDOIL Petition at 9-10. The Board denies REDOIL Petitioners' and ICAS's motions for leave to file a reply brief with respect to all other issues.[8]

The Board analyzes the parties' arguments and sets forth its determinations below.

VI. *ANALYSIS*

A. *ICAS and REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Establishing Limitations to Restrict the Kulluk Drilling Unit's PTE*

ICAS and REDOIL Petitioners both challenge the Region's determination of the *Kulluk's* potential to emit ("PTE") and argue that the Region should require Shell to obtain a preconstruction prevention of significant deterioration ("PSD") permit. They complain that the PTE restrictions Shell requested and the Region included in the permit to ensure that the *Kulluk* remains a synthetic minor source for nitrogen oxides ("NO_x"), carbon monoxide ("CO"), greenhouse gases ("GHGs"), and sulfur dioxide ("SO_2") are practically unenforceable.[9] The Region counters that the restrictions it imposed in the permit that reduce Shell's emissions below the PSD threshold levels for all criteria pollutants are practically enforceable and constitute fundamentally technical decisions that are consistent with CAA statutory and regulatory authority as well as Agency guidance and past practice. This PTE question is central to the Board's analysis because the Region uses the potential to emit to determine which provisions of the CAA, including both the Title V permit requirements and the PSD preconstruction permit requirements, apply to the *Kulluk*. The question the Board must resolve, then, is whether the restrictions the Region included in the permit to limit the *Kulluk's* PTE are both

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[8] The Board notes that Mr. Lum attempted to file by e-mail a request to file a reply brief and a request for oral argument. *See* E-mail from Daniel Lum to Eurika Durr, Clerk of the Board, Environmental Appeals Board, U.S. EPA (Nov. 4, 2011 6:18 pm EDT). The Board denies Mr. Lum's requests.

[9] While ICAS challenges the Region's PTE limitations for all of these pollutants, REDOIL Petitioners only challenge the Region's PTE limitations with respect to NO_x and CO. *See* ICAS Petition at 10-28; REDOIL Petition at 9-14.

practically enforceable and reasonable in light of the applicable statutory and regulatory authorities as well as Agency guidance and practice, and whether the Region provided adequate support for its decisions in the administrative record.

Before addressing the parties' arguments, a brief review of the relevant statutory and regulatory authorities is warranted.

1. *Statutory and Regulatory Context*

a. *CAA Section 328 and OCS Air Regulations*

Section 328 of the CAA, 42 U.S.C. § 7627, establishes air pollution controls for OCS sources[10] and requires OCS sources to "attain and maintain Federal and State ambient air quality standards" and to comply with the PSD provisions contained in CAA Title I, part C. EPA promulgated the Outer Continental Shelf Air Regulations, 40 C.F.R. part 55, to implement CAA section 328 and established within part 55 "the air pollution control requirements for OCS sources and the procedures for implementation and enforcement of the requirements." 40 C.F.R. § 55.1.

Section 328(a)(1), 42 U.S.C. § 7627(a)(1), also requires that, for OCS sources located within 25 miles of a state's seaward boundary, the requirements shall be the same as would apply if the source were located in the corresponding onshore area ("COA"), including, but not limited to, state and local requirements for emission controls, emission limitations, offsets, permitting, monitoring, testing, and reporting. As the Board has explained before, "OCS sources must obtain

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[10] Section 328 defines an OCS source as follows:

> The terms "Outer Continental Shelf source" and "OCS source" include any equipment, activity, or facility which –
>
> (i) emits or has the potential to emit any air pollutant,
>
> (ii) is regulated or authorized under the Outer Continental Shelf Lands Act [43 U.S.C. § 1331 et seq.], and
>
> (iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf.
>
> Such activities include, but are not limited to, platform and drill ship exploration, construction, development, production, processing, and transportation. For purposes of this subsection, emissions from any vessel servicing or associated with an OCS source, including emissions while at the OCS source or en route to or from the OCS source within 25 miles of the OCS source, shall be considered direct emissions from the OCS source.

CAA § 328(a)(4)(C), 42 U.S.C. § 7627(a)(4)(c).

a preconstruction permit from either EPA or an EPA-delegated agency if the OCS source is located within twenty-five miles of a state's seaward boundary and is subject to either federal or state requirements listed in 40 C.F.R. §§ 55.13 or 55.14."[11] *Shell 2007*, 13 E.A.D. at 365 (citing 40 C.F.R. §§ 55.6(b)(1), 55.11 and CAA § 328(a)(3), 42 U.S.C. § 7627(a)(3)). The Agency has retained the authority to implement and enforce section 328 in the OCS off the coast of Alaska as opposed to delegating that authority to the state. Accordingly, as mentioned above, Shell submitted its permit applications to the Region, and the procedural rules contained at 40 C.F.R. part 124 apply. 40 C.F.R. § 55.6(a)(3).

Because requirements for these OCS sources are based on onshore requirements, which may change, section 328(a)(1) and the corresponding regulations in part 55 require EPA to update the OCS requirements as necessary to maintain consistency with onshore requirements. *See* CAA § 328(a)(1), 42 U.S.C. § 7627(a)(1); 40 C.F.R. §§ 55.6(b)(2), 55.12; *see also Shell 2007*, 13 E.A.D. at 364 & n.6. In response to Shell's December 10, 2010, notice of intent submitted to the Agency pursuant to 40 C.F.R. § 55.4, the Agency first proposed in the Federal Register a consistency update on February 10, 2011, and later published the final consistency update on June 27, 2011, subsequent to a public notice and comment period. *See* Outer Continental Shelf Air Regulations Consistency Update for Alaska, 76 Fed. Reg. 37,274 (June 27, 2011) (codified at 40 C.F.R. § 55.14(e) & appx. A); Statement of Basis at 17. This most recent consistency update incorporated, except where specifically noted, Alaska Administrative Code title 18, articles 1 through 5 and article 9, into part 55. 76 Fed. Reg. at 37,279-80; Statement of Basis at 17. In particular, articles 3 and 5 establish the minor source and major source permitting requirements with which the *Kulluk* must comply. *See Shell 2007*, 13 E.A.D. at 364 & n.6.

In addition, because the permit authorizes the *Kulluk* to operate on a group of lease blocks located both within 25 miles and beyond 25 miles of the state's seaward boundary, the permit conditions that refer to lease blocks wholly or partially located beyond 25 miles of the seaward boundary are designated as "outer

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[11] Section 55.13 states, among other things, that the PSD program applies to OCS sources located within 25 miles of a state's seaward boundary whenever the OCS source requires construction of a new major stationary source or a modification at an existing major source and the COA is classified under the PSD program as in attainment or unclassifiable. 40 C.F.R. § 55.13(d)(1) ("40 C.F.R. [§] 52.21 shall apply to OCS sources [l]ocated within 25 miles of a state's seaward boundary if the requirements of 40 C.F.R. [§] 52.21 are in effect in the COA."); *see also Shell 2007*, 13 E.A.D. at 364.

Section 55.14 incorporates by reference regulatory requirements that states which border the OCS in the Pacific, Atlantic, and Arctic Oceans and the Gulf of Mexico have promulgated to meet the national ambient air quality standards ("NAAQS"). 40 C.F.R. § 55.14(d); CAA § 328(a)(1), 42 U.S.C. § 7627(a)(1) (defining the geographic scope of EPA authority to regulate air pollution from OCS sources). These state regulations are known as state implementation plans ("SIPs") and are created pursuant to CAA § 110, 42 U.S.C. § 7410.

OCS," and conditions that refer to lease blocks wholly or partially located within 25 miles of the seaward boundary are designated as "COA." Permit at 9 (noting that conditions identified with "COA" are those that apply on the "inner OCS," within 25 miles of the state's seaward boundary, and that all other conditions not identified as "COA" or "outer OCS" apply to lease blocks on both the inner and outer OCS); *see also* Statement of Basis at 7.

b. *The PSD Program and PTE*

The PSD program is a preconstruction NSR program that applies to areas designated as either in attainment with the national ambient air quality standards ("NAAQS")[12] or unclassifiable and requires new major stationary sources[13] to limit their impact on ambient air quality by obtaining a PSD permit before construction begins. CAA §§ 160-169, 42 U.S.C. §§ 7470-7479; 40 C.F.R. § 52.21(a)(2).

A source's PTE relates to its inherent ability to emit air pollutants. *Shell 2007*, 13 E.A.D. at 365; *Peabody*, 12 E.A.D. at 30. Under the PSD program, a permitting authority must determine a source's PTE to identify which sources are "major sources" subject to regulation under the applicable PSD requirements, making PTE a technical determination that "is jurisdictional in nature." *Ala. Power Co. v. Costle*, 636 F.3d 323, 352 (D.C. Cir. 1979), *quoted in Peabody*, 12 E.A.D. at 30; *see also* CAA § 165(a), 42 U.S.C. § 7475(a) (requiring a PSD permit for any "major emitting facility"); *Shell Discoverer 2012*, 15 E.A.D. at 515 n.58. The regulations that implement the PSD program define PTE as:

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[12] The NAAQS are maximum ambient air concentrations for specific pollutants that EPA has determined are necessary to protect public health and welfare. *See* CAA §§ 108(a)(1)(A), 109, 42 U.S.C. §§ 7408(a)(1)(A), 7409; 40 C.F.R. § 50.4-.12.

[13] EPA regulations define a major stationary source as any of certain specifically listed stationary sources that emit or have a potential to emit 100 tons per year ("tpy") or more of any regulated NSR pollutant, *see* 40 C.F.R. § 52.21(b)(50), or any other stationary source that emits, or has the potential to emit, 250 tpy or more of a regulated NSR pollutant. 40 C.F.R. § 52.21(b)(1)(i)(a)-(b); *accord* CAA § 169(1), 42 U.S.C. § 7479(1) (defining a "major emitting facility" in the same way).

Alaska regulations, which incorporate large parts of the federal PSD regulations into title 18 of the Alaska Administrative Code, provide that a new PSD permit is required prior to actual construction of a new major stationary source. Alaska Admin. Code tit. 18, § 50.040 (adopting federal standards by reference); *id.* §§ 50.302(a)(1), 50.306. The Alaska regulations also define a major stationary source as any of certain specifically listed stationary sources that emit or have a potential to emit 100 tpy or more of any regulated NSR pollutant, or any other stationary source that emits, or has the potential to emit, 250 tpy or more of a regulated NSR pollutant. *Id.* § 50.990(52) (incorporating by reference definition of major stationary source from 40 C.F.R. § 51.166(b)(1)); *accord* Alaska Stat. § 46.14.990 (same).

> [T]he maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

40 C.F.R. § 52.21(b)(4).[14] In sum, PTE reflects a source's maximum emissions capacity considering the application of any emission control equipment, or other capacity-limiting restrictions, that effectively and enforceably limit emissions capacity. *Shell 2007*, 13 E.A.D. at 366; *Peabody*, 12 E.A.D. at 31 (citing Part 71 Rulemaking, 61 Fed.Reg. 34,202, 34,212 (July 1, 1996)).

Alaska regulations require that, under certain circumstances, a stationary source with a PTE of less than 250 tons per year ("tpy") obtain a minor source permit. Alaska Admin. Code tit. 18, § 50.502. Specifically in terms of the *Kulluk's* operations, Alaska regulations require a minor source permit prior to the construction of a new stationary source with the potential to emit more than 40 tpy of NO_x. *Id.* § 50.502(c)(1)(B). Thus, as the Board noted in *Shell 2007*, under the Alaska PSD program, a new stationary source that has a PTE between 40 and 250 tpy of NO_x must obtain a minor source permit before commencing construction, and a stationary source with a PTE greater than 250 tpy of NO_x must obtain a major source permit. 13 E.A.D. at 366.

A source that would otherwise exceed the applicable PSD major source threshold of 250 tpy of any regulated NSR pollutant may, as in this instance, seek to avoid regulation as a major source under the PSD program by requesting that the permitting authority impose enforceable permit restrictions on the source's PTE. *Shell* 2007, 13 E.A.D. at 366, *cited in* RTC at 20; *see also Peabody*, 12 E.A.D. at 26 & n.11, 31. A Title V permit may function as a vehicle for a permitting authority to establish enforceable permit limits that restrict the source's potential to emit air pollutants to a level below the PSD major source threshold, in this instance 250 tpy, allowing the source to qualify instead as a "synthetic minor" source.[15] *Peabody*, 12 E.A.D. at 31 & n.21.

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[14] The OCS regulations define the term "potential emissions" almost identically to the PTE definition in part 52, with the exception of first sentence, which instead states that "[p]otential emissions means the maximum emissions of a pollutant from an OCS source." 40 C.F.R. § 55.2.

[15] EPA guidance defines the term "synthetic minor" as "air pollution sources whose maximum capacity to emit air pollution under their physical and operational design is large enough to exceed the

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If a source accepts limitations that restrict its potential to emit air pollutants to a level below the PSD threshold, that source will be a synthetic minor source for purposes of the PSD program and will therefore not be subject to PSD permitting requirements "unless future facility modifications increase emission capacity enough to exceed the PSD major source threshold." *Id.* at 31-32. As the Board noted in *Peabody*, in order for a capacity restriction to be cognizable as a PTE limit, it must be practically enforceable, which Agency guidance has interpreted to mean that:

> [T]he permit's provisions must specify: (1) a technically accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, and annual limits such as rolling annual limits); and (3) the method to determine compliance including appropriate monitoring, recordkeeping, and reporting.

12 E.A.D. at 32 (quoting Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, to EPA Reg'l Air Div. Dirs., *Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act* 5-6 (Jan. 25, 1995) [hereinafter *Options for Limiting PTE*] (A.R. B-9)).

In this instance, the pre-permit PTE for units located on the *Kulluk*, and on the Associated Fleet when operating within 25 miles of the *Kulluk* while it is an OCS source,[16] exceeded applicable PSD thresholds for NO_x, CO, SO_2, and GHGs. Statement of Basis at 24-25 & tbl. 2-1.[17] To avoid exceeding the PSD major

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major source threshold but [is] limited by an enforceable emissions restriction that prevents this physical potential from being realized." Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, U.S. EPA, & Eric Schaeffer, Dir., Office of Regulatory Enforcement, U.S. EPA, *Potential to Emit Transition Policy for Part 71 Implementation in Indian Country* 2 n.2 (Mar. 7, 1999), *quoted in Shell Discoverer 2012*, 15 E.A.D. at 515-16 n.59, and *Peabody*, 12 E.A.D. at 31 n.21.

Alaska regulations refer to such a limitation as an owner requested limit ("ORL"), which can be used to "avoid one or more permit classifications * * * at a stationary source that will still be subject to at least one permit classification; a limitation approved under an ORL is an enforceable limitation for the purpose of determining * * * a stationary source's potential to emit." Alaska Admin. Code tit. 18, § 50.508(5).

[16] The permit states that the *Kulluk* will be an OCS source at any time it is attached to the seabed at a drill site by at least one anchor. Permit at 8; Statement of Basis at 17, 19-20 (A.R. H-4).

[17] The primary emission sources on the *Kulluk* and the Associated Fleet are internal combustion engines that consume diesel fuel. Statement of Basis at 9, 12-14. Incinerators, heaters, boilers, and seldom used sources on the *Kulluk* and the Associated Fleet also emit pollution but to a far lesser extent. *Id.*

source thresholds, Shell requested that the Region include in the permit practically enforceable restrictions that will reduce the *Kulluk's* PTE below PSD threshold levels for each of the four pollutants. *See* Letter from Susan Childs, Alaska Venture Support Integrator Manager, Shell Offshore Inc., to Doug Hardesty, EPA Region 10, attach. 2 (Apr. 29, 2011) (describing Shell's proposed restrictions and how they would affect emissions) (A.R. E-17). The final permit authorizing the *Kulluk* to operate within the Beaufort Sea contains source-wide emission limits, operational restrictions, and monitoring, recordkeeping and reporting requirements intended to ensure that the *Kulluk* can operate as a synthetic minor source. Permit Conditions D.1-D.4.

With this framework in mind, the Board now turns its attention to Petitioners' arguments presented in these appeals.

2. *The Region Did Not Clearly Err in Establishing Source-Wide Emission Limits to Restrict PTE for NO_x and CO*

The Permit restricts emissions from the *Kulluk* and the Associated Fleet to no more than 240 tpy of NO_x and no more than 200 tpy of CO.[18] Permit Conditions D.4.1, D.4.2. For both pollutants, the PTE limits are determined on a rolling 365-day basis by calculating emissions for each day and adding the emissions calculated for the previous 364 days. *Id.* For both NO_x and CO, daily emissions from each emission unit or group of emission units "shall be determined by multiplying the appropriate emission factor (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Permit Condition E.2) by the recorded daily operation rate (units/day) and dividing by 2000 lb/ton." *Id.* The Region further explained that "[c]ompliance with the emissions limits for NO_x and CO is determined by applying the relevant emission factor to the amount of fuel combusted by each emission unit (or hours of operation for incinerators)." RTC at 29. The Permit also includes conditions that require source-wide recordkeeping and monitoring to ensure that Shell complies with the source-wide limits. Permit at 56-61 (including operations and fuel monitoring in Permit Condition F.2 as well as selective catalytic reduction ("SCR") and oxida-

[18] ICAS asserts that the Region should include a 5-10% buffer zone between the PSD threshold emissions level of 250 tpy and the *Kulluk's* restricted PTE, and that the NO_x emission limit of 240 tpy does not provide this. ICAS Petition at 15 (citing a comment letter from Region 9 to the Nevada Division of Environmental Protection in which Region 9 "encourage[d] a 5-10% buffer between the permitted emission limits and the federal threshold" for a permit that established a CO synthetic minor limit of 249 tpy). However, the 240 tpy emission limit for NO_x contained in the current Permit represents a 4% buffer between the synthetic minor limit and the PSD threshold emission level of 250 tpy, which is ten times larger than the 0.4% buffer between a 249 tpy emission limit and the PSD threshold of 250 tpy contained in the Nevada permit. The Board agrees with the Region that Congress established specific thresholds to determine when a source would be considered major for purposes of PSD review. *See* RTC at 30. The buffer that ICAS requests is neither a legal requirement nor an established Agency policy, and thus the Region appropriately declined ICAS's request.

tion catalyst ("OxyCat") control device monitoring in Permit Conditions F.3 – F.4).

REDOIL Petitioners and ICAS make several challenges to the Region's decision to restrict the *Kulluk's* PTE for NO_x and CO using source-wide emission limits. Both petitioners assert that the Region's decision to limit CO and NO_x emissions using source-wide limits in effect applies blanket emission limits, which Agency guidance expressly prohibits because they are practically unenforceable, and that the limited exception in the Agency guidance that allows for source-wide limits is inapplicable to the *Kulluk's* operations. REDOIL Petition at 10-11; ICAS Petition at 11. Both petitioners also object to the Region's use of generic emission factors[19] to calculate source-wide emission limits. In particular, both petitioners assert that (1) the Region should have developed source-specific emission factors for all units of the OCS source; (2) the AP-42 emission factors applied to the emergency generator, the OSRVs, and heaters and boilers lead to inaccurate and underestimated emissions for those sources; and (3) the Region did not require Shell to conduct enough stack tests to accurately calculate source-specific emission factors. ICAS Petition at 15-20; REDOIL Petition at 11-14.

The Region responds that Agency guidance documents generally "illustrate that the Clean Air Act and the implementing regulations allow for a flexible, case-by-case evaluation of appropriate methods for ensuring practical enforceability of PTE limits." Region Response at 14-15 (quoting *In re Orange Recycling & Ethanol Prod. Facility*, Pet. No. II-2001-05, at 5 (Adm'r Apr. 8, 2002) (A.R. B-17)). Specifically, the Region asserts that source-wide emission limits for NO_x and CO are indeed practically enforceable and are most appropriate given the uncertainty of a number of factors that otherwise preclude the Region from establishing PTE restrictions based on operational limits. *Id.* at 18; RTC at 26-27, 29-30. In addition, the Region asserts that the emission factors used to calculate NO_x and CO emissions provide reliable emission calculations. Region Response at 19-23. In particular, the Region asserts that it made an appropriate technical determination to apply AP-42 emission factors or emission factors derived from *Discoverer*[20] data rather than source-specific emission factors for certain emission units. *Id.* The Region adds that the permit conditions that apply to source-specific

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[19] *See infra* Part VI.A.2.b.

[20] The Region issued Shell two OCS PSD permits to conduct exploratory drilling activities in the Chukchi and Beaufort Seas utilizing the drillship *Discoverer* that were twice appealed to the Board, first in 2010, and then again in 2011 subsequent to a Board remand of the permits to the Region. *See Shell Discoverer 2012*, 15 E.A.D. at 474-75 (describing history of *Discoverer* permit proceedings). In preparing the permit applications for the *Discoverer*'s operations, Shell conducted source-specific emission tests for various emission units on the *Discoverer* and an associated fleet of support ships, including icebreakers, supply ships, and oil spill response vessels. *See id.*, 15 E.A.D. at 479-80 (describing associated fleet).

emission factors require source tests that are inadequate in frequency and unrepresentative of the variation in Shell's proposed operations to allow the Region to derive accurate emission factors. *Id.*

a. *Blanket Emission Limits and Practical Enforceability*

ICAS and REDOIL Petitioners correctly assert that the use of blanket emission limits alone, essentially statements that actual emissions of a pollutant will not exceed a particular quantity, is generally prohibited to restrict PTE because such limits are not enforceable as a practical matter. *See United States v. La.-Pac. Corp.*, 682 F. Supp. 1122, 1133 (D. Colo. 1987) ("[C]ompliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce."), *quoted in* REDOIL Petition at 11; *see also* Office of Air Quality Planning & Standards, U.S. EPA, *New Source Review Workshop Manual* at C.4 (draft Oct. 1990) [hereinafter *NSR Manual*] ("Blanket emissions limits alone (e.g., tons/[year], lb/[hour]) are virtually impossible to verify or enforce, and are therefore not enforceable as a practical matter."), *quoted in* ICAS Petition at 13; Memorandum from Terrell Hunt, Assoc. Enforcement Counsel, U.S. EPA, & John Seitz, Dir., Stationary Source Compliance Div., U.S. EPA, *Guidance on Limiting Potential to Emit in New Source Permitting* 7 (June 13, 1989) (A.R. B-4) [hereinafter *1989 Guidance on Limiting PTE*].[21] However, the Petitioners' characterization of the source-wide emission limits for NO_x and CO contained in the Permit as blanket emission limits must fail. ICAS and REDOIL Petitioners do not acknowledge the Region's explanation in the Response to Comments for why it chose to apply source-wide emission limits in the Permit, nor do they establish that the Region's fundamentally technical determinations contravene Agency guidance.

The Region made clear in the Response to Comments that its decision to employ source-wide emission limits calculated as rolling 365-day limits to restrict NO_x and CO was based in large part on the substantial and unpredictable variations in emissions based on the atypical nature of Shell's operations. RTC at 26-27; Region Response at 18. Variability in Shell's exploratory operations, multiple engines and generators located on both the *Kulluk* and numerous vessels in the Associated Fleet, the state of the weather and the sea, ice thickness, and the changing nature of the activities that Shell may need to conduct all influenced the Region's conclusion that the need for operational flexibility made it impractical to establish unit-specific limits or operating parameters for some pollutants, such as NO_x and CO, that might typically be applied to limit a stationary source's PTE. RTC at 27; *see* Statement of Basis at 38. The Region continued that, in its judgment, the choice to restrict the *Kulluk*'s PTE for NO_x and CO using source-wide emissions limits "accounts for variability in operations and emissions, yet still

[21] Appendix C of the NSR Manual is based largely on the 1989 Guidance on Limiting PTE. *NSR Manual* at C.1 n.1.

provides assurance that limits on potential to emit can be enforced as a practical matter." RTC at 28.

Although the restrictions to limit the PTE of emission units located on the *Kulluk* and the Associated Fleet utilize a rolling 365-day limit, a longer time period than generally recommended in Agency guidance,[22] as the Region points out, the continuous monitoring and recording of fuel usage and the application of source-test derived or specified emission factors have the practical effect of constraining Shell's fuel use, thus ensuring compliance with the PTE limits. Region Response at 15, 17 (citing *In re Pope & Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007) (A.R. B-24), in which rolling emission limits in addition to prescribed emission factors and appropriate monitoring and recordkeeping were sufficient to restrict PTE).[23] In essence, although the Region could not incorporate more traditional operational limits into the Permit based on the atypical nature of the permitted activities, the daily calculation of NO_x and CO emissions in conjunction with continuous monitoring and recording of fuel usage ensure that the NO_x and CO PTE restrictions can be practically enforced.

Despite the Region's explanation in the Response to Comments regarding the need to consider the facts unique to this Permit, neither ICAS nor REDOIL Petitioners explain why, especially in light of the *Kulluk*'s atypical operations as

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[22] The 1989 Guidance on Limiting PTE recommends that the time limit over which production or operational limits extend should be "as short term as possible" in order for such limitations to be enforceable as a practical matter, and generally not exceeding one month, but the Guidance also recognizes that in rare circumstances a limit spanning a longer time may be appropriate. *1989 Guidance on Limiting PTE* at 9. The Guidance specifies that a limit spanning a longer time is appropriate if it is rolling and that it should not exceed an annual limit rolled on a monthly basis. *Id.* The Guidance also notes that:

> [P]ermits where longer rolling limits are used to restrict production should be issued only to sources with substantial and unpredictable annual variation in production[] * * * Rolling limits could be used as well for sources which shut down or curtail operation during part of a year on a regular seasonal cycle, but the permitting authority should first explore the possibility of imposing a month-by-month limit.

Id. at 9-10. In this instance, although the Guidance was written prior to Congress authorizing EPA to regulate air emissions from sources located on certain areas of the OCS, *see* Region Response at 17, including the Arctic, the circumstances the Guidance anticipates that would make a longer time limit appropriate apply in this instance to the *Kulluk* permit, where the operations are seasonal and thus variation in production would be substantial. *See 1989 Guidance on Limiting PTE* at 9-10.

[23] Although the Board agrees with Petitioners that the Region did not cite this decision until it submitted its response to the petitions for review, and thus accepts their reply briefs with respect to this point, *see supra* Part V, the Board nonetheless disagrees that this publicly available decision of the Administrator is inapposite to the current appeal. The *Pope & Talbot* decision underscores the Agency's ability to exercise its discretion and its technical expertise in order to craft practically enforceable synthetic minor limits.

compared to other stationary sources, the Permit's PTE limits are not practically enforceable. *See* Region Response at 17. Rather, Petitioners hew closely to the language in the 1989 Guidance on Limiting PTE prohibiting blanket emissions, asserting instead that because the Permit does not contain production or operational limits to restrict PTE, the NO_x and CO emission limits constitute blanket emission limits that contravene Agency guidance. ICAS Petition at 11-14; REDOIL Petition at 9-11. The 1989 Guidance on Limiting PTE sets forth the types of limitations that will restrict a source's PTE and states in relevant part:

> To appropriately limit potential to emit * * * permits * * * must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment. Restrictions on production or operation that will limit potential to emit include limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level.

1989 Guidance on Limiting PTE at 5-6.[24] In addition, neither ICAS nor REDOIL Petitioners address the operational limits included in the Permit and discussed in

[24] The Guidance also acknowledges that the "particular circumstances of some individual sources make it difficult to state operating parameters for control equipment limits in a manner that is easily enforceable as a practical matter" and lists two exceptions. *1989 Guidance on Limiting PTE* at 7. Although the Guidance preceded EPA's authority to regulate air emissions on parts of the OCS, *see* Region Response at 17, and thus could not have anticipated the circumstances of the permit at issue in these appeals, the Region nonetheless asserts that the circumstances surrounding the current permit are sufficiently analogous to the second exception for volatile organic compound ("VOC") surface coating operations, which contemplates no add-on controls but allows for the restriction of PTE by limiting the VOC contents and quantities of coatings used. *Id.* at 17-19 (referring to *1989 Guidance on Limiting PTE* at 8).

The VOC exception focuses on circumstances where operating and production parameters could not be readily set due to the wide variety of coatings and products and due to the unpredictable nature of the operations. *1989 Guidance on Limiting PTE* at 8. The Region asserted that the rationale informing the VOC surface coating operation exception is sufficiently similar to the present circumstances and analogized that an effective way to restrict NO_x and CO was through source-wide emissions limits supported by test-derived or specified emission factors, similar to the VOC content of coatings, continuous monitoring and recording of operational parameters, and tracking the quantity of VOC coating used. RTC at 30; Region Response at 18. REDOIL Petitioners and ICAS assert that the VOC exception should be construed quite narrowly and that the VOC surface coating operation exception within the 1989 Guidance on Limiting PTE could not apply to the *Kulluk* and the Associated Fleet. *See* ICAS Petition at 20; REDOIL Petition at 13-14. Petitioners do not state more than a differ-

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the Response to Comments. *See* RTC at 29 (discussing hourly operational limits on mudline cellar drilling and overall drilling activity and the installation of SCR and OcyCat controls to limit NO_x emissions).

Finally, ICAS challenges the Region's inclusion of requirements in the Permit to calculate daily emissions for NO_x and CO on a weekly basis, arguing that it is a "critical flaw to enforceability of the permit because it means that Shell will only know where it stands vis-a-vie [sic] its NO_x and CO permit limits once a week." ICAS Petition at 14 (citing Permit Conditions D.1.1, D.1.2). The Board finds ICAS's argument here unavailing in light of the Region's thorough explanation in the Response to Comments. *See* RTC at 44; Region Response at 19, 23. The Region explained that although the calculations of emission limits will be conducted weekly, data is continuously collected and recorded and will eventually be generated in the same terms as the emission limits. *See* RTC at 44; Region Response at 23. Moreover, the Region points out that Shell is required to process data from numerous emission units across multiple vessels for 168 individual hours (24 hours x 7 days). RTC at 44. The permit requirements to continuously monitor and record data necessary to conduct daily emissions calculations ensures, as ICAS raises, the ability to assess and verify compliance immediately should an inspector, the Region, or Shell require it. RTC at 44; Region Response at 23. In this instance, ICAS does not acknowledge the Region's response or address why that response is inadequate and thus warrants review. As this Board has previously stated, "[p]etitions for review may not simply repeat objections made during the comment period; instead they must demonstrate why the permitting authority's response to those objections warrants review." *Peabody*, 12 E.A.D. at 46 n.58; *accord In re Knauf Fiber Glass GmbH, ("Knauf II")*, 9 E.A.D. 1, 5 (EAB 2000); *see also* standard of review discussion *supra* Part III.

In addition, as the Board noted above in Part VI.A.1.b, the determination of a source's PTE is inherently an exercise that requires technical expertise. Neither REDOIL Petitioners nor ICAS have met the particularly heavy burden of demonstrating that review of the Region's decisions to employ source-wide emission limits to restrict the *Kulluk*'s PTE is warranted. *See, e.g.*, *Peabody*, 12 E.A.D. at 33; *NE Hub*, 7 E.A.D. at 567 ("When issues raised on appeal challenge a Region's technical judgments, clear error or a reviewable exercise of discretion is not

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ence of opinion or alternative view on a technical issue. *See NE Hub*, 7 E.A.D. at 567. Without more, petitioners cannot sustain the burden of demonstrating that review of the Region's exercise of its technical judgment is warranted. *See Peabody*, 12 E.A.D. at 33; *In re Teck Cominco Alaska Inc.*, 11 E.A.D. 457, 473 (EAB 2004).

established simply because petitioners document a difference in opinion or an alternative theory regarding a technical matter.").

b. *Emission Factors*

An emission factor is a representative value used to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. U.S. EPA, AP-42, *Compilation of Air Pollutant Emission Factors*, Volume 1: Stationary Point and Area Sources 1 (Jan. 1995) (5th ed.) ("AP-42 Guidance"). Emission factors essentially represent an average of a range of emission rates of the subject sources. *Id.* at 2. As stated above in Part VI.A.2, in this instance compliance with the PTE restrictions for NO_x and CO are determined by calculating daily emissions of each pollutant, which requires multiplying the appropriate emission factor by the recorded daily operation rate and dividing by 2000 lb/ton. Permit Conditions D.4.1, D.4.2.

REDOIL Petitioners and ICAS challenge several aspects of the Region's use of emission factors to assist in calculating compliance with the restricted PTE for both NO_x and CO. Both petitioners challenge the Region's decision to forgo source-specific emission testing to establish emission factors for all emission units on the *Kulluk* and the Associated Fleet and further assert that this will cause the Region and Shell to underestimate the quantities of NO_x and CO emitted by the OCS source. ICAS Petition at 15-19; REDOIL Petition at 11-13. REDOIL Petitioners and ICAS assert that the use of AP-42 emission factors and emission factors derived from *Discoverer* test results for those emission units that will not undergo source-specific testing constitutes clear error because these more generic emission factors will likely lead to an underestimation of emissions from the units to which they are applied. ICAS Petition at 16-18; REDOIL Petition at 11-12 (referring to AP-42 emission factors as "notoriously inaccurate default factors"). Finally, ICAS challenges the frequency and number of stack tests used to develop source-specific emission factors for emission units and further asserts that by Shell's own admission there is a 15% variability in stack test data that results in a less conservative emission factor than the Region claims. ICAS Petition at 16-17.

The Board notes at the outset that the development of emission factors for use in calculating daily emissions to determine compliance with PTE restrictions requires the sort of quintessential technical expertise the permit issuer possesses, here the Region, to which the Board will defer if "the record demonstrates that the Region duly considered the issues raised in the comments and if the approach ultimately selected by the Region is rational in light all of the information in the record." *NE Hub*, 7 E.A.D. at 567-68, *quoted in Peabody*, 12 E.A.D. at 34; *see also Avenal Energy Ctr.*, 15 E.A.D. at 387. As explained more fully below, for each challenge regarding the derivation and use of emission factors set forth in the Permit, REDOIL Petitioners and ICAS have failed to sustain the particularly heavy burden petitioners must overcome to demonstrate that review of a funda-

mentally technical decision is warranted. *See, e.g.*, *Peabody*, 12 E.A.D. at 33; *NE Hub*, 7 E.A.D. at 567-68.

The Region fully explained in the Response to Comments its rationale for supplementing source-specific emission factors derived for most of the emission units or groups of emission units located on the *Kulluk* or the Associated Fleet with either AP-42 emission factors[25] or emission factors derived from *Discoverer* source test data for a minority of units. RTC at 32-33; *see also* Region Response at 20-21. In support of its decision to utilize a mix of source-specific testing for emission factors in addition to using AP-42 and *Discoverer* test data emission factors, the Region stated that it "believes the permit strikes an appropriate balance between the need for accurate emission factors to reliably calculate emis-

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[25] ICAS's attempt to analogize the situation the Board confronted in *Peabody* to the current permit appeal falls short. Although *Peabody* discusses the use of AP-42 emission factors in a PTE calculation where the source was seeking synthetic minor status, ICAS fails to acknowledge critical factual elements that distinguish *Peabody* from the current appeal.

In *Peabody*, the permittee was a large coal-processing plant built prior to the effective date of the PSD program that requested a PTE limit for particulate matter with a diameter of 10 microns or less ("PM_{10}") in the permittee's Title V permit so that the facility could remain a synthetic minor source for PM_{10} emissions should it conduct any major modifications in the future. *See Peabody*, 12 E.A.D. at 24-34. Of critical importance, the facility's emissions were primarily fugitive, and thus, emission testing to directly measure PM_{10} emissions was not feasible. *Id.* at 34. The permittee consequently submitted a request for a PTE limit based on a quantitative estimate of the facility's capacity to emit PM_{10}, which in turn relied on estimates of uncontrolled emissions from each unit based on the application of AP-42 emission factors that were then used to estimate net emissions by applying assumed emission control efficiencies for the emission control equipment in use. *Id.* at 34-35 & n.31. Peabody's proposed compliance regimen did not include direct measurement of PM_{10} emissions. As the Board stated, "[b]ecause Peabody's approach would rely entirely on the application of emission factors and assumed control efficiencies, for purposes of both estimating maximum emissions capacity and monitoring ongoing compliance, the accuracy and appropriateness of the emission factors and the control efficiency assumptions were the focal point of Region IX's analysis of Peabody's proposal." *Id.* at 35-36.

Contrary to the facility in *Peabody*, in this instance the use of AP-42 factors to calculate compliance with restricted PTE for NO_x and CO was essentially a last resort method for calculating compliance, whereas the emission units that accounted for at least 90% of the NO_x and CO emissions were subject to source-specific emission testing. *See id.* at 32-33. The Region made clear that in the relatively small number of instances where an AP-42 emission factor was employed to calculate compliance with PTE, the Region chose conservatively higher emission factors. In *Peabody*, the Region made a technical determination and "concluded that Peabody had not sufficiently demonstrated that it met the central criteria for establishing [PTE] – technical accuracy and a reliable method of determining compliance." *Id.* at 39. In this instance, the Region made a technical determination that Shell has sufficiently demonstrated that the *Kulluk* could demonstrate compliance with the NO_x and CO PTE limits included in the permit in a manner that is technically accurate, and that the compliance of the emission units can be verified based on source-specific testing. The Region's exercise of its technical expertise to conclude that in limited circumstances AP-42 emission factors were appropriate to demonstrate compliance with the restricted PTE is rational in light of all of the information in the record. Thus, ICAS's contention that *Peabody* governs the appeal currently before the Board is unpersuasive.

sions for comparison to permit limits and the complexity of testing numerous emission units in a short period of time." RTC at 33. The Region also noted that, in response to comments received, it decided to require source-specific emission testing for incinerators and that, after that change, the permit will require source testing of emission units that constitute 91% of NO_x and 97% of CO emissions. *Id.* at 32. Of the remaining units that were not required to undergo source testing to develop an emission factor, the Region set forth in detail why it had chosen emission factors derived from *Discoverer* source test data or the AP-42 emission factors, in many instances raising the value of an emission factor to provide a more conservative estimate of emissions.[26] *Id.* at 32-33; *see also* Region Response at 20; Statement of Basis at 38 (noting that testing for source-specific emission factors (Permit Condition E.2) uses a protocol that results in conservatively high unit-specific emission factors that in turn help to ensure compliance with PTE).

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[*] The Region explained in the Statement of Basis that an important element of Permit Condition E.2, which catalogues the procedures for conducting tests to determine equipment-specific emission factors, "is the selection of worst[-]case emission factors for each emission unit or group of emission units tested." Statement of Basis at 43; *see also* Permit at 52-56. The record demonstrates that the Region thoughtfully and judiciously employed emission factors derived from *Discoverer* test data and AP-42 emission factors, and consistently chose higher, more conservative emission factors when there was any question or discrepancy. For example, for those NO_x emission units for which the Permit does not require source testing and that rely on emission factors based on *Discoverer* test data, the Region adjusted the emission factor to reflect the conservative 90th percentile (or higher) values from the test data. RTC at 32. The Region further explained that for heaters and boilers – the only remaining group of NO_x emission units that rely on AP-42 for emission factors – the Region expects the AP-42 emission factor to be a conservative representation of actual emissions. *Id.* (noting that while AP-42 predicted an NO_x emission factor for heaters and boilers of 0.02 lb/gal, Shell testing of *Discoverer* boilers shows a range of values between 0.011 lb/gal and 0.015 lb/gal); *see also* RTC at 46 (noting that the boiler and heater NO_x emission factor used in the *Kulluk* permit is "lower than the *Discoverer* BACT limit for similar equipment, but is higher than available test data for a similar source"). ICAS challenged the Region's use of an NO_x emission factor in the Permit that is lower than the one in the *Discoverer* permits, *see* ICAS Petition at 18-19, but ICAS failed in its petition to even acknowledge the Region's response to its comment regarding the NO_x emission factor for heaters and boilers, let alone "substantively confront the permit issuer's subsequent explanation." *Peabody*, 12 E.A.D. at 33 (citing *In re Zion Energy, LLC*, 9 E.A.D. 701, 705 (EAB 2011)).

With respect to emission units that will not undergo source testing to verify CO emission factors, the Region similarly explained that it believed emission factors are reasonable for use in the permit given that AP-42 emission factors will represent only 3% of the total CO emissions. RTC at 32. In addition, the Region notes that the CO emissions from tests conducted for two boilers on the *Discoverer* were nearly identical to the AP-42 emission factor. *Id.* at 33 (explaining that the Region chose the highest, most conservative emission factor of the three). Finally, the Region notes that one of the potential oil spill and response boats has an actual CO emission factor for its propulsion engine that is based on the manufacturer's data and is one tenth of what the AP-42 factor predicts. *Id.*; *see also* Permit Table D.2.2 (demonstrating that the Region chose to include the much higher AP-42 emission factor for the OSRV propulsion engine).

While REDOIL Petitioners[27] and ICAS may disagree with the Region's approach, Petitioners do not demonstrate that the Region's choices in deriving emission factors for emission units will result in an underestimation of pollutants emitted by the *Kulluk* and the Associated Fleet. The Region has demonstrated that it balanced its primary task of accurately calculating NO_x and CO emission factors to ensure that the *Kulluk* and the Associated Fleet will not exceed the restricted PTE with the practical need to calculate emission factors for numerous and varied emission units aboard both the *Kulluk* and the Associated Fleet. The Board has frequently stated that it will not grant review where, as here, the record demonstrates a bona fide difference of opinion or alternative theory regarding a technical matter but the approach the Region ultimately selected is rational in light of all the information in the record. *Peabody*, 12 E.A.D. at 34 (quoting *NE Hub*, 7 E.A.D. at 567).

Finally, ICAS asserts that the *Discoverer* source test data is not sufficient to accurately generate worst-case scenario emission factors for *Kulluk* emission units because similar sources tested on the *Discoverer* were subject to BACT, and further, that in using stack test results from the *Discoverer* to develop emission factors for the *Kulluk* permit, the Region never accounted for "15% variability in Shell's stack tests," resulting in inadequate emission factors. ICAS Petition at 17-19. The Region points out, however, that the *Discoverer* stack tests on which the Region relied to calculate the 90th percentile value and assess the appropriateness of AP-42 factors were not subject to post-combustion controls limiting NO_x or CO and thus provided an appropriate comparison for purposes of deriving emission factors for the *Kulluk*. Region Response at 21 (citing *Discoverer* stack test results and communications discussing them in the administrative record, specifically A.R. B-55, B-63, C-406, and C-489). With respect to the 15% variability in stack test results[28] that ICAS alleges, the Region points to the technical litera-

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[27] REDOIL Petitioners contend that the Region's recognition that Shell's approach involves "inherent uncertainty" regarding what equipment will be aboard the *Kulluk* and the Associated Fleet, which in turn requires "thorough source testing," coupled with the Region's refusal to require source testing for all equipment, is "internally inconsistent and thus arbitrary and unlawful." REDOIL Petition at 12. However, the Region responded that it used its technical expertise to determine that in this instance, a mix of both source-specific testing to derive emission factors, in addition to using AP-42 factors and emission factors derived from *Discoverer* test data where appropriate, was reasonable and not inconsistent. Region Response at 20-21. The Board agrees with the Region that the decision to use source-specific testing to derive emission factors, in conjunction with the emission factors developed from *Discoverer* data and from AP-42, is inherently technical. In order to effectively exercise its expertise, the Region should not, as REDOIL Petitioners suggest, be cabined by a rigid interpretation of how emission factors should be determined. REDOIL Petitioners have failed to meet the particularly high threshold for demonstrating that Board review of the Region's fundamentally technical decision is warranted. *Peabody*, 12 E.A.D. at 33-34.

[28] ICAS also asserts that stack tests are "conducted once a year for one or two years depending on the source," at three different loads, and even when the worst-case emissions are used, the stack tests fail to account for Shell's varying emissions. ICAS Petition at 16. The Region explained in re-

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ture Shell referenced in Shell's comments, which addresses "uncertainty in determining front-half PM [particulate matter] emission rates" and does not directly address procedures for deriving NO_X and CO emission factors. *Id.* at 22-23; *see also* Permit Conditions E.1.2, E.1.7, E.1.14 (requiring Shell to submit a testing plan and follow EPA-approved test methods, and establishing Region's authority to require additional stack tests if necessary). As the Region correctly points out, ICAS has not demonstrated that the worst-case stack test results, which embody the Region's fundamentally technical determinations, will be biased low and underreport emissions. Region Response at 22-23; *see, e.g., Teck Cominco*, 11 E.A.D. at 473 (discussing heavy burden assigned to petitioners seeking review of issues that are essentially technical in nature).

3. *ICAS Has Failed to Demonstrate That the Region Clearly Erred in Restricting the Kulluk and the Associated Fleet's Potential to Emit GHGs*

ICAS also challenges the Permit's GHG emission limit, which restricts Shell's annual GHG emissions to 80,000 tpy of carbon dioxide equivalent ("CO_2e").[29] *See* ICAS Petition at 21-26; *see also* Permit Condition D.4.4; RTC at 28. EPA promulgated regulations, commonly referred to as the "Tailoring Rule," that set forth applicability criteria to determine which GHG emission sources become subject to the PSD and Title V programs under the Act.[30] Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31,516 (June 3, 2010). In this instance, despite the fact that

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sponse that Permit Condition E.2.1 requires each source-tested unit to be tested prior to each of the first two drilling seasons and subsequently every two or five years depending on any variability observed in the results of the two initial tests. Region Response at 22; *see also* Statement of Basis at 44 (frequency of source-specific emission factor testing after first two years based on variability of results). Further, each test requires three 1-hour runs at each of the three tested operating loads, which results in nine results total for each aggregate source test. Region Response at 22. Without more than its bare assertion that the current source tests do not adequately address Shell's varying emissions when the data is used to derive emission factors, ICAS cannot demonstrate that the permit conditions that dictate the frequency and parameters of source tests warrant Board review.

[29] GHGs are defined as "the aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydroflourocarbons, perflourocarbons, and sulfur hexaflouride." 40 C.F.R. § 52.21(b)(49)(i). CO_2e represents the amount of GHGs emitted and is computed by "[m]ultiplying the mass amount of emissions (tpy), for each of the six greenhouse gases in the pollutant GHGs, by the gas's associated global warming potential published at Table A-1 subpart A of [40 C.F.R.] part 98 of this chapter – Global Warming Potentials." *Id.* § 52.21(b)(49)(ii)(a).

[30] The regulations provide that any source that is considered a new major source for a regulated NSR pollutant other than GHGs will also be subject to regulation for GHGs if it emits or has the potential to emit 75,000 tpy or more of CO_2e. 40 C.F.R. § 52.21(b)(49)(iv). New stationary sources that emit or have the potential to emit more than 100,000 tpy or more of CO_2e are also subject to regulation for GHGs. *Id.* § 52.21(b)(49)(v).

the OCS source's pre-permitted potential to emit exceeded 100,000 tpy of CO_2e, *see* Statement of Basis at 24, the Permit restricts the potential to emit GHGs to 80,000 tpy of CO_2e and thus prevents Shell from being subject to regulation for GHGs under the PSD program. *See* RTC at 24.

As noted previously, the vast majority of emissions, including GHG emissions, from both the *Kulluk* and the Associated Fleet result from internal combustion sources such as engines and boilers, along with incinerators. Statement of Basis at 12, 14, 39; RTC at 35. The Permit contains operational restrictions on the amount of time a source can operate, the amount of fuel and waste combusted, and the type of fuel combusted to ensure compliance with the Permit's GHG emission limit.[31] *See* Statement of Basis at 37-39; RTC at 33-36; *id.* at 34-35 (noting that in response to comments the Region adjusted the methane emission factor upward by a factor of four to represent a reasonable upper-bound estimate of the number of wells that could be drilled in a single season, which in turn required a small reduction to the total amount of fuel that may be combusted in engines and boilers during any rolling 12-month period). In addition to the combustion sources and the incinerators, a relatively small amount of GHG emissions in the form of methane results from the drilling mud system ("DMS").[32] *See* RTC at 35. GHG emissions from the DMS, calculated at 85 tpy of CO_2e, represent only 0.11% of the total GHG emissions allowed under the permit, 80,000 tpy of CO_2e. *Id.* The Region calculated an unrestricted PTE for methane emissions of 1,596 lbs/month,

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[31] The Permit imposes annual limits of 120 days of operation as an OCS source during a drilling season, which spans from July 1 through November 30, and 1,632 hours of total drilling activity in a drilling season, of which only 480 hours may be used to conduct mudline cellar drilling activity, which is expected to generate the most air pollution. *See* Permit Conditions D.3.1-D.3.5. The Permit also limits the total aggregate combustion of fuel over a 12-month rolling period, the type of fuel combusted, and the total aggregate daily waste-combusting capacity of incinerators. *See* Permit Conditions D.4.6-.7, .9; *see also* RTC at 34-35. In addition, the Permit includes various monitoring and recordkeeping requirements to document when emissions should be counted toward emission limits, testing requirements for the derivation of source-specific emission factors, tracking and documentation requirements for the fuel and waste combusted, and maintenance requirements to ensure that emission units are properly operated and maintained. *See* Permit Conditions D.1-.4, D.8, F.2.1-.7; *see also* RTC at 36-37, 43.

[32] The Region explained methane emissions from the DMS as follows:

> When wells are drilled through porous, hydrocarbon[-]bearing rock, drilling fluids (mud) circulated through the drill bit can carry gaseous hydrocarbons from the well back to [the] Kulluk. These gases are typically released as fugitive emissions when the mud is processed for reuse on the Kulluk or stored and shipped away; however, some of the emissions pass through a vent.

Statement of Basis at 38.

the equivalent of 17 tons per month ("tpm") of CO_2e.[33] *Id.* The Permit accounts in Condition 4.4.2 for methane emissions encompassing the source's full unrestricted PTE of 17 tpm of CO_2e, which are added to GHG emissions from combustion sources when calculating total GHG emissions. *See* Statement of Basis at 39; *Shell Discoverer 2012*, 15 E.A.D. at 516.

ICAS raises several challenges to the Permit's GHG emission limit. Similar to its challenges of the Permit's synthetic minor limits for NO_x, CO, and SO_2, ICAS contends that the Permit contains a blanket emission limit for GHGs that is practically unenforceable and further asserts that the requirement that GHG emissions only be calculated monthly to determine compliance with the established rolling 12-month limit is inadequate to verify compliance "in a given moment." ICAS Petition at 21-22 (citing *NSR Manual* at C.3, C.5, H.5); *see* Permit Conditions D.1.3-.4. In addition, ICAS asserts that the Region clearly erred by accepting an owner-requested limit for methane attributable to mud off-gassing from the DMS that is not only unenforceable, but also less than the "maximum expected capacity" or "upper-bound projection" ConocoPhillips submitted in another Arctic OCS permit proceeding. *Id.* at 22-26.

Based on the foregoing information, ICAS's general assertion that the GHG emission limit is practically unenforceable must fail. The Region has demonstrated in both the Permit and the documentation in the record supporting the Permit that it crafted a synthetic minor limit that would not only prevent Shell from being subject to regulation under the PSD program for GHG emissions, but also

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[33] In calculating the unrestricted PTE for DMS methane emissions, the Region included several conservative assumptions to ensure a wide margin of safety for total methane emissions over Shell's five-month period of operation. *See* RTC at 34; *Options for Limiting PTE* at 8 (noting that for sources with inherent physical limitations that restrict the potential emissions of an emissions unit, if such limitations can be documented and confirmed, the permitting authority may factor them into estimates of a stationary source's PTE). For example, the Region assumed that the total unrestricted PTE for DMS methane emissions for the entire five months of drilling operations would be emitted during each of the five months. RTC at 35.

In addition, despite much of the methane emissions being fugitive emissions that are not counted towards PSD applicability for exploratory drill rigs, *see* 40 C.F.R. § 52.21(b)(1)(iii), Shell agreed to consider all of the methane emissions from the DMS as point source emissions that would count towards Shell's potential to emit GHGs. *See* RTC at 35; *see also* Statement of Basis at 38-39. In its petition, ICAS disputes the Region's claim that counting such fugitive emissions towards PTE represents a conservative approach that lends a "measure of safety" and asserts that the part 71 regulations governing Title V permits require such fugitive emissions to be included. ICAS Petition at 24 (citing 40 C.F.R. § 71.3(d), which states that fugitive emissions from a part 71 source "shall be included in the permit application and the part 71 permit in the same manner as stack emissions"). However, as the Region correctly points out in its response, the definitions of major source in both 40 C.F.R. § 52.21(b)(1)(iii) and 40 C.F.R. § 71.2 make clear that fugitive emissions are not considered when determining whether a source is a major source. Region's Response at 26 n.21 (citing the Tailoring Rule and noting that it retained this approach of determining whether a source becomes subject to regulation for GHGs).

would be practically enforceable as a result of the numerous operational restrictions in combination with monitoring, recordkeeping, and reporting requirements contained in the Permit. While ICAS acknowledges the operational limits contained in the Permit, ICAS simultaneously disputes their efficacy without explaining why such operational limits will not have their intended effect of restricting Shell's potential to emit GHGs.[34] *See* ICAS Petition at 21-22. Without stating more than mere disagreement, ICAS cannot meet the especially high threshold of demonstrating that the Region's inherently technical decisions regarding the GHG emission limit warrant Board review. *See, e.g.*, *NE Hub Partners*, 7 E.A.D. at 567; *Shell Discoverer 2012*, 15 E.A.D. at 501.

ICAS's more specific contention that the Region clearly erred by accepting an owner requested restriction for methane from mud off-gassing that is practically unenforceable is unavailing. *See* ICAS Petition at 22-26. ICAS raised this same argument in previous appeals of two OCS PSD permits the Region issued to Shell for operations in the Chukchi Sea of the Arctic OCS. *See Shell Discoverer 2012*, 15 E.A.D. at 514-19; *see also supra* note 20. In brief, the monthly calculation of methane to be released in mud off-gassing in both *Shell Discoverer 2012* and the current appeal are not only the same amount, 17 tpm, they also both reflect the unrestricted PTE for methane emissions from DMS operations. *See* RTC at 34-35; *Shell Discoverer 2012*, 15 E.A.D. at 517-18. The Board rejects ICAS's assertion in this instance, relying on the same reasons it gave in *Shell Discoverer 2012*:

> [T]he Permit[] in this case do[es] not include owner requested limits on PTE for methane emissions. Rather, * * * methane emissions were assumed to occur at the source['s] full PTE for the five-month drilling season

[34] Similarly, ICAS's contention that the Region clearly erred by not requiring more frequent calculations of GHG emissions than the monthly calculations the Permit requires, *see* Conditions D.1.3-.4, falls short. The Region explained that its decision to calculate emissions on a monthly basis stemmed from "good confidence in the overall [GHG emission] compliance technique and therefore 'yearly' emissions are required to be summed only monthly." Statement of Basis at 38. Although GHG emission calculations will be calculated once a month based on the Region's stated confidence in its compliance method, the data required to make such calculations is collected continuously through fuel usage monitoring. RTC at 43-44 ("Shell is generally required to continuously measure and record, on an hourly basis, the fuel consumed by each emission unit or group of emission units."); *see also* Region Response at 24 (citing *1989 Guidance on Limiting PTE* and noting that "in light of annual variations in operations and the fact that the source operates during only part of the year" the Region determined that a 12-month rolling limit for CO_2e was appropriate as stated). Again, ICAS has failed to meet its burden of demonstrating that review is warranted, where, as here, it has not addressed the Region's stated rationale for requiring only monthly calculation of GHG emissions and has not demonstrated that monthly calculation of GHG emission would inhibit verification of compliance with the GHG emission limit. *See supra* Part III.

> (0.798 tons per month),[35] and the Permit[] count[s] these emissions towards the total GHG limitation * * * . The Region determined that because these unrestricted emissions of methane (when combined with GHG emissions from combustion sources) would not result in an exceedance of the Permit['s] total GHG emissions limit, additional permitting restriction limits were not required.
>
> Under these circumstances, ICAS's reliance on the requirement that permits include conditions ensuring the enforceability of limitations on a source's PTE is misplaced, as the Permits do not contain owner requested limits on methane emissions or otherwise limit the source['s] PTE from DMS operations.

Shell Discoverer 2012, 15 E.A.D. at 517-18 (citations omitted).

In addition, ICAS has not demonstrated that the Region's calculation of methane emissions from the DMS underestimated the "upper-limit" projection that is in turn used to identify the "maximum capacity" of a source based on an "inherent physical limitation." RTC at 34 (citing *Options for Limiting PTE* at 8 and Memorandum from John Seitz, Dir., Office of Air Quality Planning & Standards, to Reg'l Air Dirs., U.S. EPA, *Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities* at 4-5 (Nov. 14, 1995) (A.R. B-10) [hereinafter *Grain Handling Guidance*]). ICAS's assertion is premised on ConocoPhillips' higher estimate of DMS methane emissions submitted to the Region in another permit proceeding concerning exploratory drilling in the Arctic OCS. ICAS Petition at 23-26. However, ICAS simply states that the discrepancy between Shell's and ConocoPhillips' calculations of DMS methane emissions means that the Region clearly erred in accepting Shell's methane calculations, but it does not acknowledge or evaluate the record information Shell submitted that explains in depth the causes for the divergent methane calculations.[36] Upon considering this

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[35] This is the same unrestricted PTE for methane emissions as in the *Kulluk* permit (1596 lb / 2000 lb = 0.798 tons).

[36] In *Shell Discoverer 2012*, ICAS asserted that it was unable to evaluate the basis for Shell's estimates of DMS methane emissions that the Region had relied on to calculate PTE because Shell did not release its estimates until after the close of the comment period. 15 E.A.D. at 517 n.63. In that instance, the Board concluded that the Region was authorized to supplement the record with previously unavailable information confirming that Shell's estimate of methane PTE was a reasonable upper-bound estimation, and "[t]hus, ICAS had the opportunity to evaluate the basis for Shell's PTE estimates and the Region's assessment of those estimates in preparing its appeal to this Board." *Id.* (citing *In re Cape Wind Assoc., LLC*, 15 E.A.D. 327, 332-33, 335 (EAB 2011), and 40 C.F.R. §§ 124.17(a)-(b), .18(b)).

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information, the Region exercised its technical expertise in concluding that Shell's estimates of methane emissions from the DMS were permissible, especially given the conservative assumptions the Region incorporated when calculating PTE. ICAS does not address either the record information that supports the Region's decision to accept Shell's methane estimate or the Region's stated rationale for concluding that methane monitoring is not required. *See* RTC at 35-36 (explaining that, based on the inherent limitations that exist and the relatively small contribution of the DMS to overall GHG emissions, the Region does not believe monitoring of DMS emissions or operations is necessary in addition to the monitoring already required in the permit). As this Board has often stated, a petitioner cannot demonstrate that review is warranted if the petitioner fails to substantively confront a permit issuer's response. *Peabody*, 12 E.A.D. at 33 (noting that to obtain review a petitioner must "explain why, in light of the permit issuer's rationale, the permit is clearly erroneous or otherwise deserving of review"); *see also In re BP Cherry Point*, 12 E.A.D. 209, 217 (EAB 2005). Moreover, as stated above, the Region's decision regarding the GHG emission limit is inherently technical in nature, and ICAS has fallen short of the particularly high threshold it must meet to demonstrate that review of the Region's technical determination is warranted. *See Peabody*, 12 E.A.D. at 33-34; *see also NE Hub*, 7 E.A.D. at 567-68.

4. *The Region Did Not Clearly Err in Restricting OCS Source's Potential to Emit SO_2*

The Permit restricts SO_2 emissions from the *Kulluk* and the Associated Fleet to no more than 10 tpy, well below the 250 tpy PSD threshold level. *See* Permit Condition D.4.3. Compliance with this limit is determined on a rolling 12-month basis and is achieved by requiring that Shell not combust any liquid fuel with sulfur content greater than 0.01 percent by weight in any emission unit on the *Kulluk* or the Associated Fleet and that all fuel purchased for use in emission units on the *Kulluk* and Associated Fleet have a maximum sulfur content of 0.0015 percent by weight. Permit Conditions D.4.5, D.4.9. Shell is required to keep diesel

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The material in question is not only in the record submitted with the *Discoverer* appeals, it also appears in the record for the instant appeal. *See* E-mail from Susan Childs, Shell, to Doug Hardesty, EPA Region 10 (Sept. 16, 2011 14:31 pm PDT) (A.R. CCC-438 in *Shell Discoverer 2012* and A.R. C-575 in the current appeal). Thus in the current appeal there is no question that the information from Shell clarifying and explaining its estimate of DMS methane emissions, including the highly conservative assumptions Shell included in its estimate, was at ICAS's disposal. In addition, Shell submitted further clarification of its DMS methane estimates as compared to ConocoPhillips' in order to "explain how different assumptions led to different results, and why Shell believes that ConocoPhillips' estimate is unrealistically high." E-mail from Susan Childs, Shell, to EPA Region 10 (Sept. 20, 2011 17:57 pm PDT) (A.R. C-577). ICAS's petition does not address either of these record submissions or the Region's reliance on this information to determine that the Region's calculation of methane emissions from the DMS represents "a reasonable upper-bound projection for Shell's operations [that] is not expected to be exceeded under any reasonably anticipated operating scenario." RTC at 35.

fuel purchase records documenting sulfur content for each batch of fuel purchased. Permit Condition D.4.9.2. In addition, the total amount of fuel combusted in engines and boilers must not exceed 7,004,428 gallons during any rolling 12-month period. Permit Condition D.4.6; *see also* Permit Condition F.2.4 (requiring Shell to (1) obtain representative fuel samples and determine fuel sulfur content in parts per million from fuel storage tanks on the *Kulluk* and the Associated Fleet prior to their mobilization, (2) determine the sulfur content of each delivery of fuel to the *Kulluk* and the Associated Fleet once the vessels are mobilized, and (3) maintain records of all sampling and analysis).

ICAS asserts that the Region justifies its blanket SO_2 emissions limits by including "purported 'operational limits'" that restrict fuel content and usage and concludes that compliance with the restricted PTE for SO_2 is practically unenforceable because these operational limits are not unit-specific and because the overall limit is based on a 12-month rolling limit. ICAS Petition at 26-27. ICAS offers no explanation as to why the operational limits and averaging time the Region chose to include in the Permit, both of which are clearly considered legitimate in Agency guidance, nonetheless constitute clear error. *See* Region Response at 28; *Options on Limiting PTE* attach. 1 at 5 ("[L]imitations on sulfur dioxide emissions could be based on specified sulfur content of fuel and the source's obligation to limit usage to certain maximum amounts."); *1989 Guidance on Limiting PTE* at 9-10 (noting that in certain situations a rolling limit of up to a year may be appropriate for sources with "substantial and unpredictable annual variation in production," including "source which shut down or curtail operation during part of the year on a regular seasonal cycle").

ICAS also challenges the monitoring provisions for small and/or infrequently used emission units that are not required to have fuel flow monitors. ICAS Petition at 27. As the Region correctly points out, however, ICAS makes no attempt to explain why the specified fuel measurement alternatives, together with the requirement to measure and record fuel usage before and after operation, do not allow for a reliable and accurate assessment of fuel usage. Region Response at 28 (citing Permit Condition F.2.2.2). Here again, ICAS offers nothing more than a bald assertion of clear error without any analysis of why the Region erred. Where, as here, the Region's decision was technical in nature, ICAS has failed to meet the particularly high threshold for establishing that review of the Region's technical determination is warranted.

5. *Shell's Minor Source Permit Is Not a "Sham" Permit*

ICAS asserts that in order to ensure the *Kulluk*'s status as a minor source, Shell has agreed to operational limitations in its OCS/Title V permit that are not represented in other authorizations and permit applications for Shell's exploratory activities in the Beaufort Sea. ICAS Petition at 28. ICAS alleges that Shell's incidental hazard assessment, required under the Marine Mammal Protection Act,

16 U.S.C. § 1371(a)(5)(A), (D), authorizes 78 days of drilling whereas the OCS/Title V permit only authorizes 68 days of drilling. *Id.* Based on this single discrepancy, ICAS categorically concludes that "Shell is submitting permit applications and seeking authorization from other agencies with different plans than are provided for in its air permit." ICAS Petition at 28-29. ICAS also asserts that the Region did not adequately respond to its concern that Shell's application for a minor source permit is a sham.[37] *Id.*

At the outset, the Board notes that ICAS's assertion that Shell has secured a sham minor source permit with the intention to avoid preconstruction review as a major source under the PSD program is wholly unsupported in the record.[38] As the Region noted in the Response to Comments, there is nothing to indicate that Shell intends to later apply to the Region to remove the synthetic limits contained in the Permit. RTC at 22. The Region continued that, regardless of what the incidental hazard assessment says regarding the number of days Shell may drill, Shell nonetheless "must comply with all requirements of the Kulluk Permit and failure to do so is a violation of the CAA." *Id.* (citing Permit Condition A.3). Finally, the Region made clear that whether an original request for a minor source permit is a "sham" may be evaluated when the Region receives a request to remove the synthetic limits. *Id.*

ICAS rejects the Region's statement that there is nothing to suggest that Shell intends to obtain a minor source permit now and then apply for a major source permit down the road, and baldly asserts that "this is not the proper test." ICAS Petition at 28. ICAS ignores the element of intent to obtain a minor source

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[37] The NSR Manual defines a sham permit as follows:

> A sham permit is a federally enforceable permit with operating restrictions limiting a source's potential to emit such that potential emissions do not exceed the major or de minimis levels for the purpose of allowing construction to commence prior to applying for a major source permit. Permits with conditions that do not reflect a source's *planned* mode of operation may be considered void and cannot shield the source from the requirement to undergo major source preconstruction review. In other words, if a source accepts operational limits to obtain a minor source construction permit but intends to operate the source in excess of those limitations once the unit is built, the permit is considered a sham.

NSR Manual at C.6.

[38] ICAS asserts that its concern with the potential for Shell to obtain a minor source sham permit arose because "Region 10 has provided no assurance that reporting mechanisms in the permit will provide sufficient time for Shell to halt drilling with enough of an emissions buffer remaining to secure a partially drilled well for the entire winter season * * *." ICAS Petition at 29. ICAS also acknowledges that any exceedance of an emission limit would allow the Agency to exercise its enforcement powers. *Id.* Without more, ICAS cannot demonstrate that the Region clearly erred in determining that Shell's minor source permit is not a sham.

sham permit that both the Region in the Response to Comments and the 1989 Guidance on Limiting PTE discuss and instead quotes the NSR Manual language for the proposition that the "proper test" is a permit that does not reflect a source's "*planned* mode of operation." ICAS Petition at 28 (citing *NSR Manual* at C.6) (emphasis in original); *see also 1989 Guidance on Limiting PTE* at 12. However, the 1989 Guidance on Limiting PTE contains guidelines for determining, based on an evaluation of specific facts and evidence in each individual case, when minor source construction permits are shams and includes two of four criteria that discuss the intent of the source to circumvent the PSD preconstruction review process. *1989 Guidance on Limiting PTE* at 14-15.[39]

ICAS has not identified any information in the record that supports its assertion that Shell is seeking to avoid preconstruction review. Moreover, minor source sham permits are generally discovered when a source seeks another air emissions permit that requests the permit issuer to relax the synthetic limits in the minor permit, *see 1989 Guidance on Limiting PTE* at 12-14, rather than when the source seeks another authorization under a different statute such as the Marine Mammals Protection Act. Finally, ICAS has not demonstrated any deficiency in the Region's response to its comment regarding sham permits. *See, e.g., Russell City II*, 15 E.A.D. at 24 (noting that the part 124 regulations require a response to comments document to "demonstrate that all significant comments were considered but does not require a permit issuer to respond to each comment in an individualized manner or require the permit issuer's response to be of the same length or level of detail as comment") (citation omitted).

For all of the reasons stated above, the Board denies review of this issue.

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[39] Specifically, the guidelines for determining when minor source construction permits are shams state in relevant part:

> 1. Filing a PSD or nonattainment NSR permit application
>
> If a major source or major modification permit application is filed simultaneously with or at the same time as the minor source construction permit, this is strong evidence of *an intent to circumvent the requirements of preconstruction review*.
>
> * * *
>
> 4. Statement of authorized representatives of the source regarding plans for operation
>
> Statements by representatives of the source to EPA or to state or local permitting agencies about the source's plans for operation can be evidence *to show intent to circumvent preconstruction review requirements*.

1989 Guidance on Limiting PTE at 14-15 (emphasis added).

B. *REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Declining to Require PSD Increment Consumption Analyses for the Kulluk's Proposed Emissions as Part of the Title V Permitting Process*

1. *Section 504(e) of CAA Title V Imposes Permitting Requirements on "Temporary" Stationary Sources*

The CAA's PSD program requires permit applicants to demonstrate compliance with ambient air quality "increments" (also called "PSD increments") for specific air pollutants. *See* CAA §§ 161, 163, 165(a)(3)(A), 42 U.S.C. §§ 7471, 7473, 7475(a)(3)(A); 40 C.F.R. § 52.21(c), (k). Such increments are maximum allowable increases in pollutant concentrations that may occur in particular areas.[40] They are designed to "prevent significant deterioration" of air quality in locations that already have relatively clean air by ensuring that contaminants contributed by proposed new sources, combined with levels of contamination already present in the ambient air as of a specific baseline date, fall within bounds established by the Agency. *See generally NSR Manual* ch. C.

As noted in Part VI.A.1.b above, Congress designed the PSD program to regulate "major" sources of air pollution, which have potential to emit certain specific pollutants in amounts exceeding major source threshold levels. "Minor" sources, which have projected emissions that fall below the PSD major source thresholds, generally are not regulated under the PSD program. The Board determined above that the *Kulluk* qualifies as a minor source for PSD purposes, and so it is not required to obtain a PSD permit. The *Kulluk* nonetheless is still subject to permitting under the CAA's Title V program. The question presented is whether section 504(e) of Title V imposes PSD increment requirements in this circumstance.

In section 504(e) of Title V Congress set out permitting requirements for "temporary" stationary sources of air pollution as follows:

> The permitting authority may issue a single [Title V] permit authorizing emissions from similar operations at multiple temporary locations. No such permit shall be issued unless it includes conditions that will assure compliance with all the requirements of this chapter [i.e., the CAA] at

[40] To date, EPA has established PSD increments for four pollutants — SO_2, NO_2, PM_{10}, and $PM_{2.5}$. The increments consist of numeric concentrations, measured in micrograms of pollutant per cubic meter of air, that vary according to averaging period (3-hour, 24-hour, or annual averages) and geographic location (areas designated as "Class I," "Class II," or "Class III"). *See* 40 C.F.R. § 52.21(c) (table of increment levels).

> all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under part C of subchapter I of this chapter [i.e., the PSD program].

CAA § 504(e), 42 U.S.C. § 7661c(e). In allowing for a streamlined permitting process in which a single permit could authorize emissions at multiple temporary locations, Congress explained:

> Some sources requiring [Title V] permits do not operate at fixed locations. These might include asbestos demolition contractors and certain asphalt plants. Subsection (e) allows the permittee to receive a permit allowing operations, after notification to the permitting authority, at numerous fixed locations without requiring a new permit at each site. Any such permit must assure compliance at all locations of operation with all applicable requirements of the Act, including visibility protection and PSD requirements and ambient standards.

H.R. Rep. No. 101-490, pt. 1, at 350 (1990).

The parties' dispute centers on competing interpretations of section 504(e) and whether, in providing for a streamlined permitting process for temporary sources, Congress intended temporary minor sources to have increment provisions in their Title V permits where the state implementation plans do not otherwise impose increment provisions on such sources.

Section 504(e) is an unusual provision, not only because it addresses temporary rather than permanent stationary sources of air pollution (which comprise the majority of Title V sources), but also because it imposes substantive air requirements on temporary sources. As a general matter, Title V is a procedural rather than a substantive statute. It serves as a vehicle for collecting diverse CAA requirements otherwise applicable to a source into one all-encompassing air permit for that source. *See, e.g., Ohio Pub. Interest Research Grp., Inc. v. Whitman*, 386 F.3d 792, 794 (6th Cir. 2004) ("Title V does not impose new obligations; rather, it consolidates pre-existing requirements into a single, comprehensive document for each source"); Operating Permit Program, 57 Fed. Reg. 32,250, 32,251 (July 21, 1992) (explaining that Title V "generally does not impose substantive new requirements" on sources but instead attempts to "clarify, in a single document, which requirements apply to a source," thereby enabling all parties to better understand and track that source's CAA compliance). For the most part, requirements that are "applicable" to a source's emissions units under a Title V permit are directly imposed not by Title V itself but, rather, by state or federal implementation plans, preconstruction permits, the air toxics or acid rain programs, and other

substantive CAA provisions. *See* 40 C.F.R. §§ 70.2, 71.2 (definitions of "applicable requirements" under state and federal operating permit program regulations, respectively).

To ensure adequate regulation of temporary sources, Congress directed that Title V permits for such sources must include, as noted above, "conditions that will assure compliance with all the requirements of [the CAA] at all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under [the PSD program]." CAA § 504(e), 42 U.S.C. § 7661c(e). The parties do not dispute that this language serves to impose, through Title V itself, substantive CAA requirements on temporary sources. *See* REDOIL Petition at 19-25; Region Response at 5-6. Indeed, they agree that, because of section 504(e), the *Kulluk*'s Title V permit "must contain terms and conditions that ensure compliance with the NAAQS at all relevant locations." Statement of Basis at 26, *quoted in* Region Response at 5; *see* REDOIL Petition at 21. The parties strongly dispute, however, whether PSD increments should also be included in the complement of substantive requirements for the *Kulluk*.

2. *Under the Region's Interpretation, PSD Increment Compliance Demonstrations Are Not Mandatory for Temporary Minor Sources but May Be Required by States*

The Region's basic position is that section 504(e) uniformly imposes ambient standards (i.e., NAAQS) compliance requirements on all temporary sources, but that it does not uniformly so impose PSD increment requirements. The Region initially based this distinction on the language of section 504(e) and the implementing regulations, as well as on a prior Agency interpretation of these authorities. *See* Statement of Basis at 25-27. The distinction hinged primarily on Congress' insertion of the adjective "applicable" in section 504(e) to modify not "ambient standards" but only "increment or visibility requirements under [the PSD program]." *Id.* at 26; *see* CAA § 504(e), 42 U.S.C. § 7661c(e). PSD increments are only "applicable" to a temporary source, the Region reasoned, if the source also qualifies as a PSD major source, obligated to obtain a PSD permit. Statement of Basis at 26 ("applicable" increment requirements are those applicable "under [the PSD program]" (i.e., part C of subchapter I of the CAA), which covers only PSD major sources). By this logic, the *Kulluk*, a PSD minor source, would not have to demonstrate compliance with PSD increments at any of its authorized locations. *Id.*

Commentors on the *Kulluk*'s draft permit pressed the Region on this point, which prompted it to take a closer look at the entire issue. The Region prepared a lengthy, detailed Response to Comments document, in which it repeated the above points, but also added a far more robust discussion of the preconstruction permitting programs for major and minor sources. The Region explained that,

under the statute and implementing regulations, states have discretion to impose PSD increment requirements on PSD minor sources as part of their minor source construction permitting programs, if the states deem such requirements necessary to prevent significant deterioration of air quality. *See* RTC at 102-09 (citing and discussing, e.g., CAA §§ 110(a)(2)(C), 161, 163, 165(a)(3)(A), 504(e), 42 U.S.C. §§ 7410(a)(2)(C), 7471, 7473, 7475(a)(3)(A), 7661c(e); 40 C.F.R. §§ 51.160(a)(2), (b)(2), .166(a)(1), (3), 70.2, 71.2, 71.6(e)). The Region emphasized that states are not *obliged* to do this but have discretionary authority to pursue this course if they deem it necessary to fulfill their obligations under CAA sections 161 and 163(a). *See id.* at 103-06.

These clarifications led the Region to encapsulate its understanding of section 504(e) and the preconstruction programs in the following way: "PSD major sources are subject to NAAQS and increment in the permitting process, whereas non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the [PSD] increment[s]." *Id.* at 107. The Region concluded that the State of Alaska's minor source preconstruction program does not require permanent minor sources to demonstrate compliance with PSD increments as a condition of construction, so neither would it require such compliance of temporary minor sources. *See id.* at 103-04, 107-08; *see also* Region Response at 12, 11 n.7. For this reason, the Region declined to require that Shell conduct PSD increment compliance analyses for *Kulluk* emissions at any of its authorized locations in the Beaufort Sea.

The Region's statutory and regulatory interpretation of the Title V temporary source program finds support in Board case law that recognizes the states' primary role in using PSD increments to manage economic growth. In *In re West Suburban Recycling & Energy Center, LP*, 8 E.A.D. 192 (EAB 1999), the Board observed the following:

> From the beginning of the PSD program, EPA has acknowledged that decisions about how increment should be used or allocated are primarily within the province of the states. For example, in the preamble to the original PSD regulations, EPA noted that allocation of PSD increment could affect economic development and that EPA should endeavor to preserve the states' authority on issues of economic development and growth:
>
> > "EPA should not make decisions [that] would have a significant impact upon future growth options of the [s]tates."

8 E.A.D. at 196 (quoting Approval and Promulgation of State Implementation Plans, 43 Fed. Reg. 26,388, 26,401 (June 19, 1978)); *accord In re Commonwealth*

Chesapeake Corp., 6 E.A.D. 764, 768 (EAB 1997) ("'The PSD requirements provide for a system of area classifications [that] affords [s]tates an opportunity to identify local land use goals. * * * Each classification differs in terms of the amount of [industrial or other] growth it will permit before significant air quality deterioration would be deemed to occur.'" (quoting *NSR Manual* at C.4-.5)).

3. *REDOIL Petitioners Have Not Demonstrated That the Region's Interpretation Is Clearly Erroneous*

On appeal, REDOIL Petitioners claim on a number of grounds that the Region's interpretation is clearly erroneous and thus a basis for remand of this permit. REDOIL Petition at 19-37. REDOIL Petitioners' central contention is that the plain language, structure, and purpose of section 504(e) reveal Congress' "unambiguously expressed intent" to tie increment requirement applicability to the increment status of the geographic area or areas in which a temporary source will emit pollutants. *See id.* at 20-32. REDOIL Petitioners also contend that the Agency's implementing regulations confirm the plain meaning of the statutory language and, additionally, contain provisions that "at least imply" independent obligations to ensure PSD increment compliance. *Id.* at 33-35.

REDOIL Petitioners observe that section 504(e) distinguishes between ambient standards (i.e., NAAQS), which apply to all temporary sources "at all times and in all locations," *id.* at 21, and PSD increment standards, which do not apply at all times and in all locations because they "are not universally applicable to all areas." *Id.* Rather, as designed by Congress, PSD increments "apply" only in areas where they specifically have been triggered, by means of the submission of an initial, complete PSD permit application to emit in a particular area. *Id.*; *see* CAA §§ 163, 169(4), 42 U.S.C. §§ 7473, 7479(4); 40 C.F.R. § 52.21(b)(14)(ii), (15)(i). The concentration of pollutants in such an area's ambient air is measured at the time the initial application is submitted (the "baseline date") and then fixed as the "baseline concentration" for that area. *See NSR Manual* at C.6-.8, .12-.15. From that point forward, PSD increments serve as the maximum allowable increases that pollutant concentrations may rise above the established baseline levels. CAA § 163, 42 U.S.C. § 7473; 40 C.F.R. § 52.21(c).

REDOIL Petitioners reason from this basic design that Congress intended "applicable increment * * * requirements" in section 504(e) to be area-dependent rather than source-dependent. *See* REDOIL Petition at 21-22, 25-27, 29. By this logic, any new source, including any new temporary minor source, that proposes to emit in geographic areas where increments previously have been triggered would be obligated to demonstrate compliance with such increments as "applicable" requirements under section 504(e). Only in areas where increments have not yet been triggered would PSD increments be inapplicable to temporary minor sources. *See id.* REDOIL Petitioners claim the Agency's implementing regula-

tions are fully in accord with this interpretation and thus do not bar increment compliance demonstrations prior to issuance of Title V permits. *Id.* at 33-35.

As described below, the Region did not clearly err in its own interpretation of these authorities. The Board agrees with the Region that its interpretation more fully comports with the structure and language of the CAA and the implementing regulations, and rejects REDOIL Petitioners' assertion that the statutory language is so plain that there is no ambiguity about whether Congress intended to impose increment provisions on temporary minor sources where the state implementation plan does not otherwise impose increment requirements on such sources. REDOIL Petitioners misapprehend or fail to grapple with several key points that formed the basis for the Region's interpretation in its final permitting decision and Response to Comments.

a. *REDOIL Petitioners Misunderstand Portions of the Region's Response to Comments*

In several of its points of advocacy before this Board, REDOIL Petitioners reveal a misunderstanding of the explanations the Region set forth in the Response to Comments. In the most significant example, REDOIL Petitioners argue that the Region erroneously construes "any applicable increment * * * requirements under Part C" in section 504(e) to mean that only those temporary sources that are also PSD major sources must demonstrate PSD increment compliance. REDOIL Petition at 29, 33-34. While this description reflects the position the Region advanced in the Statement of Basis,[41] it fails to acknowledge the very substantial further interpretive exegesis the Region developed and presented in its Response to Comments on the draft permitting record (which included the Statement of Basis). In that later and more comprehensive analysis, the Region made clear that, in its view, states have discretionary authority in their minor source preconstruction programs to impose PSD increment requirements on temporary minor sources, either as implementation plan requirements or on a case-by-case basis, as they deem necessary to protect the NAAQS. *See* RTC at 103-06. REDOIL Petitioners fail to address or demonstrate why the Region's position, as more fully articulated in the Response to Comments, is clearly erroneous. Because REDOIL Petitioners have failed to substantively confront the Region's Response to Comments, they cannot prevail on this ground. *See, e.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 450 (EAB 2011) (petitioners "must substantively confront the permit issuer's explanations in its response to comments document"); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005) (same).

[41] The Region acknowledges that statements in the Statement of Basis could be read to suggest such an approach. Region Response at 8.

REDOIL Petitioners also misunderstand the interplay of sections 161, 165, and 504(e) of the Act, as those provisions are discussed by the Region in the Response to Comments. *See* RTC at 103-06. REDOIL Petitioners point out that section 163, not section 165, is the source of increment requirements within the PSD program and contends that the Region "ignore[d]" this provision in interpreting section 504(e). REDOIL Petition at 30. In so arguing, REDOIL Petitioners take the position that section 504(e) makes the section 163 increments directly applicable to temporary sources. *See id.* at 30-31. The plain language of section 163, however, is to the contrary. It provides that "each applicable implementation plan shall contain measures assuring that maximum allowable increases over baseline concentrations [i.e., increments] * * * shall not be exceeded." CAA § 163(a), 42 U.S.C. § 7473(a). Moreover, the text of section 161, which establishes implementation plan requirements, provides that such plans "shall contain emission limitations and such other measures as may be necessary * * * to prevent significant deterioration of air quality." CAA § 161, 42 U.S.C. § 7471.

Increments, in other words, are not directly imposed by section 504(e). Instead, they must be implemented (i.e., applied to a source) through either of two means: (1) a state implementation plan, per section 161 and 40 C.F.R. § 51.166(a)(1); or (2) the PSD major source permitting program, per section 165(a)(3)(A) and 40 C.F.R. § 52.21. *See* RTC at 103-04. Thus, while section 504(e) can serve as the direct source of NAAQS compliance requirements and other CAA requirements for temporary sources (*see infra* note 44 and accompanying text), it only imposes PSD increment requirements to the extent such requirements are "applicable" to the source.

Finally, REDOIL Petitioners also suggest that the State of Alaska's operating permit regulations are "more lenient" than the federal regulations because they do not require PSD minor sources to demonstrate compliance with PSD increments as a preconstruction condition. REDOIL Petition at 27-28. Noting that the Alaska rules apply to sources on the inner OCS only, and not on the outer OCS, REDOIL Petitioners suggest that the purportedly more stringent federal operating permit rules in effect on the outer OCS require temporary sources situated on the outer OCS to demonstrate compliance with PSD increments. *Id.* at 28 (citing 40 C.F.R. §§ 71.2, 71.6(e)). REDOIL Petitioners claim, therefore, that Shell must conduct, at the very least, a PSD increment analysis for the *Kulluk*'s authorized locations on the outer OCS. *Id.*

This argument reveals a misunderstanding of the Region's discussion of relevant legal requirements on the inner versus outer OCS. In the Response to Comments, the Region explained:

> In this case, the requirements for Title V temporary sources in the inner OCS and outer OCS off of Alaska are the same because Alaska has adopted EPA's Part 71 rules

> with respect to Title V temporary sources by reference for application onshore and Region 10 has in turn adopted these requirements into the [Corresponding Onshore Area] regulations for application in the inner OCS.

RTC at 109. As the Region explained, PSD increments are not applicable to any temporary minor sources, wherever they might be located on the OCS, *unless* a state exercises its discretion to require minor source compliance with such increments. A state, of course, has limited jurisdiction, and its authority does not extend beyond its borders. *E.g.*, CAA § 107(a), 42 U.S.C. § 7407(a) ("[e]ach [s]tate shall have the primary responsibility for assuring air quality within the entire geographic area comprising such [s]tate"). That would mean, therefore, that in the outer OCS or other places where only federal operating permit rules apply, PSD increments would not be applicable to temporary minor sources, *unless* federal OCS regulations required it or EPA chose to add increment compliance obligations under 40 C.F.R. § 55.13(h)[43] once the source becomes operational. *See* RTC at 109. REDOIL Petitioners fail to squarely confront this legal landscape, which results in a failure to demonstrate how the Region's interpretation is clearly erroneous. *See, e.g., In re Teck Cominco Alaska, Inc.*, 11 E.A.D. 457, 494-95 (EAB 2004) (burden of demonstrating review is warranted rests with the petitioner, who must raise objections to the permit and explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review); *In re Westborough*, 10 E.A.D. 297, 305, 311-12 (EAB 2002) (same).

b. *REDOIL Petitioners Mischaracterize the Title V Regulatory Scheme*

REDOIL Petitioners' notion that "applicable increment requirements" in section 504(e) mean "applicable to the *area*" rather than "applicable to the *source*" is not supported by the Title V regulatory model as a whole. A Title V permit for a temporary source to operate at multiple locations must include, among other things, "[c]onditions that will assure compliance with all applicable requirements at all authorized locations." 40 C.F.R. §§ 70.6(e)(1), 71.6(e)(1). Broadly speaking, the Board has recognized that "'[a]pplicable requirement' is a term of art in the Title V program that, in general, refers to any substantive requirement that applies to an *emissions source* under any CAA regulatory provisions." *Peabody*,

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[43] This OCS-specific regulation provides:

> If the Administrator determines that additional requirements are necessary to protect [f]ederal and [s]tate ambient air quality standards or to comply with part C of title I, such requirements will be incorporated in this part.

40 C.F.R. § 55.13(h).

12 E.A.D. at 28 n.14 (emphasis added) (citing 40 C.F.R. § 71.2). Further, the regulations implementing the federal Title V program provide that "[a]pplicable requirement means all of the following as they apply to *emissions units in a part 71 source*." 40 C.F.R. § 71.2 (emphasis added). In turn, the term "emissions unit" means "any part or activity of a *stationary source* that emits or has the potential to emit any regulated air pollutant." *Id.* (emphasis added).

Accordingly, the Region's interpretation of the term "applicable" in section 504(e) as meaning "applicable to the source" is consistent with the Agency's Title V regulations, in which applicability is determined by reference to the *source*, not the *area*. REDOIL Petitioners fail to present legal authorities supporting their own novel view of applicability in a way sufficient to demonstrate that the Region's different approach is clearly erroneous.

c. *REDOIL Petitioners Confuse Air Quality Management Obligations with Permitting Obligations*

REDOIL Petitioners argue that the Region's interpretation of section 504(e) should be rejected because it is inherently inconsistent. REDOIL Petition at 31-32. On the one hand, REDOIL Petitioners note, the Region explicitly recognized that the *Kulluk* will consume a portion of the available PSD increments in its authorized drilling areas, but the Region nonetheless refused to impose preconstruction increment compliance requirements in the Title V permit, finding them "inapplicable." RTC at 102, 105-06. On the other hand, the Region acknowledged that after the *Kulluk* becomes operational, it might be necessary to impose increment-related restrictions; i.e., increments would be "applicable." In the Response to Comments, the Region stated:

> If, at any time after the *Kulluk* begins operation under its Title V/OCS permit, Region 10 determines that the actual emissions increases from the permitted OCS source cause or contribute to an increment violation, Region 10 has authority to adopt additional requirements to ensure that increments are not violated.

Id. at 106 (footnote omitted). REDOIL Petitioners argue that the Region cannot have it both ways, contending on this basis that the Region's interpretation should not be sustained. REDOIL Petition at 32.

The Board perceives no conflict between the Region's purportedly "inconsistent" positions on increment applicability. As the Region noted in its Response to Comments, EPA has authority, separate and apart from section 504(e) and the preconstruction programs, to address violations of increment standards that might arise once sources become operational. *See* RTC at 106 (citing CAA §§ 301, 328, 42 U.S.C. §§ 7601, 7627; 40 C.F.R. § 55.13(h)). Moreover, states have authority

to revise their implementation plans to adopt emission limits and other remedial control measures in cases where existing controls are not adequately protecting air quality increments. 40 C.F.R. § 51.166(a)(3), *cited in* RTC at 106.[43] REDOIL Petitioners confuse permitting obligations with ongoing air quality management obligations, but the two are distinct. *See* RTC at 105-06. Simply positing that the Region's view of "applicable" increments is inconsistent is not sufficient to overcome the specific statutory and regulatory authority the Region references in support of its position. The Board therefore finds no showing of clear error justifying a remand on this ground.

d. *REDOIL Petitioners Misconstrue the Regulations*

The Agency's Title V implementing regulations for state and federal operating permit programs closely parallel the language of section 504(e). *Compare* CAA § 504(e), 42 U.S.C. § 7661c(e), *with* 40 C.F.R. §§ 70.6(e), 71.6(e). The regulations define "applicable requirement" for Title V purposes as (among other things): "(2) [a]ny term or condition of any preconstruction permits" issued under parts C or D of title I; and "(13) [a]ny [NAAQS] or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act." 40 C.F.R. §§ 70.2, 71.2. REDOIL Petitioners argue on appeal, as commentors did on the draft permit, that the Region's interpretation of "applicable requirement" improperly reads the thirteenth requirement out of the regulations by subsuming it within the second requirement. REDOIL Petition at 33-34.

The Region explained in the Response to Comments why this was not so. *See* RTC at 107-08. The Region stated that "the intent of the Title V temporary source provisions is to relieve sources of the burden of applying for Title V permits for each new location, while at the same time[] assuring compliance with all requirements to which the source would be subject if it were a new [permanent] source at each such new location." *Id.* at 108. For a temporary source that is also a PSD major source, this would include ensuring that the NAAQS and increment standards are met at each future location – a requirement that, the Region pointed out, would exceed the requirements otherwise applicable to the source under the

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[43] This state implementation plan regulation provides, in relevant part:

> If the [s]tate or the Administrator determines that a[n implementation] plan is substantially inadequate to prevent significant deterioration or that an applicable increment is being violated, the plan shall be revised to correct the inadequacy or the violation.

40 C.F.R. § 51.166(a)(3). The regulations also provide, in the next subsection, that the state "shall review the adequacy of a[n implementation] plan on a periodic basis and within 60 days of such time as information becomes available that an applicable increment is being violated." *Id.* § 51.166(a)(4).

PSD program alone.[44] *Id.* at 107. For a temporary source that is also a PSD minor source, this would include ensuring that the NAAQS and, if required under the implementation plan for minor permanent sources, PSD increment standards are met at each future location, even if the implementation plan did not require such a demonstration for temporary minor sources. *See id.* at 107-08; Region Response at 12.

REDOIL Petitioners fail to meaningfully confront the Region's reasoning on this issue or demonstrate why it is clearly erroneous. Instead, REDOIL Petitioners reference an irrelevant minor permit modification provision (40 C.F.R. § 71.7(e)(1)(i)(A)(3)), rather than a minor source provision, as support for their position. REDOIL Petition at 34. REDOIL Petitioners also suggest that the Title V permitting regulations in sections 70.6(c) and 71.6(e) establish a more expansive regulatory program than the one the Region finds present in section 504(e); indeed, one that would even be broad enough to require the *Kulluk* to demonstrate PSD increment compliance. *Id.* at 33. The Board finds otherwise, in light of the fact that sections 70.6(e) and 71.6(e) are expressly limited by a reference to section 504(e) itself and therefore cannot expand the meaning of the statute. *See* RTC at 107-08.

4. *Increment Section Conclusion*

The Board has carefully examined each of REDOIL Petitioners' increment-related arguments and determined that none have merit. Petitioners' burden is to show clear error, but REDOIL Petitioners have failed in all instances to achieve this standard. The Board therefore denies review of the Permit on this ground.[45]

C. *REDOIL Petitioners Failed to Raise Below Their Contention That Shell's Ambient Air Quality Analysis Was Flawed in That It Failed to Conform to Applicable Agency Guidance*

On February 9, 2010, EPA published in the Federal Register a final rule (effective April 12, 2010) revising the primary NO_2 NAAQS "in order to provide requisite protection of public health as appropriate under section 109 of the Clean Air Act." Primary NAAQS for NO_2, 75 Fed. Reg. 6474, 6475 (Feb. 9, 2010); *see also Shell 2010*, 15 E.A.D. at 149-50 & n.74. This rule set the new 1-hour NO_2

[44] As such, the NAAQS and PSD increment requirements for future locations would be "additional" requirements imposed on the temporary source by section 504(e). RTC at 107-08.

[45] In light of the Board's decision to uphold the Region's interpretation of section 504(e) and the implementing regulations, the Board need not reach REDOIL Petitioners' final argument, which challenges the Region's finding that air quality modeling establishes the *Kulluk*'s emissions will not violate the PSD increments.

NAAQS standard (hereinafter "the 1-hour NO_2 NAAQS") at 100 parts per billion ("ppb") to supplement the existing annual standard, set at 53 ppb. 75 Fed. Reg. at 6475. EPA regulations specify how attainment of the standard is to be calculated, providing that the 100 ppb standard is met "when the annual 98th percentile of the daily maximum 1-hour average concentration is less than or equal to 100 ppb, as determined in accordance with Appendix S of this part for the 1-hour standard." 40 C.F.R. § 50.11(f). This calculation is sometimes referred to as "the form."[46] *See* 75 Fed. Reg. at 6477 n.5, 6492-93. The 100 ppb standard reflects the maximum allowable NO_2 concentrations anywhere in an area. *Id.* at 6493, 6502. EPA has issued guidance clarifying procedures for demonstrating compliance with the new 1-hour NO_2 NAAQS. *See* REDOIL Petition Ex. 16 (Memorandum from Stephen D. Page, Dir., Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Dirs., U.S. EPA, *Guidance Concerning the Implementation of the 1-Hour NO_2 NAAQS for the Prevention of Significant Deterioration* (June 29, 2010) ("Page Memo"));[47] Memorandum from Tyler Fox, Leader, Air Quality Monitoring Grp., Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Dirs., U.S. EPA, *Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO_2 National Ambient Air Quality Standard* (Mar. 1, 2011) ("Fox Memo") (A.R. BB-83).

REDOIL Petitioners assert that Shell's ambient air quality analysis was flawed.[48] In particular, REDOIL Petitioners state that in "identifying the Kulluk's

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[46] The 98th percentile form corresponds approximately to the 7th or 8th highest daily maximum concentration in a year. 75 Fed. Reg. at 6492.

[47] According to the Page Memo, the guidance was issued in response to reports that sources were modeling potential violations of the 1-hour NO_2 NAAQS. Page Memo at 1. The Memo states that "[t]o respond to these reports and facilitate the PSD permitting of new and modified major stationary sources, we are issuing the attached guidance in the form of two memoranda." *Id.* The attached memoranda are titled "General Guidance for Implementing the 1-hour NO_2 National Ambient Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" and "Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard." *Id.* at 1-2. Although the Page Memo attaches these two memoranda, the Memo is consecutively numbered as a single document.

[48] In order to establish compliance with the NAAQS and PSD increments, permit applicants must conduct an "ambient air quality analysis," which applicants must prepare under the permitting rules for each regulated pollutant their proposed facilities will emit in "significant" amounts. 40 C.F.R. § 52.21(b)(23)(i), (m)(1)(i). This analysis predicts a pollutant's future concentration in the ambient air by modeling a proposed facility's expected emissions of the pollutant against the backdrop of existing ambient conditions. To conduct an air quality analysis, a permit applicant compiles data on the proposed facility's physical specifications and anticipated emission rates, local topography, existing ambient air quality, meteorology, and related factors. *See, e.g.*, *id.* § 52.21(l), (m); *id.* pt. 51 app. W (Guideline on Air Quality Models); *In re Knauf Fiber Glass, GmbH*, 8 E.A.D. 121, 145-48 (EAB 1999); *NSR Manual* at C.16-.23, .31-.50. These data are then processed using mathematical models that calculate the rates at which pollutants are likely to disperse into the atmosphere under various climatological conditions, with the goals of determining whether emissions from the proposed source will cause or

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98th percentile cumulative impact – *i.e.*, the Kulluk's impact added to background levels of pollutants – for comparison to the 1-hour NO_2 standard, Shell used an approach that the Region admits is 'less conservative.' More specifically, Shell used background values that were already adjusted to the 98th percentile, instead of basing its calculations on the full distribution of background values." REDOIL Petition at 38 (footnote omitted). According to REDOIL Petitioners, this method for demonstrating compliance with the 1-hour NAAQS was rejected in the Page Memo as "not being protective of the [NAAQS]." *Id.* at 38-39 (quoting Page Memo at 18). REDOIL Petitioners then cite to a portion of the more recent Fox Memo which, according to them, allows for the method Shell used to calculate background values. *Id.* at 39. That is, the Fox Memo states that the approach used in the Page Memo was overly conservative and should not be used in certain cases. *Id.* (citing Fox Memo at 17-20). REDOIL Petitioners assert that the Region allowed Shell to demonstrate compliance with the form of the 1-hour NAAQS using the approach permitted in the Fox Memo without providing an explanation as to why the determination in the Page Memo was incorrect. *Id.* at 40. REDOIL Petitioners argue that "[b]ecause neither EPA nor the Region provided any explanation about whether and, if so, how, its earlier conclusion [in the Page Memo] that the use of the 98th percentile background values is 'not protective' of the national ambient air quality standard was incorrect, EPA's new guidance and the approach taken by the Region here in reliance on it are arbitrary." *Id.* (quoting Page Memo at 17-20). REDOIL Petitioners contend that the Region had an obligation to explain this "departure from its prior analysis." *Id.* at 40-41.

Upon examination of the record, the Board concludes that this issue was not adequately raised during the comment period and was therefore not preserved for review. As stated above, the regulations require any person who believes that a permit condition is inappropriate to raise "all reasonably ascertainable issues and * * * all reasonably available arguments supporting [petitioner's] position" during the comment period on the draft permit. 40 C.F.R. § 124.13. That requirement is made a prerequisite to appeal by 40 C.F.R. § 124.19(a), which requires any petitioner to "demonstrat[e] that any issue[] being raised [was] raised during the public comment period * * * to the extent required[.]". *In re ConocoPhillips Co.*, 13 E.A.D. 768, 800-01 (EAB 2008); *accord In re Christian Cnty. Generation, LLC*, 13 E.A.D. 449, 457 (EAB 2008); *Shell 2007*, 13 E.A.D. at 394 n.55.

The requirement that an issue must have been raised during the public comment period in order to preserve it for review is not an arbitrary hurdle placed in the path of potential petitioners. *Russell City II*, 15 E.A.D. at 10; *In re City of Marlborough*, 12 E.A.D. 235, 244 n.13 (EAB 2005), *appeal dismissed for lack of*

(continued)
contribute to a violation of either the NAAQS or the PSD increments. *See* 40 C.F.R. § 52.21(f); *id.* pt. 51 app. W; *NSR Manual* at C.24–.27, .51–.70.

juris., No. 05-2022 (1st Cir. Sept. 30, 2005); *In re BP Cherry Point*, 12 E.A.D. 209, 219 (EAB 2005). Rather, the requirement serves an important function related to the efficiency and integrity of the overall administrative permitting scheme. *Marlborough*, 12 E.A.D. at 244 n.13. The intent of the rule is to ensure that the permitting authority first has the opportunity to address permit objections and to give some finality to the permitting process. *Id.*; *In re Sutter Power Plant*, 8 E.A.D. 680, 687 (EAB 1999). As the Board has explained, "[t]he effective, efficient and predictable administration of the permitting process demands that the permit issuer be given the opportunity to address potential problems with draft permits before they become final." *In re Teck Cominco*, 11 E.A.D. 457, 481 (EAB 2004) (quoting *In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 250 (EAB 1999)). "In this manner, the permit issuer can make timely and appropriate adjustments to the permit determination, or, if no adjustments are made, the permit issuer can include an explanation of why none are necessary." *In re Essex Cnty. (N.J.) Res. Recovery Facility*, 5 E.A.D. 218, 224 (EAB 1994).

Although REDOIL Petitioners' comments on the draft permit asserted that Shell had used background ambient air data in a manner that understated the impact of its operations, *see* REDOIL Comments at 9-11, nowhere in these comments did Petitioners assert that Shell's approach conflicted with the Page Memo or that the Region had any obligation to provide an explanation for its alleged departure from the Page Memo. Indeed, REDOIL Petitioners' comments recognized that, according to the Fox Memo, Shell's approach is appropriate in some circumstances. *Id.* at 11. The comments, however, did not assert any conflict between the Page Memo and the Fox Memo nor is it clear to this Board that any such conflict exists. Thus, this "battle of the memos" issue was not preserved for review.[49] *See Shell Discoverer 2012*, 15 E.A.D. at 507.

[49] *See Teck Cominco*, 11 E.A.D. at 481-82 (denying review where issue was not specifically raised during the comment period). The Board notes that the issue REDOIL Petitioners did raise during the comment period was fully and adequately addressed in the Region's Response to Comments. Specifically, in commenting on the draft permit, REDOIL Petitioners raised the argument that Shell had failed to demonstrate compliance with the 1-hour NO_2 NAAQS because, according to REDOIL Petitioners, Shell used background ambient air data in a manner that understated the impact of its operations. REDOIL Comments at 10-11. As stated above, REDOIL Petitioners' comments recognized that Shell's approach to analyzing background data was consistent with the Fox Memo, but argued that Shell's approach was inconsistent with the 1-hour NO_2 NAAQS standard itself. *Id.* at 11. The Region provided a detailed response to this assertion in the Response to Comments. RTC at 74-78. Nothing in the REDOIL Petition indicates why the Region's response on this issue was erroneous or otherwise warrants Board review, nor does the Board find anything erroneous in the Region's response. Thus, even if Petitioners had preserved this issue, the Board would deny review. *See, e.g., In re Guam Waterworks Auth.*, 15 E.A.D. 437, 450 (EAB 2011) (stating that "a petitioner may not simply reiterate comments made during the public comment period, but must substantively confront the permit issuer's explanations in its response to comments document"); *In re Peabody W. Coal Co.*, 12 E.A.D. 22, 33 (EAB 2005) (same).

D. *REDOIL Petitioners Have Not Demonstrated That the Region Clearly Erred in Its Ambient Air Exemption Determination*

REDOIL Petitioners allege that the Region clearly erred in exempting the area within a 500 meter radius from the *Kulluk* from the definition of "ambient air."[50] REDOIL Petition at 15. This area is also referred to throughout the record as the United States Coast Guard ("USCG") "safety zone." *See, e.g.*, RTC at 52-54. REDOIL Petitioners claim that the Region's decision "contravenes both EPA's definition of 'ambient air' as well as EPA's longstanding interpretation of that regulation." REDOIL Petition at 16. In particular, they assert that the Region's 500 meter ambient air boundary fails to meet either of the two criteria the Agency has previously used in evaluating the appropriateness of an exemption. *Id.* at 16-18. According to REDOIL Petitioners, the Region's decision essentially allows Shell to emit more pollution, and possibly with fewer controls, than would otherwise be lawful.[51] *Id.* at 15-16.

The CAA regulations define "ambient air" as "that portion of the atmosphere, external to buildings, to which the general public has access." 40 C.F.R. § 50.1(e). Based on this definition, the Agency has, on occasion, exempted certain areas from the definition of ambient air. *E.g.*, Letter from Steven C. Riva, Chief, Permitting Sec., U.S. EPA Region 2, to Leon Sedefian, Air Pollution Meteorologist, N.Y. State Dep't of Env't Conservation, at 1-2 (Oct. 9, 2007) (A.R. BB-19) [hereinafter Broadwater Letter]; Letter from Douglas M. Costle, Adm'r, U.S. EPA, to Sen. Jennings Randolf, Chairman, Env't & Pub. Works Comm., at 1 (Dec. 19, 1980) (A.R. BB-1) [hereinafter Costle Letter]; *see also* Letter from Nancy Helm, Fed. & Delegated Air Programs, U.S. EPA, to John Kuterbach, Alaska Dep't of Envtl. Quality, at 2 (Sept. 11, 2007) (area exempt if certain conditions met) [hereinafter Helm Letter]. The parties agree that the Agency's "longstanding interpretation" of this exemption is set forth in a letter signed by former EPA Administrator Douglas Costle, which states that "the exemption from ambi-

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[50] For an area that is not considered within the definition of "ambient air," Shell would not have to demonstrate compliance with the NAAQS. *See* CAA §§ 109(b), 160, 163, 42 U.S.C. §§ 7409(b), 7470,7473 (NAAQS apply to areas meeting the definition of ambient air); 40 C.F.R. § 50.1(e) (definition of "ambient air"); *In re Hibbing Taconite Co.*, 2 E.A.D. 838, 848 & nn.23-24 (Adm'r 1989); RTC at 53.

[51] REDOIL Petitioners additionally argue that, should the Region's response contain a "natural physical feature" argument similar to an argument the Region raised in its response brief in *Shell Discoverer 2012*, the Board should consider such an argument a "*post hoc* rationalization" and should disallow it. REDOIL Petition at 19; *see also Shell Discoverer 2012*, 15 E.A.D. at 510 n.52 (discussing this issue). REDOIL Petitioners also reserve the right to request leave to file a reply brief addressing this issue. REDOIL Petition at 19. Unlike the situation in *Shell Discoverer 2012*, the Board does not find that the Region's response brief contains an explanation that is clearly different than the rationale set forth in the Response to Comments. Moreover, REDOIL Petitioners do not raise this particular issue in their reply brief. Consequently, the Board does not consider REDOIL Petitioners' "post hoc rationalization" argument further.

ent air is available only for the atmosphere over land owned or controlled by the source and to which the public access is precluded by a fence or other physical barriers." Costle Letter at 1; REDOIL Petition at 16 (quoting same letter); Region Response at 29-30 (referring to same letter); Shell Response at 26-27 & n.27 (same); *see also* RTC at 51 (same). The Costle Letter also indicates that, in determining whether the exemption applies, the Agency reviews "individual situations on a case-by-case basis." Costle Letter at 1; *see also* Approval and Promulgation of State Implementation Plans, 50 Fed. Reg. 7056, 7057 (Feb. 20, 1985) (noting that, in considering ambient air exemptions, "individual variations in the type of land and nature of the limitation on access necessitate a case-by-case evaluation of the facts, and application of the principles involved in this determination").

Here, in its permitting decisions, the Region determined that, as long as certain permit conditions were being met, it was appropriate to set the ambient air boundary at a 500 meter radius from the *Kulluk*, or, in other words, the 500 meter radius "safety zone" was exempt from the ambient air definition. RTC at 51-52; *see also* Statement of Basis at 40. The terms and conditions upon which the Region relied to exempt this area prohibit the operation of vessels and emissions units unless (1) the USCG establishes a safety zone within at least 500 meters from the center of the *Kulluk*, (2) members of the public are precluded from entering the safety zone, and (3) Shell develops and implements a "public access control program."[52] Permit at 42-43. The Region determined that, as long as these safety zone and public access restriction permit conditions are complied with, ex-

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[52] The precise terms and conditions of the Permit are as follows:

> The permit does not authorize operation unless:
>
> > 5.1.1. The Kulluk is subject to a currently effective safety zone established by the [USCG] which encompasses an area within at least 500 meters from the hull of the Kulluk and which prohibits members of the public from entering this area except for attending vessels or vessels authorized by the USCG (such area shall be referred to as the "Safety Zone"); and
> >
> > 5.1.2. The permittee has developed in writing and is implementing a public access control program to:
> >
> > 5.1.2.1. Locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the Safety Zone; and
> >
> > 5.1.2.2. Communicate to the North Slope communities on the Beaufort Sea on a periodic basis when exploration activities are expected to begin and end at a drill site, the location of the drill site, and any restrictions on activities in the vicinity of the Kulluk's exploration operations.

Permit at 42-43.

empting the area within the safety zone from the ambient air definition would generally be consistent with previous Agency interpretations. RTC at 51-52. In so finding, the Region noted that "[g]iven that the permitted activities occur over open water in the Arctic, the[] criteria [for exemption included in the Costle Letter] must be adapted to some extent when applied to this environment." *Id.* In specifically considering the applicability of the two exemption criteria, the Region stated:

> Region 10 recognizes that Shell does not "own" the areas of the Beaufort Sea on which the Kulluk will be operating as might be the case for a stationary source on land. Shell has a lease authorizing the company to use these areas for the activities covered by the permits. A Coast Guard safety zone establishes legal authority for excluding the general public from the area inside the zone. EPA has previously recognized a safety zone established by the Coast Guard as evidence of sufficient ownership or control by a source over areas over water so as to qualify as a boundary for defining ambient air where that safety zone is monitored to pose a barrier to public access. Letter from Steven C. Riva, EPA Region 2, to Leon Sedefian, New York State Department of Conservation, re: Ambient Air for the Offshore LNG Broadwater Project, dated October 9, 2007 (Broadwater Letter).
>
> To meet the second of the criteria applied by EPA and ensure the source actually takes steps to preclude public access, Shell proposed and Region 10 required as a condition of operation under the permits that Shell develop in writing and implement a public access control program to locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the area within 500 meters of the hull of the Kulluk. Region 10 believes that, for the overwater locations in the arctic environment at issue in these permitting actions, such a program of monitoring and notification is sufficiently similar to a fence or physical barrier on land such that the area within the Coast Guard safety zone qualifies for exclusion from ambient air. *See* Broadwater Letter at 2.

RTC at 52.[53]

Upon consideration of the administrative record and the parties' arguments, the Board concludes that Petitioners have not shown that the Region clearly erred in its decision to exempt the area within the USCG safety zone from the definition of "ambient air." The Region, in its Response to Comments, provided a reasonable interpretation of the ambient air regulation and the Agency's "longstanding interpretation" of that regulation as applied in the OCS context.[54] Furthermore, the Region's analysis was entirely consistent with a similar analysis undertaken by Region 2 in which that Region determined that it was appropriate for a permittee to use the USCG safety zone to define an ambient air boundary around a proposed offshore liquefied natural gas facility. *See* Broadwater Letter at 2. The Broadwater Letter, moreover, suggests that Region 2's analysis, as well as Region 10's, is not unique, stating that "*[i]n previous permitting decisions involving * * * drilling operations, EPA Regional offices have used the USCG's safety zone as the boundary for defining ambient air.*" *Id.* at 2 (emphasis added). The letter explains that the Agency has found that "[t]he 'safety zone' approach represents a reasonable surrogate for a source's fence or physical barrier and thus could act as an ambient air boundary." *Id.*

Thus, while it is true, as Petitioners allege, that the Agency has generally required the source to own or control access over the area in question for that area to meet the first criterion, REDOIL Petition at 16-17, this requirement has been limited to sources located on land.[55] *See, e.g.*, Helm Letter at 1 (referring to possi-

[53] REDOIL Petitioners also seem to suggest that the Region's approach is flawed because it "is based upon an assumption that Shell will request, and the [USCG] will establish, a safety zone restricting the passage of other vessels." REDOIL Petition at 15 & n.45. This argument is unpersuasive because it fails to recognize that, as the permit conditions quoted in note 52 state, operation is prohibited unless these two conditions are met. *See* Permit at 42-43.

[54] As the Region rightly noted, *see* RTC at 51-52, the regulation and the Costle Letter, by their very terms, were clearly written with overland situations in mind. *See* 40 C.F.R. § 50.1(e) (referring to "buildings"); Costle Letter at 1 (referring to "land" and "fences").

[55] In support of their contention, REDOIL Petitioners rely on a previous Agency determination that leased property could not be exempted from the definition of ambient air because the lessee did not have control over access to its leased property (only the landlord did). REDOIL Petition at 17 & n.52 (citing Helm Letter). Petitioners assert that this onshore interpretation must apply equally to an OCS lease BOEMRE issued. *Id.* As the Petitioners themselves note, federal courts have found agency action to be arbitrary when the agency's "explanation 'runs counter to the evidence,'" *id.* at 17 (quoting *Motor Vehicle Mfrs. Ass'n of the U.S., Inc. v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983)), and "'the agency offer[s] insufficient reasons for treating similar situations differently,'" *id.* (quoting *Transactive Corp. v. United States*, 91 F.3d 232, 237 (D.C. Cir. 1996)); *see also FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-15, 129 S.Ct. 1800, 1810-11 (2009) (discussing standard of review of an agency's policy change). Here, not only are the situations dissimilar enough to arguably not be governed by these cases, but the Agency did offer persuasive reasons for treating the two situations differently.

ble exemption near coal-fired power plant); Memorandum from Steven D. Page, Director, Office of Air Quality Planning & Standards, U.S. EPA, to Reg'l Air Div. Dirs., U.S. EPA, *Interpretation of "Ambient Air" in Situations Involving Leased Land Under the Regulations for the Prevention of Significant Deterioration (PSD)* (June 22, 2007) (A.R. B-26) (discussing the applicability of the exemption where a source is located on "land" leased to them by another source). The Region (and the Agency before it) reasonably determined that application of the regulation and the interpretive letter to an "overwater" situation requires some leeway. REDOIL Petitioners' reliance solely on land-based exemption decisions is thus unpersuasive.[56] Finally, as mentioned above, the Agency has consistently taken the position that ambient air exemption determinations are analyzed on a case-by-case basis.

For all the reasons stated above, REDOIL Petitioners have not shown that the Region clearly erred in its ambient air exemption determination.[57] Consequently, review of the Permit based on this issue is denied.

E. *ICAS and Mr. Lum Have Not Demonstrated That the Region Failed to Satisfy Its Obligation to Comply with Executive Order 12898 and Applicable Board Precedent*

ICAS and Mr. Lum argue that the Region's environmental justice analysis lacked a valid basis on which to conclude that Shell's oil exploration activities in the Beaufort Sea will not have a disproportionately high and adverse effect on the health of the Alaska Native population living on the North Slope. ICAS alleges that the Region's environmental justice analysis fails to account for the impacts of short-term NO_2 and ozone exposures on the Alaska Native population residing on the North Slope, and also asserts that the opportunities for public participation were inadequate. Mr. Lum challenges the lack of analysis regarding the impacts

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[56] REDOIL Petitioners' arguments that the Region's determination fails to meet the second criteria because the safety zone "fails to effectuate a barrier that 'precludes' public access" are equally unpersuasive. REDOIL Petition at 17. REDOIL Petitioners focus on the fact that the USCG will limit access to the area based on safety concerns rather than for air quality considerations. *Id.* at 17-18. The important fact is that access within the zone will be strictly limited, not the reason behind it. Moreover, REDOIL Petitioners do not address the other condition of the permit that the Region relied upon for its ambient air boundary determination: the public access control program Shell is required to implement. The Board does not find clear error in the Region's conclusion that, based on the USCG limiting access to the safety zone and the permittee implementing a public access control program, the latter of which will include notification to the local residents of the location of the drilling and the fact that the public is restricted from the safety zone, the general public will be denied access to the area inside the safety zone.

[57] The Board came to the same conclusion in *Shell Discoverer 2012*. *See* 15 E.A.D. at 513-14. In that case, the Region had adopted and followed the same or a very similar interpretation as described in the text above. *See id.* 15 E.A.D. at 511-13. Nothing REDOIL Petitioners offer in the present case convinces the Board that anything in the prior analysis – and reiterated here – was in error.

emissions from Shell's activities in the Beaufort Sea could have on traditional subsistence food sources and also challenges Shell's oil spill response capabilities. The Region counters that its environmental justice analysis and resulting conclusions comply with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations" ("Executive Order"). The issue the Board must resolve is: did the Region satisfy its obligation to comply with the Executive Order and applicable Board precedent?

The Executive Order states in relevant part:

> *Agency Responsibilities.* To the greatest extent practicable and permitted by law, and consistent with principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice a part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations * * * .

Exec. Order 12898, 59 Fed. Reg. 7629, 7629 (Feb. 11, 1994) (A.R. FF-1). Federal agencies are required to implement the Executive Order "consistent with, and to the extent permitted by, existing law." *Id.* at 7632. The Board has held that a permit issuer should exercise its discretion to examine any "superficially plausible" claim that a minority or low-income population[58] may be disproportionately affected by a particular facility seeking a PSD permit. *In re EcoEléctrica, LP*, 7 E.A.D. 56, 69 n.17 (EAB 1997); *accord Shell 2010*, 15 E.A.D. at 148-49 & n.71 (citing PSD cases).

At the outset, the Board notes that both ICAS and Mr. Lum recently challenged the Region's environmental justice analysis in *Shell Discoverer 2012*. *See* 15 E.A.D. at 493-501. In addition, the environmental justice analysis the Region prepared in the current matter is reminiscent of the environmental justice analysis prepared for the *Discoverer* permits that were the subject of the Board's *Shell Discoverer 2012* decision. Moreover, while their petitions for review in *Shell Discoverer 2012* and the current appeal are not identical, both ICAS and Mr. Lum raise substantially similar arguments in their current appeals as they did in their appeals of the *Discoverer* permits.[59] *Compare* Lum Petition *with* Eskimo

[58] Under the Executive Order, the Alaska Native population residing on the North Slope qualifies as a minority population. *See* Statement of Basis at 55; ICAS Petition at 30.

[59] ICAS's remaining challenges to the amount and quality of public participation opportunities available pertaining to the environmental justice analysis appear to mirror its more general arguments
Continued

Whaler Petition for Review, *Shell Discoverer 2012* (Doc. No. 24), *and* ICAS Petition *with* ICAS and AEWC Petition for Review, *Shell Discoverer 2012* (Doc. No. 7).

1. *Region's Environmental Justice Analysis*

The Region included a fifteen-page environmental justice analysis in the administrative record to accompany the Permit and to allow for public comment on the analysis. Environmental Justice Analysis for Proposed OCS Permit No. R10 OCS030000 Kulluk Drilling Unit (undated) ("EJ Analysis") (A.R. F-1). The Region's analysis begins with a discussion of environmental justice in the permitting context and notes that "[t]he Title V operating permit program does not generally impose new substantive air quality control requirements."[66] EJ Analysis at 2. In addition, the analysis includes a discussion of how the national ambient air quality standards ("NAAQS") are crafted by integrating scientific information and evidence from rigorously reviewed studies, and a summary of the Board's case law stating that the Board views compliance with the NAAQS as "emblematic of achieving a level of public health protection that, based on the level of protection afforded by the NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants." *Id.* (quoting *Shell 2010*, 15 E.A.D. at 156) (citations omitted); *see also* Statement of Basis at 54-55.

(continued)
regarding the public participation process. *See* ICAS Petition at 6-10, 38-39. Accordingly, the Board addresses ICAS's challenges to the adequacy of the public participation process, both generally and with respect to the environmental justice analysis, in Parts VI.F and VI.G below.

[66] The Region further explained that:

> [T]he Title V operating permit program is generally a vehicle for ensuring that existing air quality control requirements are appropriately applied to facility emission units and that compliance with these requirements is assured. Accordingly, the primary means of addressing environmental justice issues in the Title V program is through increased public participation and review by permitting agencies, and conditions to assure compliance with applicable requirements. As discussed above, the Title V permit at issue in this case is unusual in that it requires the source, as a Title V temporary source, to meet the NAAQS and also establishes limits on the potential to emit. Region 10 has considered environmental justice concerns in this permitting action where possible in the context of assuring compliance with applicable requirements for the source, in particular assuring compliance with the NAAQS as a Title V temporary source and establishing PSD avoidance limits.

EJ Analysis at 2; *see also* Statement of Basis at 54.

The analysis goes on to catalogue the distances between Inupiat communities on the coast of the North Slope that are closest to Shell's lease blocks in the Beaufort Sea, and discusses the importance of subsistence foods obtained through hunting, fishing, and whaling to the Inupiat diet, and more generally the nexus between subsistence activities and Inupiat culture. EJ Analysis at 3, 5. The Region also included an illustration that juxtaposes the location of Shell's lease blocks, including proposed exploration sites, with onshore and offshore subsistence use areas for the northern Inupiat communities.[61] *Id.* at 4; *see also* Statement of Basis at 56.

The Region then proceeded to analyze demographic, health-related, and air quality data.[62] The demographic analysis indicates that 68% of residents living in the North Slope Borough classify themselves as Alaska Natives. EJ Analysis at 7. In addition, nearly half of North Slope residents speak a language other than English at home. *Id.* at 8. The analysis of health data revealed, among other things, that from 1990 to 2007 there has been a 158% rate of increase in the prevalence of diabetes for Alaska Natives residing on the Arctic Slope, whereas during the same time period there has been a 117% rate of increase in the prevalence in diabetes for Alaska Natives statewide.[63] *Id.* at 9. In addition, there is a higher incidence of outpatient visits for respiratory problems ranging from the common cold to pneumonia in the Arctic Slope than in the rest of Alaska. *Id.*

In the air impacts analysis, the Region first noted that the North Slope Borough is currently designated as attainment/unclassifiable for all of the NAAQS, meaning that the North Slope has sufficient data to determine that the area is meeting the NAAQS or that, due to no data or insufficient data, EPA cannot make a determination. *Id.* at 11 & n.15 (citing CAA § 107(d), 42 U.S.C. § 7407(d)). The

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[61] The analysis also includes, for some of the northern Inupiat communities, the distances residents have reported traveling offshore to hunt for traditional subsistence food sources. *See* EJ Analysis at 6 (noting that Nuiqsut residents have traveled up to 60 miles offshore to the north and as far east as Camden Bay to hunt for bowhead whale and that Kaktovik residents have traveled as far as 35 miles offshore to hunt for bowhead whale and walrus); Statement of Basis at 55; *see also Shell 2010*, 15 E.A.D. at 155 n.80 (noting that subsistence activities, which can take Inupiat residents living on the North Slope far from their local communities and closer to emissions sources, are a potential environmental justice consideration that may be unique to the OCS PSD permitting context); *Shell Discoverer 2012*, 15 E.A.D. at 496 n.32 (same).

[62] The Region used demographic information gathered from the 2000 U.S. Census to compare the population of the North Slope Borough to the populations of both the State of Alaska and the entire United States, which served as reference populations for the demographic analysis. EJ Analysis at 6-8 & n.6. The North Slope Borough consists of the following eight incorporated villages: Point Hope, Point Lay, Wainwright, Atqasuk, Barrow, Nuiqsut, Kaktovik, and Anaktuvuk Pass. *See* Statement of Basis at 55.

[63] The Region utilized data from the Alaska Native Health Status Report 2009, which the Alaska Native Epidemiology Center and the Alaska Native Tribal Health Consortium had prepared to analyze health conditions in the North Slope Borough. *See* EJ Analysis at 8-10 & n.11.

Region then examined the total modeled concentrations of NO_2, particulate matter with a diameter of 10 micrometers or less ("PM_{10}"), particulate matter with a diameter of 2.5 micrometers or less ("$PM_{2.5}$"), SO_2, and CO,[64] including background concentrations and maximum concentrations from the *Kulluk* and the Associated Fleet.[65] *Id.* at 13-14 & tbl.6. The Region compared the total modeled concentrations for each of the three nearest communities while the source is in operation and found that the total maximum modeled concentrations demonstrate that the NAAQS will be attained at all locations beyond the 500-meter boundary, and that the modeled concentrations in the North Slope communities and in areas where the communities conduct subsistence activities will be below the relevant standard.[66] *Id.* at 14. Finally, the Region noted that a majority of the total impacts result from background concentrations. *Id.*

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[64] The Board notes that the information included in table 5 of the air quality analysis includes modeled impacts in the nearest onshore communities from operation of the *Kulluk* alone, without impacts from the Associated Fleet or background concentrations. EJ Analysis at 12 & tbl.5. The Region explains that the maximum modeled concentrations in Nuiqsut, Deadhorse, and Kaktovik listed in table 5 are all below the significant impact levels ("SILs") established for each criteria pollutant. *Id.* at 12. In the PSD program, SILs function as threshold levels for ambient concentrations of a given pollutant; for a given pollutant and averaging period, any source that has a measured concentration that is below the SIL is considered too small to cause or contribute to a violation of the NAAQS. *Id.*

The Region made clear earlier in the environmental justice analysis that emissions from the Associated Fleet while operating within 25 miles of the *Kulluk*, together with emissions from the *Kulluk*, are considered in conducting an ambient air quality analysis to determine whether emissions from the project will cause or contribute to a violation of the NAAQS. *Id.* at 4. The Region's analysis repeatedly emphasized that compliance with the NAAQS is "emblematic of achieving a level of public health protection" that demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental impacts due to exposure to relevant criteria pollutants. *Id.* at 4-5 (quoting *Shell 2010*, 15 E.A.D. at 156). While the inclusion of information on modeled impacts of emissions from the *Kulluk* alone on the nearest onshore communities is illustrative regarding the *Kulluk*'s contribution to the overall emissions profile, it is the information that encompasses both background concentrations and emissions from the *Kulluk* and the Associated Fleet when it is within 25 miles of the *Kulluk* that establishes the Region has satisfied its obligation to comply with the Executive Order.

[65] Monitoring data from Prudhoe Bay, Deadhorse, and Endicott were used for background values. EJ Analysis at 13. The Region also noted that the modeled impacts are based on conservative assumptions, including that all four wells are drilled at the same location to account for overlapping plumes, even though the drilling of four wells at a fixed location and the overlap of plumes will not occur. *Id.*

[66] Specifically, the Region noted that in Kaktovik, located 8 miles from Shell's closest lease block in the Beaufort Sea, the total maximum modeled concentrations, assuming Shell's *Discoverer* is in operation and considering background concentrations, are measured at the following percentages of the NAAQS: 11% for the 1-hour NO_2 NAAQS; 20% for the 24-hour $PM_{2.5}$ NAAQS; 35% for the 24-hour PM_{10} NAAQS, and; 20% for the annual $PM_{2.5}$ NAAQS. EJ Analysis at 13-14 & tbl.6. Similarly, in Nuiqsut, located 33 miles from Shell's closest lease block in the Beaufort Sea, and applying the same assumptions, the total maximum modeled concentrations are measured at the following percentages of the NAAQS: 50% for the 1-hour NO_2 NAAQS; 48% for the 24-hour $PM_{2.5}$ NAAQS, 35% for the 24-hour PM_{10} NAAQS, and 26% for the annual $PM_{2.5}$ NAAQS. *Id.*

Overall, the Region concluded that Shell's proposed OCS activities in the Beaufort Sea will not result in disproportionately high and adverse human health or environmental effects with respect to Alaska Natives residing on the North Slope, and further, in reaching this conclusion the Region considered the impact on these communities while engaging in subsistence activities in the areas where such activities are regularly conducted. *Id.* at 15. With this background in mind, the Board now turns to the specific assertions both ICAS and Mr. Lum make in support of their arguments that the Region has not complied with its obligation under the Executive Order.

2. *One-Hour NO_2 NAAQS Analysis*

ICAS challenges the Region's consideration of 1-hour NO_2 NAAQS[67] compliance in the environmental justice analysis on several grounds, arguing that it is "insufficient and ignores salient record evidence." ICAS Petition at 34. ICAS asserts that in addition to NO_2 emissions from the *Kulluk* when it is an OCS source and from the Associated Fleet when it is within 25 miles of the *Kulluk*, the Region must also account for mobile source NO_2 emissions that remain unregulated by the Permit when assessing potentially adverse health impacts of NO_2 emissions on North Slope communities. *Id.* at 35-38. In addition, ICAS challenges the Region's "fatal flaw of the environmental justice analysis," namely the failure to *analyze* the impacts of Shell's emissions on residents of the North Slope conducting subsistence activities offshore. *Id.* at 36-37 (emphasis in original). Finally, ICAS challenges the Region's analysis of Shell's 1-hour NO_2 NAAQS compliance based on several technical decisions the Region made. *Id.* at 37-38.

ICAS asserts that the Region's environmental justice analysis is inadequate because it does not account for emissions from mobile sources that are not included in the air quality impact analysis conducted to determine whether emissions from the project will cause or contribute to a violation of the NAAQS. *See id.* at 34 & n.30; EJ Analysis at 4. The Board disagrees.

The Region appropriately determined that it was not required to analyze these mobile source emissions where, as here, the Title V permit did not address mobile source emissions, and the record lacked sufficient data for such an analy-

[67] NAAQS are health based-standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics. *See In re AES Puerto Rico, L.P.*, 8 E.A.D. 324, 351 (EAB 1999), *aff'd sub nom. Sur Contra La Contaminacion v. EPA*, 202 F.3d 443 (1st Cir. 2000), *cited in Shell 2010*, 15 E.A.D. at 149 n.72. The Administrator is required to carry out periodic reviews of the air quality criteria published under section 108 of the CAA, 42 U.S.C. § 7408, as well as the NAAQS, and to revise the criteria and standards as appropriate. CAA § 109(d)(1), 42 U.S.C. § 7409(d)(1). The Board outlined the history of the NO_2 NAAQS reviews in its December 2010 remand order. *See Shell 2010*, 15 E.A.D at 150 nn.73-74.

sis.[68] RTC at 114; Statement of Basis at 54; *see also* EJ Analysis at 2; Region Response at 36 n.34. The Region acknowledged that the Title V permit at issue in this case is unusual in that it requires a temporary Title V source to meet the NAAQS, and the permit also establishes limits on PTE. EJ Analysis at 2; Statement of Basis at 54; RTC at 114. However, the Title V permit does not regulate mobile source emissions.[69]

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[68] ICAS asserts that the Board should remand the *Kulluk* permit so that the Region can assess mobile source emissions included in Shell's emissions inventory submitted to BOEMRE as part of Shell's Exploration Plan, both because it "shows that the additional emissions estimates are not as hard to obtain as Region 10 implies," and because once the Region assesses the accuracy of the inventory it can "use the information to conduct an EJ analysis that accounts *for all* of Shell's emissions." ICAS Petition at 35 (emphasis in original).

Nowhere in its petition does ICAS acknowledge the Region's statement, in the Response to Comments, that "[t]he Exploration Plan * * * does not include estimates of air emissions from these other vessels during the time they are more than 25 miles from the Kulluk or before the Kulluk becomes an OCS source." RTC at 15. The Board has consistently stated that, in order to sustain its burden of demonstrating that review is warranted, the petitioner must address the permit issuer's responses to relevant comments made during the permit proceeding. *See, e.g., Peabody*, 12 E.A.D. at 33 ("[T]he petitioner may not simply reiterate comments made during the public comment period, but must substantively confront the permit issuer's subsequent explanations.").

Furthermore, ICAS's suggestion that the Region should "compile rough estimates" of these mobile source emissions because "[s]ome additional steps are particularly necessary here" is similarly unavailing. ICAS Petition at 36. ICAS has acknowledged its ongoing concern regarding emissions that are not included in the PTE analysis, along with its efforts to compel Region 10 to consider non-PTE emissions as OCS source emissions in prior appeals to this Board. ICAS Petition at 34. Despite its concerns, ICAS cannot demonstrate that review is warranted where, as here, ICAS offers a generalized objection to the Region's consideration of mobile sources in the environmental justice analysis, and the Region has demonstrated that it lacks sufficient data to reach a determinative conclusion regarding these mobile source emissions in the environmental justice context. *See Avenal*, 15 E.A.D. at 401-02; *see also In re Cape Wind Assocs., LLC*, 15 E.A.D. 327, 330 (EAB 2011) (noting that petitioners "must raise specific objections to the permit"); *In re BP Cherry Point*, 12 E.A.D. 209, 217 (EAB 2005) (same).

[69] In a memorandum addressing environmental justice in the permitting context, the Agency stated:

> Unlike PSD/[New Source Review] permitting, Title V generally does not impose substantive emission control requirements, but rather requires all applicable requirements to be included in a Title V operating permit. * * * Because Title V does not directly impose substantive emissions control requirements, it is not clear whether or how EPA could take environmental justice issues into account in Title V permitting – other than to allow public participation to serve as a motivating factor for applying closer scrutiny to a Title V permit's compliance with applicable CAA requirements.

Memorandum from Gary Guzy, General Counsel, U.S. EPA, to Assistant Administrators, U.S. EPA, *EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting* 13 (Dec. 1, 2000) (A.R. FF-7).

Despite the fact that mobile source emissions are not regulated under the Title V permit, the Region did go beyond its required review to consider mobile source emissions with respect to environmental justice in the Response to Comments. *See* RTC at 114-15. The Region was unable to reach a determinative conclusion with respect to these emissions due to insufficient information.

ICAS's attempt to construe the Executive Order and Board precedent to *require* in this instance the analysis of emissions from mobile sources that the Region may not have accurate or sufficient data to complete in the context of a Title V permit is unpersuasive. Notably, the Board has held that it will decline to review a permit issuer's environmental justice analysis that cannot reach a determinative conclusion due to the insufficiency of available valid data. *See* RTC at 115; *Avenal*, 15 E.A.D. at 401-02 (stating that where a permit issuer conducts a substantive environmental justice analysis that endeavors to include and analyze data that is germane to the environmental justice issue raised during the comment period, and the permit issuer demonstrated it exercised its considered judgment when determining that it cannot reach a determinative conclusion due to the insufficiency of available data, the Board will decline to grant review of the environmental justice analysis). Moreover, "[t]he plain language of the Executive Order imparts considerable leeway to federal agencies in determining how to comply with the spirit and letter of the Executive Order." *Avenal*, 15 E.A.D. at 401. ICAS overreads *Avenal* when it suggests that *Avenal* compels the analysis of these mobile source emissions in the context of this permit. *See* ICAS Petition at 35 ("The Agency has considered mobile emissions previously in its EJ analyses and should be required to do so here." (citing *Avenal*, 15 E.A.D. at 399)).[70]

ICAS's challenge also fails because ICAS never responded to the Region's stated rationale in the administrative record that Title V permits generally do not impose new substantive air quality control requirements. A petitioner cannot sim-

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[70] ICAS includes a citation to *Avenal* for the proposition that "motor vehicle emissions are by far the greatest concern," in support of its contention that mobile source emissions should be included in the short-term NO_2 NAAQS assessment included in the environmental justice analysis, but the quote is taken out of context and does not support ICAS's position. *See* ICAS Petition at 35. The circumstances in *Avenal* are markedly different than those in the present case. In *Avenal*, the Agency conducted an environmental justice analysis that focused in particular on short-term NO_2 impacts in support of a PSD permit to build a 600-megawatt power plant. 15 E.A.D. at 399. The Agency noted that in the area surrounding the proposed site for the new source, motor vehicles accounted for 91% of NO_2 emissions locally, as compared to 61% of NO_2 emissions nationwide. *Id.* In addition, the environmental justice analysis in *Avenal* noted that the area surrounding the proposed facility was designated as extreme nonattainment for ozone, and NO_2 is a precursor emission. *Id.* Finally, the Agency further explained that NO_2 concentrations on or near major *roadways* have appreciably higher emissions than those measured at monitors in the Agency-approved network. *Id.* ICAS has not demonstrated that the need to assess NO_2 impacts from mobile sources in *Avenal*, where NO_2 emissions near roadways were known to be much higher, translates into a requirement that the Agency account for these mobile emissions on the Arctic OCS to demonstrate that its environmental justice analysis is sufficient.

ply repeat comments made during the comment period, but must substantively confront the permit issuer's substantive explanations in order to demonstrate that review of a particular issue is warranted. *Peabody*, 12 E.A.D. at 33.

Further, ICAS's assertion that the Region failed "to *analyze* the impacts of Shell's emissions on subsistence hunters and fishers while offshore," is unsupported by the record. ICAS Petition at 36-37 (emphasis in original); *see also Shell Discoverer 2012*, 15 E.A.D. at 500. The environmental justice analysis stated that mobile source emissions will dissipate while vessels are in transit, RTC at 115, and the environmental justice analysis analyzed how the subsistence areas located in close proximity to Shell's lease blocks might be affected by Shell's OCS activities. EJ Analysis at 5; *id.* at 6 (discussing distances subsistence hunters, whalers, and fishermen have traveled offshore in search of subsistence foods); *id.* at 4 (depicting subsistence use areas mapped over Shell exploration plan well sites). In addition to demonstrating compliance with the applicable NAAQS, the Region conducted an environmental justice analysis that included and analyzed data that is germane to the environmental justice issues raised during the comment period. *See Shell 2010*, 15 E.A.D. at 160-61 n.87. Although ICAS may disagree with the contents or conclusions of the Region's environmental justice analysis, ICAS has not demonstrated that this difference in opinion equates to an insufficient effort on the Region's part regarding environmental justice, or that the Region failed to analyze impacts. *See Shell Discoverer 2012*, 15 E.A.D. at 500.

Finally, ICAS enumerates several problems with the Region's environmental justice analysis that amount to challenges to the Region's technical expertise. *See* ICAS Petition at 37; Region Response at 43-44; *see also Shell 2012*, 15 E.A.D. at 500-01. Without elaborating any further, ICAS expresses "significant concerns" with, among other things, installed NO_2 controls and their ability to function properly in cold weather, the use of generic NO_x/NO_2 ratios in lieu of actual source tests, the use of "diurnal pairing" of NO_2 data, and the need for additional "tracer experiments" to supply data for the AERMOD model. ICAS Petition at 37. It is axiomatic that a challenge to the fundamental technical expertise of a permit issuer requires a petitioner to overcome a particularly heavy burden, and that a successful challenge to a permit issuer's technical expertise must consist of more than just a difference of opinion. *Shell 2012*, 15 E.A.D. at 501; *accord In re NE Hub Partners, L.P.*, 7 E.A.D. 561, 567 (EAB 1998), *review denied sub nom. Penn Fuel Gas, Inc. v. EPA*, 185 F.3d 862 (3rd Cir. 1999). Here, ICAS has failed to overcome this particularly heavy burden because it does nothing more than list its broad objections to the Region's environmental justice analysis.

3. *Ozone NAAQS Analysis*

ICAS also challenges the Region's compliance with its obligation under the Executive Order based on the Region's alleged failure to adequately address both the latest scientific findings regarding ozone and the potential impacts of ozone on

local communities. ICAS Petition at 31. ICAS's assertions focus in large part on the Region's decision to demonstrate compliance with the current 8-hour ozone NAAQS, which is set at 0.75 parts per million ("ppm"), as opposed to the range of 0.60 to 0.70 ppm for the 8-hour ozone NAAQS that EPA's Administrator proposed in January 2010 but never finalized. *See id.* at 30-34; Region Response at 40-42; RTC at 96-98, 119-20. On September 2, 2011, four days before the close of the public comment period and prior to the Region issuing the Permit, the President requested that the Administrator withdraw the proposed 8-hour ozone NAAQS standard and instead enforce the current 8-hour ozone standard of 0.75 ppm until the ozone standard is reconsidered again in 2013. Statement on the Ozone National Ambient Air Quality Standards, 2011 Daily Comp. Pres. Doc. 607, at 1 (Sept. 2, 2011), *available at* http://www.gpo.gov/fdsys/ (click on Compilation of Presidential Documents). ICAS also asserts that the Region's conclusion not to model emissions from ozone precursors based on available background data that does not account for the cumulative impacts of proposed activities on the Arctic OCS was in error, and that the Region's response to its comments regarding ozone were inadequate. ICAS Petition at 33.

The Region responds that ICAS's petition raises issues that are largely technical, and that the Region appropriately relied on the Agency's current legal standard of 0.75 ppm when assessing Shell's compliance with the 8-hour ozone NAAQS. Region Response at 40. The Region further asserts that it exercised its technical expertise to determine that ozone levels in the area were not expected to exceed even the lowest level of 0.60 ppm that EPA included in its proposed 8-hour ozone NAAQS. *Id.* at 42. Finally, the Region asserts that it appropriately responded to comments received, including comments specifically raising concerns about the cumulative impacts of proposed OCS operations with respect to attaining the ozone NAAQS. *Id.*

Although ICAS argues to the contrary, the current, enforceable 8-hour ozone NAAQS that Shell must demonstrate compliance with is 0.75 ppm. As this Board has stated previously, "[a] permit issuer must apply the statutes and implementing regulations in effect at the time the final permit decision is made." *Russell City II*, 15 E.A.D. at 81 n.98 (quoting *In re Phelps Dodge Corp.*, 10 E.A.D. 460, 478 n.10 (EAB 2002)). The Region's decision to require Shell to comply with the 0.75 ppm 8-hour ozone NAAQS is consistent with applicable law and the corresponding regulations in effect at the time the Region issued the Permit.

In addition, ICAS does not demonstrate that the Region's analysis of the impacts the 8-hour ozone NAAQS may have on Alaska Natives residing on the North Slope would result in a disproportionately high or adverse impact on the

health of Alaska Natives.[71] In the Response to Comments supporting the Permit, the Region stated that it "stands by its decision" to forego regional photochemical modeling and further explained that "Region 10 reviewed ozone monitoring data along with existing precursor emissions that will impact ozone formation. Based on this review, Region 10 determined further analysis of ozone was not warranted." RTC at 97. In addition, the Region explained that the most recent ozone data indicates that current ozone levels in the Beaufort Sea are well below 0.60 ppm, which represents the low end of the range of the proposed 8-hour ozone NAAQS.[72] *Id.* at 97-98, 120.

Finally, ICAS's assertion that the Region failed to consider the cumulative impacts of emissions from proposed Arctic OCS operations is unavailing. *See* ICAS Petition at 33. ICAS's petition for review not only lacks any further support for this statement, it also fails to substantively confront the Region's explanation in the Response to Comments. *See Peabody*, 12 E.A.D. at 33 (petitioner must

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[71] ICAS's assertion that in the context of an environmental justice analysis the Region's treatment of the 8-hour ozone standard in the current appeal is analogous to the Region's treatment of the newly promulgated 1-hour NO_2 NAAQS in *Shell 2010* must also fail. *See* ICAS Petition at 32. As the Board recently explained, the context of the challenge to the environmental justice analysis in *Shell 2010* was unusual in that the OCS PSD permits at issue were finalized in the interim between the Administrator's publication of the final rule establishing the hourly NO_2 NAAQS in the Federal Register on February 9, 2010, and the effective date of the new hourly NO_2 standard, April 12, 2010. *Avenal*, 15 E.A.D. at 401. The Board emphasized that the environmental justice aspect of the *Shell 2010* remand order turned on the Region's scant environmental justice analysis, which provided no examination or analysis of short-term NO_2 impacts whatsoever. *Id.*

Here, the Region not only analyzed impacts from ozone emissions, *see* RTC at 96-98, 119-20, it further explained that current levels of ozone in the area are well below the low end of the range EPA had requested comment on in the proposed ozone NAAQS, and that emissions of ozone precursors would also not lead to an exceedance of the low range of the proposed ozone NAAQS. *Id.* at 120; *see also* Region Response at 41 n.37 (noting that the discussion of ozone in the Region's environmental justice analysis was brief, but that both the Response to Comments and the technical support document contained in the administrative record provide more detailed discussions of the Region's determination regarding ozone). Of equal importance, and unlike the events leading up to the Board's remand order in *Shell 2010*, in this instance the Agency has not made a final determination or issued a final rule stating that the current 8-hour ozone standard is inadequate. *See* Region Response at 41. ICAS has not demonstrated that the Region's consideration of the ozone NAAQS in the current appeal warrants Board review based on similarities to the Region's treatment of the hourly NO_2 NAAQS in *Shell 2010*.

[72] ICAS challenges the Region's conclusion not to model emissions of ozone and ozone precursors, and alleges that the "limited background data" that exists does not demonstrate that current ozone levels are well below the proposed ozone NAAQS. ICAS Petition at 33. ICAS does not provide any citation or reference as support for this statement, which amounts to a challenge to the Region's technical expertise. This Board recently stated that "it is axiomatic that a challenge to the fundamental technical expertise of a permit issuer requires a petitioner to overcome a particularly heavy burden, and that a successful challenge to a permit issuer's technical expertise must consist of more than just a difference of opinion." *Shell Discoverer 2012*, 15 E.A.D. at 501 (citing *Shell 2011*, 15 E.A.D. at 203, and *NE Hub*, 7 E.A.D. at 567). ICAS's bald assertion that background ozone data was limited and does not support the Region's conclusions cannot overcome this particularly heavy burden.

demonstrate why a permitting authority's response to objections made during the public comment period warrants review). In this instance, the Region explained:

> [T]he Clean Air Act permitting programs are essentially 'first come, first served' programs and each subsequent permitting action needs to account for all of those that went before but not any actions that will occur subsequent to that action. The permits for the Discoverer drill ship in the Chukchi Sea and Beaufort Sea are the first permits in their respective vicinities and they only need to assess their impacts on the existing air quality situation.
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> The Kulluk drill rig in the Beaufort Sea is the second permit and EPA has addressed cumulative impacts by including conditions in the permit that prevent Shell from operating the Kulluk drill rig and the Discoverer drill ship in the Beaufort Sea during the same drilling season. Permit Condition D.4.8. As such, only one of the two drill rigs can operate in the Beaufort in any year so there will be no overlapping impacts with respect to compliance with short[]term NAAQS. * * *
>
> As discussed above, ConocoPhillips has withdrawn its permit application for operation of a jack-up drill rig in the Chukchi Sea.

RTC at 101; *see also* EJ Analysis at 14 (reporting total maximum modeled concentrations for criteria pollutants in Kaktovik and Nuiqsut, which account for both the *Discoverer*'s operation and background concentrations); Region Response at 42 n.39 (noting that "[p]otential OCS operations in the Chukchi Sea and the Beaufort Sea are over 200 miles apart at the closest point"). Aside from its plain statement that the Region did not consider the emissions from all proposed OCS operations, ICAS does not address the Region's response to its comment, and thus cannot demonstrate that this issue warrants Board review. *Peabody*, 12 E.A.D. at 33.

4. *Oil Spill Response Capabilities*

Mr. Lum asserts that EPA has failed to require Shell to demonstrate its oil spill response capabilities in "clear, windy, broken ice and sheet ice conditions." Lum Petition at 1-2. The Region responds that this issue is outside the scope of these permit proceedings and thus is not properly subject to review. Region Response at 47.

The Board has previously emphasized that "[t]he PSD review process is not an open forum for consideration of every environmental aspect of a proposed project, or even every issue that bears on air quality."[73] *In re Knauf Fiber Glass GmbH*, 8 E.A.D. 121, 127 (EAB 1999) ("*Knauf I*"), *quoted in In re Sutter Power Plant*, 8 E.A.D. 680, 688 (EAB 1999); *see also In re Encogen Cogeneration Facility*, 8 E.A.D. 244, 259-60 (EAB 1999). The Board has jurisdiction "to review issues directly related to permit conditions that implement the federal PSD program," *Sutter*, 8 E.A.D. at 688, but will deny review of issues not governed by the PSD regulations because it lacks jurisdiction over them. *Id.*; *see also Encogen*, 8 E.A.D. at 259 (noting that petitioners had not shown how the issues they requested the Board to review fell within the Board's PSD jurisdiction). Moreover, there are often other regulatory programs in place that may address environmental concerns that fall outside the Board's scope of review. *Knauf I*, 8 E.A.D. at 162; *see also Shell 2007*, 13 E.A.D. at 405 n.66.

EPA's jurisdiction over portions of the OCS applies to air emissions subject to the CAA and its implementing regulations. In this instance, BOEMRE[74] is responsible for implementing regulations that address oil spill and response capabilities.[75] The Board does not have jurisdiction to consider Shell's oil spill and re-

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[73] As noted above, see Part VI.A.1.a, the OCS air regulations require that OCS permit proceedings follow the procedures used to issue PSD permits contained in 40 C.F.R. part 124. 40 C.F.R. § 55.6(a)(3).

[74] As the Board has noted in previous *Shell* decisions, in May 2010 the Secretary of the Department of the Interior ("DOI") signed a Secretarial Order reorganizing the former Minerals Management Service ("MMS") into three independent entities to better carry out its three missions of: (1) improving the management, oversight, and accountability of activities on the OCS; (2) ensuring a fair return to the taxpayer from offshore royalty and revenue collection and disbursement activities; and (3) providing independent safety and environmental oversight and enforcement of offshore activities. *Shell 2012*, 15 E.A.D. at 492 n.29; *see also Shell 2010*, 15 E.A.D. at 112 n.7; U.S. DOI, Departmental Manual, pts. 118 & 119, ch. 1 (Sept. 30, 2011), *available at* http://elips.doi.gov/app_dm/dm.cfm ("Departmental Manual") (establishing the creation, authorities, objectives, and reporting relationships for the Bureau of Ocean Energy Management ("BOEM") and Bureau of Safety and Environmental Enforcement ("BSEE")). BOEMRE assumed all of MMS's responsibilities in the interim until the full implementation of the reorganization into the three separate entities was complete. *Shell 2012*, 15 E.A.D. at 492 n.29; *see Shell 2010*, 15 E.A.D. at 112 n.7. The transfer of the revenue collection function to the Office of Natural Resources Revenue was completed on October 1, 2010. *See* Secretary of the Interior, U.S. DOI, Order No. 3306, *Organizational Changes Under the Assistant Secretary – Policy, Management and Budget* (Sept. 20, 2010), *available at* http://elips.doi.gov/app_SO/so.cfm; Departmental Manual, pt. 112, ch. 34 (Apr. 15, 2011). One year later, on October 1, 2011, the reorganization was completed when BOEMRE was replaced by BOEM and BSEE. *See* Departmental Manual, pts. 118 & 119. For consistency the Board refers to BOEMRE because the Permit and the supporting documentation refer exclusively to BOEMRE.

[75] On August 4, 2011, BOEMRE (now BOEM, see note 74 above) conditionally approved Shell's exploration plan for the Beaufort Sea. Letter from Jeff Walker, Regional Supervisor, Field Operations, Alaska OCS Region, BOEMRE, U.S. DOI, to Susan Childs, Shell Offshore, Inc. (Aug. 4,

Continued

sponse capabilities in the Arctic OCS, and thus, the Board denies Mr. Lum's petition for review on these grounds.

5. *Impacts of Air Emissions on Traditional Subsistence Food Sources*

Mr. Lum asserts that the *Kulluk*'s operations in the Beaufort Sea will introduce toxins into the ocean "via the exhaust [from the *Kulluk*] that settles down into it," and contaminate the marine mammals and fish the coastal Inupiat consume as part of their indigenous diet. Lum Petition at 2-3. Mr. Lum continues that this will not only contaminate the food supply but also alter traditional Inupiat culture. *Id.* The Region responds that this issue is outside the scope of these permit proceedings and thus is not properly subject to Board review. Region Response at 47. The Board construes Mr. Lum's assertions as a challenge to the adequacy of the Region's compliance with the Executive Order.

Mr. Lum also raised this issue in the appeals that led to the Board's *Shell Discoverer 2012* decision. *See* 15 E.A.D. at 502. In *Shell Discoverer 2012*, the Board denied review on procedural grounds because the impacts of air emissions on traditional subsistence food sources was not raised at the time of the first appeals.[76] *Id.* In the current appeal, Mr. Lum timely submitted comments on this issue and thus his petition for review is procedurally sound. *See* Lum Comments at 1. The Board, however, has previously held that "[i]mpacts on subsistence hunting and fishing are outside the scope of the PSD program and therefore the Board's jurisdiction." *Shell 2007*, 13 E.A.D. at 405 n.66 (citing *Knauf I*, 8 E.A.D. at 161-62), *quoted in* RTC at 125. The Board does not have jurisdiction to consider the impacts of air emissions on traditional subsistence food sources and Inupiat culture, and thus, the Board denies Mr. Lum's petition for review on these grounds.

(continued)
2011) [hereinafter Beaufort EP Letter]. The approval of the Beaufort Sea exploration plan was conditioned, among other things, on Shell submitting to BOEMRE prior to the commencement of exploratory drilling operations documentation regarding the subsea well capping and containment system Shell has committed to have at its disposal. *Id.* at 3. Specifically, Shell must "submit documentation on the procedures for deployment, installation, and operation of the system under anticipated environmental conditions, including the potential presence of sea ice for approval by BOEMRE. Shell will also be required to conduct a field exercise to demonstrate Shell's ability to deploy the system." *Id.*

[76] As mentioned above, the Board remanded to the Region two OCS PSD permits in December 2010. *See generally Shell 2010*, 15 E.A.D. at 161-62. In the subsequent appeals of the permits issued upon completion of remand proceedings, the Board unequivocally stated that "in the current appeals, '[n]o new issues may be raised that could have been raised, but were not raised,' in the previous appeals." *Shell Discoverer 2012*, 15 E.A.D. at 477 (quoting *Shell 2010*, 15 E.A.D. at 162).

For all of the foregoing reasons, the Board declines to review the Region's compliance with the Executive Order and applicable Board precedent.

F. *ICAS Has Failed to Demonstrate That the Region Clearly Erred or Abused Its Discretion in Providing 46 Days for Comment on the Draft Permit and in Denying ICAS's Request for Nonoverlapping Comment Periods*

ICAS claims that the Region "committed clear legal error by failing to provide the public an adequate opportunity to comment on" the draft permit.[77] ICAS Petition at 6. More specifically, ICAS alleges that the Region failed to meet the parts 71 and 124 procedural requirements that require permit issuers to "allow *at least* 30 days for public comment" on draft permits. *Id.* at 7 (citing 40 C.F.R. §§ 71.11(d)(2)(i), 124.1) (emphasis added by Petitioners). Although ICAS acknowledges that the comment periods for the Permit ran from July 22, 2011, to September 6, 2011, an interval of 46 days, ICAS contends that, because the Region issued the draft *Kulluk* permit for comment at the same time it issued another draft minor source air permit for comment and in the middle of comment periods for two major source air permits for another Shell drillship,[78] in reality, ICAS only "had 16 days to comment on each of the[] permits," rather than the required minimum of 30. *Id.* at 7. This is because, according to ICAS, it "does not have the resources to comment on more than one air permit at a time." *Id.* ICAS further claims that "the short and overlapping comment periods * * * deprived [them] of a meaningful opportunity to comment on Shell's new air modeling results." *Id.* at 8.

In a related argument, ICAS asserts that the Region clearly erred in denying its request that the Region "hold nonoverlapping comment periods on the OCS permits and [] provide 45 days to comment on each permit." *Id.* at 8-9. ICAS claims that it met the regulatory standard for demonstrating the need for additional time to prepare comments. *Id.* (referring to the standard at 40 C.F.R. § 71.11(g)); *see also id.* attach. 8 (Letter from Harry Brower, Chairman, Alaska Eskimo Whaling Commission ("AEWC"), et al., to Doug Hardesty, Air Permits Project Manager, U.S. EPA Region 10 (June 15, 2011) (A.R. C-487)) (AEWC and ICAS request for nonoverlapping comment periods) [hereinafter ICAS Let-

[77] The Board also considers ICAS's claim under an abuse of discretion standard. *See infra* note 80.

[78] The Region had issued two draft permits for Shell's *Discoverer* drillship earlier in July of 2011. *See Shell Discoverer 2012*, 15 E.A.D. at 480. The comment period for those two permits ran from July 6 to August 5, 2011. *Id.*; ICAS Petition at 7. In addition, on the same date the Region had issued the *Kulluk* draft permit, it had also issued a draft permit for ConocoPhillips to operate a jackup drill rig in the Chukchi Sea. ICAS Petition at 7. The comment period for this permit originally ended at the same time as the *Kulluk* draft permit, but was later extended to September 21, 2011. ICAS Petition at 8-9; RTC at 7.

ter]; *id.* attach. 9 (Letter from Richard Albright, Director, Office of Air, Waste, & Toxics, U.S. EPA Region 10, to Harry Brower, AEWC Chairman, et al. (July 21, 2011) (A.R. C-532)) (EPA response).

The part 71 procedural regulation governing public notices and public comment periods specifically provides that "[p]ublic notice of the preparation of a draft permit * * * shall allow at least 30 days for public comment." 40 C.F.R. § 71.11(d)(2)(i). The part 124 procedural regulations, which also apply to the Permit,[79] contain the same language. *See* 40 C.F.R. § 124.10(b). The Board has traditionally read these regulations to establish a minimum comment period length of 30 days, recognizing that the regulations clearly allow the permit issuer, in its discretion, to grant a longer comment period. *Shell Discoverer 2012*, 15 E.A.D. at 520-21 (discussing the applicable part 124 regulation); *see also In re Genesee Power Station*, 4 E.A.D. 832, 841 (EAB 1993) (noting that the part 124 regulation governing public comment periods "only require[s them] to last 30 days"). In addition, as ICAS points out, part 71 contains a separate provision specifically authorizing a permit issuer to grant additional time. It states that "[a] comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section. Additional time shall be granted to the extent that a commenter who requests additional time demonstrates the need for such time."[80] 40 C.F.R. § 71.11(g)).

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[79] As the Region explained, the Permit is subject to the procedural requirements of both part 55 (and consequently part 124) as well as part 71:

> The portion of this permit that is a Part 71 permit (e.g., the portion of the permit that applies on the Outer OCS) is issued under 40 CFR Part 55 and 40 CFR Part 71 and subject to the procedural requirements of 40 CFR Part 71 as provided in 40 CFR § 71.4(d). The portion of this permit that is a COA Title V permit and a COA minor source permit (e.g., the portion of the permit that applies on the Inner OCS) is issued under 40 CFR Part 55 and, in the absence of other applicable procedures, subject to the permit issuance procedures for PSD permits under 40 CFR Part 124, Subpart A and C. *See* 40 CFR §§ 55.6(a) (3) and 124.1.

RTC at 6 n.3.

[80] Because the regulations authorize the permit issuer to grant a longer comment period upon an adequate showing of need, the Board also considers ICAS's challenge under an abuse of discretion even though ICAS did not clearly present its challenge as such, alleging instead only "clear error." *See Shell Discoverer 2012*, 15 E.A.D. at 521 (considering similar argument as raising an abuse of discretion claim); *In re Guam Waterworks Auth.*, 15 E.A.D. 437, 443 n.7 (EAB 2011) (explaining Board's standard in reviewing claims involving a permit issuer's exercise of discretion); *In re Desert Rock Energy Co.*, 14 E.A.D. 484, 530 (EAB 2009) (using an abuse of discretion standard where the permit issuer had "broad discretion" in making the challenged determination). The Board similarly reads ICAS's challenge to the Region's denial of nonoverlapping comment periods as raising an abuse of discretion claim.

In the present case, the Region provided a 46 day public comment period for the *Kulluk* draft permit, albeit a comment period that partially overlapped with several other comment periods. The Region, in its Response to Comments, provided a lengthy, well-reasoned explanation for its establishment of a 46 day comment period for the *Kulluk* permit and for its denial of ICAS's request for nonconcurrent comment periods. *See* RTC at 5-8. In addressing comments on these topics, the Region pointed out that it had granted a period longer than the regulatory minimum for this permit and had also extended the comment period for one of the other permits, the ConocoPhillips permit. *Id.* at 6; *accord id.* at 7. The Region further noted that the ConocoPhillips permit, for which it had extended the comment period to 60 days, was for a proposed 2013 operation, whereas Shell "intends to begin its exploratory drill operations with the Kulluk in July 2012." *Id.* at 7. The Region also enumerated the many steps it had taken before and during the public comment period "to promote meaningful public involvement." *Id.* at 6.

In addition, the Region observed that, while "it agree[d] with the commenters that some aspects of the Draft Permit are technically and legally complex," on the other hand, "[t]he comments submitted * * * demonstrate[d] that the public was able to review, evaluate, and comment on many complex issues during the comment period provided." RTC at 8. The Region noted that among the more than 14,500 public comments it had received, a number of them had contained "substantive comments on, among other issues, the definition of OCS Source, limits on the source's potential to emit, choice of model, modeling data, ambient air boundary, source testing, emission factors, air quality analysis, applicability of increments and visibility, and cumulative impacts." *Id.* Accordingly, the Region believed that "[t]he volume of comments received and the substantive issues addressing technically and legally complex issues demonstrate[d] that the public was able to meaningfully review and comment on the Draft Permit." *Id.*

The Region also explained that "40 CFR § 71.7(a)(2) requires that it take a final action on a Title V permit application within 18 months of receiving a complete application. In conducting the permitting process, Region 10 must strike a balance between its obligation to provide for meaningful public participation and its responsibility to make a final permitting decision in a timely manner." *Id.* Based on all these factors, the Region had determined that "the commenters have not demonstrated that a period of more than 46 days is necessary to give the public a reasonable opportunity to comment." *Id.* at 7 (citing 40 C.F.R. §§ 71.11(g) and 124.13).

In its petition, ICAS does not explain why the Region's response to these comments is clearly erroneous or an abuse of discretion. In fact, ICAS does not even address the Region's response. ICAS's failure to address the Region's response is, in and of itself, sufficient to deny its claims of procedural error con-

cerning the comment period.[81]

Nevertheless, even if the Board considered ICAS's claim of procedural error, the Board would deny review of this claim for several reasons. First, the length of time the Region provided for comment on this permit – 46 days – is 16 days more than the regulatory minimum required by 40 C.F.R. §§ 71.11(d)(2)(i) and 124.10(b). It is also one day more than the amount of time ICAS had specifically requested for each permit in its letter.[82] *See* ICAS Letter at 2 (requesting nonconcurrent comment periods of 45 days). ICAS's attempt to recalculate the length of the comment period as "16 days" based on an unexplained mathematical formula involving the number and lengths of other comment periods is unconvincing and does not demonstrate clear error. *See Shell Discoverer 2012*, 15 E.A.D. at 521; *see also Russell City II*, 15 E.A.D. at 95-98 (denying review of a procedural error claim where petitioners fail to point to a part 124 procedural regulation that was violated); *Knauf II*, 9 E.A.D. at 17 (denying review where the permit issuer fulfilled the applicable regulatory obligations, but did not go beyond those requirements).

Furthermore, while it is true that the Region did not grant ICAS's request for nonoverlapping comment periods, ICAS has not pointed to any regulations that prohibit the Agency from issuing concurrent permits or that require – or even specify – a different comment period length when the Agency does issue concurrent permits. To the contrary, the relevant regulations authorize the Agency to issue a single public notice to "describe more than one permit or permit actions," 40 C.F.R. §§ 71.11(d)(1)(iii), 124.10 (a)(3), without mentioning a different time frame for public comment when concurrent permits are issued. While section 71.11(g) authorizes the Agency to extend a particular comment period on a case-by-case basis where a commenter has demonstrated the need for additional time – which would thereby provide an avenue for commenters to obtain longer comment periods in situations where comment periods overlap[83] – the provision does not prohibit, or even mention, overlapping comment periods.

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[81] As the Board discussed above in Part III, a petitioner must explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. "[A] petitioner's failure to address the permit issuer's response is fatal to its request for review." *In re Indeck-Elwood LLC*, 13 E.A.D. 126, 143, 170 (EAB 2006); *accord Russell City II*, 15 E.A.D. at 10.

[82] Notably, therefore, for this permit, by providing a longer comment period, the Region did in essence partially grant ICAS's request.

[83] And, in this case, the Region did, provide additional time for comment on two of the permits whose comment period overlapped. The Region increased the comment period for the Shell *Kulluk* permit to 46 days and the comment period for the ConocoPhillips permit to 60 days. *See supra* note 78.

Finally, it is clear from the administrative record that the Region appropriately balanced conflicting considerations in deciding on the length of the comment period for this permit and in denying the request for nonoverlapping periods. ICAS has not demonstrated otherwise[84] and has therefore failed to show that the Region clearly erred or abused its discretion in either selecting a 46 day comment period or in denying ICAS's request for nonconcurrent comment periods. *See Shell Discoverer 2012*, 15 E.A.D. at 523 (denying review of a similar claim based on similar facts). Review of the Permit is therefore denied on this issue.

G. *ICAS Has Failed to Demonstrate That the Region Clearly Erred in Its Public Hearing Procedures or That Any of the Alleged Procedural Deficiencies Otherwise Warrant Review*

As noted above in Part V, the Region held two public hearings on the draft permit, one in Barrow, and a second in Anchorage. The Region also held an informational meeting prior to the Barrow public hearing. *See* Statement of Basis at 11 (scheduling informational hearing from 5:00-6:30 pm, public hearing from 7:00-9:00 pm); RTC at 6-7.

ICAS claims that the Region "committed clear legal error by failing to provide the public an adequate opportunity" to participate in the Barrow public hearing. ICAS Petition at 6; *see also id.* at 9-10. ICAS alleges three procedural problems with the Barrow hearing. *Id.* at 9-10. ICAS first claims that the Region continued with the hearing despite difficulties with the teleconference phone system that allegedly impaired the ability of the Region to hear all comments. *Id.* at 9. ICAS next alleges that, "for a significant portion of the hearing," the Region discussed a PowerPoint presentation that was not made available to the public attending the hearing. *Id.* at 9-10. Finally, ICAS contends that the Region failed to sufficiently inform those attending the public hearing that it had procured an

[84] The Board is unpersuaded by ICAS's argument that it had difficulty locating an expert to review the air modeling. *See* ICAS Petition at 8. As the Region indicated in its Response to Comments, RTC at 8, other commenters provided substantive, technical comments on the air modeling, which suggests that the comment period was sufficient to allow opportunity for meaningful comment. *See Fla. Power & Light Co. v. United States*, 846 F.2d 765, 772 (D.C. Cir. 1988) (upholding a short comment period as sufficient where the agency had received numerous comments, some lengthy, and the comments had had a "measurable impact" on the final rule); *Conference of State Bank Supervisors v. Office of Thrift Supervision*, 792 F. Supp. 837, 844 (D.D.C. 1992) (holding length of comment period not unreasonable especially in light of the comments that plaintiffs and other parties submitted). Furthermore, as the Region points out, it notified ICAS in May that the comment periods would begin in July. *See* Letter from Doug Hardesty, EPA, to North Slope Borough et al. (May 25, 2011) (A.R. HH-1). The Region also conducted three separate informational meetings in Barrow and Kaktovik, Alaska, more than a month prior to the start of the public comment period for the Permit "to inform the North Slope community of the draft permit and to describe opportunities for public participation." RTC at 6.

Inupiat interpreter for the hearing.[85] *Id.* at 10. ICAS asserts that making an interpreter "available in this fashion is akin to not having [one] at all." *Id.*

Part 71 and part 124 each contain a provision governing public hearings. *See* 40 C.F.R. §§ 71.11(f), 124.12. Both public hearing regulations require the permitting authority to hold a public hearing when the permitting authority "finds, on the basis of requests, a significant degree of public interest in a draft permit." *Id.* §§ 71.11(f)(1), 124.12(a)(1). The regulations also authorize the permitting authority to hold a public hearing "at its discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision." *Id.* §§ 71.11(f)(2), 124.12(a)(2); *accord In re Russell City Energy Ctr.* ("*Russell City I*"), 14 E.A.D. 159, 164 n.6 (EAB 2008). The public hearing regulations also prescribe the method of giving public notice of the hearing, 40 C.F.R. §§ 71.11(f)(3), 124.12 (a)(4), the procedure for designating a presiding officer to preside at the hearing, *id.* §§ 71.11(f)(4), 124.12 (b), and the procedures for the public to comment at the hearing, *id.* §§ 71.11(f)(5), 124.12 (c). Finally, both regulations require that a tape recording or written transcript of the hearing be made publically available. *Id.* §§ 71.11(f)(6), 124.12 (d).

Parts 71 and 124 also both require the permit issuer, in making its final decision, to consider all comments it receives during the public comment period and at any public hearings and to issue a "response to comments." *Id.* §§ 71.11(j), 124.17(a); *see also id.* §§ 71.11(e), 124.11. More particularly, these provisions require the permit issuer to "[b]riefly describe and respond to all significant comments on the draft permit * * * raised during the public comment period, or during any hearing" in the response to comments document issued at the same time the final permit decision is issued. *Id.* §§ 77.11(j)(1)(ii), 124.17(a)(1). Importantly, none of the aforementioned regulations refer to, or in any way mention, a requirement to provide an interpreter or a requirement to provide written materials at the hearing.

Upon review of the administrative record and the parties' arguments, the Board concludes that ICAS has not shown that the Region clearly erred in its handling of the Barrow public hearing for any of the three reasons ICAS advances. Not only does ICAS fail to point to any specific regulatory provision that the Region violated, but none of the alleged problems otherwise warrant Board review. The Board addresses each alleged deficiency in more detail below.

ICAS's first contention – that the Region committed clear error because it was allegedly unable to adequately obtain input from the public due to telecom-

[85] According to ICAS, although the Region may have noted that an interpreter was available at the top of the hearing's sign-in sheet, it did not make a public announcement of this fact at the outset of the hearing. ICAS Petition at 10; ICAS Reply at 6; *see also infra* note 89.

munication problems during the hearing – is unpersuasive. The Region addressed this concern in its Response to Comments. *See* RTC at 9. There, the Region explained that, because such telecommunication problems are common on the North Slope, it had "recorded the public hearing in addition to having the hearing transcribed by a court reporter. From these *two* sources, Region 10 was able to capture the comments provided during the public hearing." *Id.* (emphasis added); *see also* Public Hearing Transcript ("Pub. Hrg Tr.") at 3 (explaining that the hearing was recorded on the teleconference line as a "safety net"). In response, ICAS merely asserts that "this does not change the fact that people were not able to be heard via phone." ICAS Petition at 9. Significantly, however, ICAS does not identify any comment that the Region failed to hear or for which the Region failed to provide a response.[86] *See id.* at 9; ICAS Reply at 6. Nor has any commenter come forward alleging that the Region failed to respond to his or her public hearing comments. The fact that the call center experienced some telecommunications problems during the public hearing — which the Region appears to have adequately anticipated and addressed by utilizing two methods of note taking — does not, without more, constitute clear legal error. Speculative claims that a permitting authority may have failed to hear a comment are insufficient to warrant Board review.

ICAS's contention that the Region committed clear procedural error by failing to provide pre-meeting copies of a Powerpoint presentation is inapposite. In its response to the petition, the Region explains that this presentation was given during the informational meeting, not during the public hearing. Region Response at 39; *see also* Statement of Basis at 11 (scheduling informational hearing prior to public hearing); RTC at 6-7 (mentioning informational meeting). ICAS does not dispute this.[87] *See* ICAS Reply at 5-7. Furthermore, nowhere do the regulations require a permitting authority to provide informational handouts at an informational meeting (or at a public hearing).[88] Thus, while it may be useful for a permit

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[86] As discussed above, the regulatory requirement is for a permit issuer to respond to significant comments. *See* 40 C.F.R. § 77.11(j)(1)(ii), 124.17(a)(1). Thus, had ICAS identified significant comments raised at the public hearing that the Region failed to address, ICAS's arguments would have been more persuasive. *See, e.g., In re Rockgen Energy Ctr.*, 8 E.A.D. 536, 557 (EAB 1999) (remanding so that permit issuer could demonstrate it had given thoughtful and full consideration to public comments); *In re W. Suburban Recycling & Energy Ctr., L.P.*, 6 E.A.D. 692, 710-12 (EAB 1996) (remanding permit and requiring permit issuer to comply with procedures under part 124 including provision requiring a response to all significant comments received); *see also In re N. Mich. Univ.*, 14 E.A.D. 283, 317-18 (EAB 2009) (discussing part 124 requirement to adequately respond to comments).

[87] The Region's explanation makes sense in light of the purpose of the two meetings. While the permitting authority may present its analyses, findings, and conclusions about the draft permit at an informational meeting, the purpose of the public hearing is to obtain comments *from* the public.

[88] The only document the public hearing regulations require a permit issuer make available to the public is the transcript of the hearing. 40 C.F.R. §§ 71.11(f)(6), 124.12 (d).

issuer to provide copies of a presentation to the audience attending an informational meeting, failure to do so at the meeting – or at a subsequent public hearing – does not constitute clear error or otherwise warrant Board review.

ICAS's final contention – that the Region committed clear procedural error by not adequately informing the public that an interpreter was available at the public hearing – is also unconvincing. Importantly, as noted above, there is no regulatory requirement for an interpreter in either part 71 or part 124, nor is there a provision specifying the method a permit issuer should use to inform the public of the availability of an interpreter at the public hearing.[89] ICAS has not pointed to any other requirement, regulatory or otherwise, requiring an interpreter or prescribing the method for announcing one. Accordingly, while it may be preferable for the permit issuer to formally announce the availability of an interpreter at the beginning of the public hearing, and in both languages, failure to do so does not constitute clear error or otherwise warrant Board review.

In sum, ICAS has failed to demonstrate that the public hearing procedures utilized by the Region constituted clear error. ICAS has not shown that the Region violated any part 71 or 124 procedural regulation. Moreover, the alleged problems ICAS has identified do not, even if the Board were to find them to constitute a deficiency in some way, warrant Board review. Consequently, the Board denies review of the Permit on this ground.

VII. *CONCLUSION AND ORDER*

For the foregoing reasons, the Board concludes that none of the petitioners have demonstrated that review of Permit No. R10 OCS030000 is warranted on any of the grounds presented. The Board therefore denies review of the Permit.

So ordered.

[89] The parties seemingly dispute the method in which the Region notified the public of the availability of the interpreter. The Region stated in its Response to Comments that, "[p]rior to the Barrow public hearing, Region 10 contacted [ICAS] to arrange for an Inupiat speaker to be available to provide Inupiat interpretation at the hearing if requested by any participant. At the beginning of the hearing, participants were provided the opportunity to request Inupiat interpretation during the hearing. No participant requested translation and therefore an interpreter was not used." RTC at 10-11. In response, ICAS claims that attendees only recall mention of an interpreter on the sign-up sheet, and only in English. ICAS Petition at 10. ICAS further asserts that the transcript of the public hearing does not indicate that an announcement was made. ICAS Reply at 6. In light of the Board's conclusion on this issue, it is unnecessary to determine the precise methodology the Region used to notify the public of the interpreter's availability.

R011723

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

Exhibit J-2

OUTER CONTINENTAL SHELF
PERMIT TO CONSTRUCT AND TITLE V AIR QUALITY OPERATING PERMIT

Permit Number:	R10OCS030000	Issuance Date:	October 21, 2011
AFS Plant I.D. Number:	02-010-OCS02	Effective Date:	November 28, 2011
		Expiration Date:	November 28, 2016

In accordance with the provisions of Section 328 and Title V of the Clean Air Act and 40 CFR Parts 55 and 71, and the applicable rules and regulations,

Shell Offshore Inc.
3601 C Street, Suite 1000
Anchorage, AK 99503

is authorized to construct and operate the Conical Drilling Unit Kulluk (Kulluk) and associated air emission units and to conduct other air pollutant emitting activities in accordance with the conditions listed in this permit, and only at the following lease blocks from the Beaufort Sea lease sales 186, 195 and 202:

OPD NR6-01 (Harrison Bay)
Lease Sale 186: 6369, 6370, 6419, 6420, 6421C
Lease Sale 195: 6173, 6222, 6223, 6272, 6273, 6320,6321, 6322, 6323, 6371, 6372, 6373, 6374BC, 6424C, 6418, 6422B, 6423B, 6468, 6469B, 6516B, 6519A
Lease Sale 202: 6221, 6274, 6319, 6324, 6367, 6368, 6470, 6471

OPD NR6-01 (Beechey Point)
Lease Sale 186: 6352, 6402A, 6403B
Lease Sale 195: 6153, 6202, 6203, 6204, 6251A, 6301B, 6252, 6253, 6254, 6255, 6256, 6302, 6303, 6304, 6305, 6306, 6307, 6308, 6309, 6351AB, 6310C, 6351, 6354, 6355, 6356, 6358, 6359, 6360, 6401A, 6405B, 6406B, 6409B, 6410, 6411, 6412
Lease Sale 202: 6009, 6010, 6011, 6012, 6058, 6059, 6060, 6061, 6062, 6063, 6064, 6065, 6066, 6067, 6068, 6114, 6115, 6116, 6117, 6118, 6324

OPD NR6-01 (Jeanne Island)
Lease Sale 195: 6057, 6058, 6059, 6707, 6708, 6709, 6712, 6713, 6757, 6758, 6764, 6773, 6774, 6814, 6815, 6822, 6823, 6824, 6825, 6826
Lease Sale 202: 6251, 6252, 6253, 6301, 6302, 6303, 6304, 6305, 6308, 6309, 6310, 6351, 6352, 6353, 6354, 6355, 6356, 6357, 6358, 6359, 6401, 6402, 6403, 6404, 6405, 6406, 6407, 6408, 6409, 6410, 6433, 6434, 6435, 6436, 6437, 6438, 6439, 6440, 6441, 6503, 6504, 6506, 6508, 6510, 6511, 6512, 6554, 6555, 6556, 6559, 6560, 6561, 6562, 6609, 6610, 6611, 6612, 6660, 6662

OPD NR07-01 (Barrow Island)
Lease Sale 195: 6751, 6752, 6801, 6802, 6851

Terms not otherwise defined in this permit have the meaning assigned to them in the referenced statutes and regulations. All terms and conditions of the permit are enforceable by the United States Environmental Protection Agency (EPA) and citizens under the Clean Air Act (CAA).

Richard Albright
Director, Office of Air, Waste and Toxics

Date

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ABBREVIATIONS AND ACRONYMS

AAC	Alaska Administrative Code
ASTM	American Society of Testing and Materials
Btu	British thermal units
°C	degree Celsius
CAA	Clean Air Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CMS	Continuous monitoring system
dscf	dry standard cubic foot
EPA	United States Environmental Protection Agency
°F	degree Fahrenheit
GHG or GHGs	Greenhouse Gas or Greenhouse Gases
hp	Horsepower
HPU	Hydraulic Power Units
hr	hour
kWe	KiloWatts electric
kWe-hr	KiloWatts electric generated in an hour
lbs	Pounds
MLC	Mud line cellars
MMBtu/hr	Million British thermal units per hour
N_2O	Nitrous Oxide
NA	Not applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOx	Oxides of nitrogen
NSPS	New Source Performance Standards
NSR	New Source Review
OCS	Outer continental shelf
OPD NR	Official protraction diagram number
OSRV	Oil spill response vessel
OTM	Other Test Method
Part 55	40 CFR Part 55
$PM_{2.5}$	Particulate matter with an aerodynamic diameter less than 2.5 microns
PM_{10}	Particulate matter with an aerodynamic diameter less than 10 microns
pph	pounds per hour
ppm	Parts per million
ppmvd	Parts per million by volume dry
PTE	Potential to Emit
SCR	Selective Catalytic Reduction
SO_2	Sulfur dioxide
Shell	Shell Gulf of Mexico Inc. (the permittee)
tpy	Tons per year
wt%	Weight percent

AUTHORITY

The EPA is issuing this outer continental shelf (OCS) permit to construct (PTC) and Title V air quality operating permit pursuant to Section 328 of the CAA, 42 U.S.C. § 7627, and the implementing OCS regulations at 40 CFR Part 55, and pursuant to Title V of the CAA, 42 U.S.C § 7661, and the implementing air quality regulations at 40 C.F.R. Part 71 and Article 5 of the State of Alaska Air Quality Control Regulations 18 Alaska Administrative Code (AAC) 50.326 (Title V permit), and consistent with 18 AAC 50.502 (Minor Permits for Air Quality Protection) and 18 AAC 50.508 (Minor Permits Requested by the Owner or Operator), the applicable provisions of which have been incorporated into 40 C.F.R. Part 55 Appendix A. This action is based upon the application initially submitted by Shell Offshore Inc. (Shell or permittee) on February 28, 2011, supplemental submittals identified in the administrative record for this permit action, and upon the technical analysis performed by EPA.

FINDINGS

On the basis of the information in the administrative record, EPA has determined that:

1. The permittee will meet all of the applicable requirements of the 40 CFR Part 55;
2. The permittee will meet all of the applicable requirements of the 40 CFR Part 71; and
3. The permittee will meet all of the applicable requirements of 18 AAC 50.

SOURCE DESCRIPTION

The information contained within Tables 1 and 2 reflects vessels and emission units used by the permittee in preparing their application materials.

Table 1 – Kulluk Emission Units

Emission Unit ID[a]	Description	Approximate Aggregate Rating[b]
K-1A – 1D	Electricity Generation Engines	10,352 hp
K-2A – 2Z	MLC HPU Engines	1,500 hp
K-3A – 3Z	MLC Air Compressor Engines	1,500 hp
K-4A – 4C	Deck Crane Engines	1,200 hp
K-5A – 5Z	Heaters and Boilers	6 MMBtu/hr

[a] The "K" in the ID stands for the Kulluk. The number following the "K" in the ID distinguishes the different groups of units. For example, "1" is for electricity generation engines and "2" is for MLC HPU engines. The letters refer to the individual units within a group. The four electricity generation engines are identified K-1A, K-1B, K-1C and K-1D or together as K-1A – 1D. When a letter has not been assigned as is the case for the emergency engine and incinerator, the group consists of only one unit. The table references engines "A" to "Z" when the number of units within a group has not yet been determined. For seldom-used sources, there are four categories of engines, "A" to "D", and for the "D" category, there are up to five engines.
[b] This permit does not limit the permittee to the specific rating listed. Permit conditions may limit operations to less than rated capacity.

Emission Unit ID[a]	Description	Approximate Aggregate Rating[b]
K-6	Emergency Generator Engine	1,047 hp
K-7A – 7D: Seldom-Used Sources		1,650 hp
K-7A	Remote-Operated-Vehicle Engine	300 hp
K-7B	Emergency Anchor Lifting Crane Engine	300 hp
K-7C	Emergency Diver Compressor Engine	300 hp
K-7D1 – 7D5	Emergency Lifeboat Propulsion Engines	750 hp
K-8	Incinerator	276 lb/hr
K-9	Fuel Tanks	423,469 gallons
K-10	Drilling Mud System	NA
K-11	Shallow Gas Diverter System[c]	NA

Table 2 – Associated Fleet Emission Units

Emission Unit ID[d]	Description	Approximate Aggregate Rating[e]
Icebreaker No. 1 (IB1)		
IB1-1A – 1Z	Propulsion Engines and Generator Engines	32,200 hp
IB1-2A – 2Z	Heaters and Boilers	10 MMBtu/hr
IB1-3A – 3Z	Seldom-Used Sources	Various
IB1-4	Incinerator	154 lb/hr
Icebreaker No. 2 - Anchor Handler (IB2)		
IB2-1A – 1Z	Propulsion Engines and Generator Engines	32,200 hp
IB2-2A – 2Z	Heaters and Boilers	10 MMBtu/hr
IB2-3A – 3Z	Seldom-Used Sources	Various
IB2-4	Incinerator	154 lb/hr
Resupply Vessel/Barge and Tug (RV/BT)[f,g]		
RV/BT-1A – 1Z	Propulsion Engines and Generator Engines	12,000 hp[h]
RV/BT-2A – 2Z	Seldom-Used Sources	Various
Oil Spill Response Vessel (OSRV)		
OSRV-1A – 1Z	Propulsion Engines and Generator Engines	3,500 hp

[a] Permit conditions prohibit the shallow gas diverter system from emitting any air pollutants.
[b] The acronym to begin the ID stands for the vessel. For instance, "IB1" stands for Icebreaker No. 1. The number following the acronym in the ID distinguishes the different groups of units. For example, "2" is for heaters and boilers on both Icebreaker No. 1 and Icebreaker No. 2. The letters refer to the individual units within a group. When a letter has not been assigned as is the case for incinerators, the group consists of only one unit. In many instances, the table references engines "A" to "Z" given that the number of units within a group has not yet been determined.
[c] This permit does not limit the permittee to the specific rating listed. Permit conditions may limit operations to less than rated capacity.
[f] Resupply vessels include, but are not limited to, resupply ships and barge and tugboat combinations.
[g] Multiple different RV/BT and OSRV WB may be employed over the course of a single drilling season.
[h] The rating for RV/BT and OSRV WB propulsion engines and generator engines listed in the table reflects approximate aggregate rating for an individual vessel, not for all RV/BT and OSRV WB combined.

Emission Unit ID[d]	Description	Approximate Aggregate Rating[e]
OSRV-2A – 2Z	Seldom-Used Sources	Various
OSRV-3	Incinerator	125 lb/hr
OSRV Work Boats (OSRV WB)[g]		
OSRV WB-1A – 1Z	Propulsion Engines and Generator Engines	600 hp[h]

COA PERMIT DETAILS

Date	Document Details
July 5, 2011	OCS Permit Application to Construct and Operate Conical Drilling Unit Kulluk in Beaufort Sea
July 7, 2011	Fuel Monitoring Information
July 13, 2011	Icebreaker No. 1 Additional Modeling Results and Modeling Files on Hard Drive

APPROVAL CONDITIONS

The permittee is authorized to construct and operate the Kulluk and Associated Fleet at any of the lease blocks identified on Page 1 of this permit, and consistent with the representations in the permit application and subject to the conditions in this permit.

OCS Source and Associated Fleet. Permit conditions contained in Sections B through G that apply to the Kulluk, except for those conditions addressing notification, reporting and testing, apply only during the time that the Kulluk is an OCS Source. Permit conditions contained in Sections B through G that apply to any vessel in the Associated Fleet, except for those conditions addressing notification, reporting and testing, apply only during the time that the Kulluk is an OCS Source and subject vessel in the Associated Fleet is within 25 miles of the Kulluk. Permit conditions in Section A as well as permit conditions contained in Sections B through G addressing notification, reporting and testing, apply at all times as specified.

For the purpose of this permit:

a. The Kulluk is an "OCS Source" at any time the Kulluk is attached to the seabed at a drill site by at least one anchor;

b. A drill site is any location at which Shell is authorized to operate under this permit and for which Shell or a leaseholder has received from the Bureau of Ocean, Energy, Management and Regulatory Enforcement (BOEMRE) an authorization to drill; and

c. The "Associated Fleet" refers to the following vessels: Icebreaker No. 1, Icebreaker No. 2 – Anchor Handler, resupply vessel(s)/barge(s) and tug(s), oil spill response vessel, and oil spill response vessel work boats.

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Corresponding Onshore Area (COA) and Outer OCS Conditions. Conditions identified with "COA" in this permit only apply to lease blocks wholly or partially (the part that is within) on the "inner OCS" (within 25 miles of the state's seaward boundary) as listed below. Conditions identified as "outer OCS" in this permit only apply to lease blocks wholly or partially (the part that is outside) on the outer OCS (outside 25 miles of the state's seaward boundary) as listed below. All other conditions in this permit apply to lease blocks on both the inner and outer OCS.

OPD/Area	Lease Sale	Lease Block Numbers
Lease Blocks Entirely Inside 25 Miles of the State's Seaward Boundary		
NR05-04 Harrison Bay	195	6369, 6370, 6419, 6420, 6421RC
	195	6173, 6222, 6223, 6272, 6273, 6320, 6321, 6322, 6323, 6371, 6372, 6373, 6373BC, 6420, 6420C, 6418, 6421B, 6421D, 6469, 6469B, 6519B, 6519A
	202	6221, 6274, 6319, 6324, 6369, 6370, 6420, 6421
NR06-03 Beechey Point	195	6452, 6453A, 6453B
	195	6452, 6502, 6503, 6504, 6551A, 6401B, 6553, 6553, 6554, 6555, 6556, 6507, 6303, 6304, 6305, 6306, 6307, 6308, 6309, 6401AB, 6401C, 6453, 6454, 6455, 6456, 6458, 6459, 6460, 6401A, 6405B, 6406B, 6409B, 6410, 6411, 6412
	202	6009, 6058, 6059, 6060, 6061, 6063, 6064, 6065, 6066, 6067, 6068, 6114, 6115 6116, 6117, 6118, 6121
NR06-04 Flaxman Island	195	6657, 6658, 6659, 6707, 6708, 6709, 6712, 6713, 6757, 6758, 6764, 6775, 6776, 6814, 6815, 6822, 6823, 6824, 6825, 6874
	202	6251, 6252, 6301, 6302, 6303, 6351, 6352, 6353, 6354, 6355, 6356, 6401, 6402, 6403, 6404, 6405, 6406, 6407, 6408, 6409, 6410, 6451, 6454, 6455, 6456, 6457, 6458, 6459, 6460, 6461, 6504, 6505, 6506, 6508, 6510, 6511, 6512, 6554, 6555, 6558, 6559, 6560, 6561, 6562, 6607, 6610, 6611, 6612, 6660, 6667
NR07-03 Barter Island	195	6751, 6752, 6801, 6802, 6803
Lease Blocks Both Inside and Outside 25 Miles of the State's Seaward Boundary		
NR06-03 Beechey Point	202	6010, 6011, 6012, 6062
NR06-04 Flaxman Island	202	6304, 6405, 6557, 6558, 6560
Lease Blocks Entirely Outside 25 Miles of the State's Seaward Boundary		
NR06-04 Flaxman Island	202	6559, 6609, 6610, 6611

A. GENERALLY APPLICABLE REQUIREMENTS

1. **Construction and Operation.**

   1.1. The permittee shall construct and operate the OCS Source and the Associated Fleet in accordance with the application and supporting materials submitted by the permittee as identified in the Statement of Basis for this permit action and in accordance with this permit. [40 CFR §55.6(a)(4)(i)]

   1.2. Upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, the permittee shall promptly submit such

supplementary facts or corrected information. [40 CFR §71.5(b), 18 AAC 50.326(a)]

2. **Overlapping Requirements.** When two or more provisions apply to the same emission unit or activity the permittee must comply with both. [40 CFR § 71.6(a)(1), 18 AAC 50.326(a)]

3. **Compliance Required.**

   3.1. The permittee shall comply with all applicable requirements of 40 CFR Part 55 and this permit. In the inner OCS, the permittee shall also comply with all applicable requirements of 18 AAC 50. [40 CFR §§ 55.9(a) and 71.6(a)(6)(i); 18 AAC 50.345(c)]

   3.2. For applicable requirements with which the source is in compliance, the permittee will continue to comply with such requirements. For applicable requirements that will become effective during the permit term, the permittee shall meet such requirements on a timely basis. [40 CFR §§ 71.5(c)(8)(iii)(A)-(B) and 71.6(c); 18 AAC 50.326(a)]

   3.3. Failure to comply with all requirements of 40 CFR Part 55 and this permit shall be considered a violation of Section 111(e) and Title V of the CAA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. All enforcement provisions of the CAA, including but not limited to, Section 113, 114, 120, 167, 303, and 304 apply to the permittee. [40 CFR §§ 55.9(a)-(b) and 71.6(a)(6)(i); 18 AAC 50.345(c)]

   3.4. All terms and conditions of this permit, including any provision designed to limit the permittee's potential to emit, are enforceable by EPA and citizens under the CAA. [40 CFR § 71.6(b); 18 AAC 50.345(c)]

   3.5. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [40 CFR §71.6(a)(6)(ii); 18 AAC 50.345(d)]

4. **Compliance with Other Requirements; Permit Shield.**

   4.1. This permit does not relieve the permittee of the responsibility to comply fully with applicable provisions of any other requirements under federal law, provided, however, that compliance with the terms and conditions of this permit shall be deemed compliance with the CAA applicable requirements as of the date of permit issuance that are included in and specifically identified in this permit. [40 CFR §§ 55.6(a)(4)(ii) and 71.6(f)(1); 18 AAC 50.345(b)]

   4.2. Nothing in this permit shall alter or affect the following:

      4.2.1. The provisions of section 303 of the CAA (emergency orders), including the authority of the Administrator under that section;

4.2.2. The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;

4.2.3. The applicable requirements of the acid rain program, consistent with section 408(a) of the CAA; or

4.2.4. The ability of EPA to obtain information from a source pursuant to section 114 of the CAA.

[40 CFR §71.6(f)(3)(i-iv); 18 AAC 50.326(a)]

5. **Notification to Owners, Operators, and Contractors.** The permittee must notify all other owners or operators, contractors, and the subsequent owners or operators associated with emissions from the source of the conditions of this permit. [40 CFR § 55.6(a)(4)(iv)]

6. **Permit Expiration and Renewal.**

6.1. This permit shall expire on the expiration date on page one of this permit. Expiration of this permit terminates the permittee's right to operate unless a timely and complete permit renewal application has been submitted at least six months, but not more than 18 months, prior to the date of expiration of this permit. [40 CFR §§71.6(a)(11), 71.7(b), and 71.7(c)(1)(ii); 18 AAC 50.326(a) and 50.326(j)(2)]

6.2. The permittee shall submit a timely and complete application for a permit renewal at least six months, but not more than 18 months, prior to the date of expiration of this permit. The application for renewal shall include the current permit number, a description of permit revisions and off-permit changes that occurred during the permit term and were not incorporated into the permit during the permit term, any applicable requirements that were promulgated and not incorporated into the permit during the permit term, and other information required by the application form. [40 CFR §§71.5(a)(1)(iii), 71.5(a)(2), 71.5(c)(5), and 71.7(c)(1)(ii); 18 AAC 50.326(a)]

6.3. If the permittee submits a timely and complete renewal application, consistent with 40 CFR § 71.5 (a)(2), but EPA has failed to issue or deny the renewal permit, then all the terms and conditions of the permit, including any permit shield granted pursuant to 40 CFR § 71.6(f) shall remain in effect until the renewal permit has been issued or denied. This permit shield shall cease to apply if, subsequent to the completeness determination, the permittee fails to submit by the deadline specified in writing by EPA any additional information identified as being needed to process the application. [40 CFR §§ 71.5(a)(1)(iii), 71.7(b), and 71.7(c)(3); 18 AAC 50.326(a)]

6.4. Renewal of this permit is subject to the same procedural requirements that apply to initial permit issuance, including those for public participation, affected State, and tribal review. [40 CFR § 71.7(c)(1); 18 AAC 50.326(a)]

6.5. This approval to construct shall become invalid in the inner OCS if construction is not commenced within 18 months after the effective date of this permit.

construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. Sources obtaining an extension are subject to all new or interim requirements and an assessment of applicable control technology when the extension is granted [40 CFR § 55.6(b)(4)]

7. **Permit Revision, Termination and Reissuance.**

7.1. This permit may be modified, revoked, reopened and reissued, or terminated by EPA for cause. Cause exists under any of the circumstances described in 40 CFR §71.7(f). The filing of a request by the permittee for modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance does not stay any permit condition. [40 CFR §§ 71.6(a)(6)(iii) and 71.7(f); 18 AAC 50.345(f)]

7.2. No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit. [40 CFR § 71.6(a)(8); 18 AAC 50.326(a)]

8. **Credible Evidence.** For the purpose of submitting compliance certifications in accordance with Condition A.12 for establishing whether or not the permittee has violated or is in violation of any requirement of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the permittee would have been in compliance with applicable requirements if the appropriate performance or reference test or procedure had been performed. [section 113(a) and 113(e)(1) of the CAA, 40 CFR §§ 51.212, 52.12, 52.33, 60.11(g), and 61.12]

9. **Inspection and Entry.** Upon presentation of credentials and other documents as may be required by law, the permittee shall allow EPA or an authorized representative to perform the following:

9.1. Enter upon the Kulluk, any support vessel, any location where emissions-related activity is conducted, or any location where records must be kept under the conditions of the permit;

9.2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

9.3. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

9.4. As authorized by the CAA, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

[40 CFR § 71.6(c)(2); 18 AAC 50.345(b)]

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10. **Recordkeeping Requirements.** In addition to the specific recordkeeping requirements contained in the source-wide and emission unit sections of this permit, the permittee shall keep records of required monitoring information that include the following:

    10.1. The date, place, and time of sampling or measurements;

    10.2. The date(s) analyses were performed;

    10.3. The company or entity that performed the analyses;

    10.4. The analytical techniques or methods used;

    10.5. The results of such analyses;

    10.6. The operating conditions as existing at the time of sampling or measurement;

    10.7. Copies of all reports and certifications submitted pursuant to this permit; and

    10.8. The locations where samples were taken.

The permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

[40 CFR §§ 71.6(a)(3)(ii)(A-B) and 71.6(a)(3)(i); 18 AAC 50.326(n)]

11. **Agency Notifications.** Unless otherwise specified in this permit, any documents required to be submitted under this permit, including reports, test data, monitoring data, notifications, compliance certifications, fee calculation worksheets, and applications for renewals and permit modifications shall be submitted to:

    OCS Air Quality Permits
    U.S. EPA – Region 10, AWT-107
    1200 Sixth Avenue, Suite 900
    Seattle, WA 98101
    Facsimile: 206-553-0110
    Email: R10OCSAirPermits_Reports@epa.gov

[40 CFR §§ 71.5(d), 71.6(c)(1) and 71.9(h)(2); 18 AAC 50.326(a)]

12. **Certification.** Any document required to be submitted under this permit shall be certified by a responsible official, as that term is defined in 40 CFR § 71.2, of the permittee as to truth, accuracy, and completeness. Such certification shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. [40 CFR §§ 71.5(d), 71.6(c)(1) and 71.9(h)(2); 18 AAC 50.205, 50.326(c) and 50.345(o)]

13. **Severability.** The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force. [40 CFR § 71.6(a)(5); 18 AAC 50.345(e)]

14. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege. [40 CFR § 71.6(a)(6)(iv); 18 AAC 50.345(g)]

15. **Information Request.** The permittee shall furnish the EPA, within a reasonable time, any information the EPA requests in writing to determine whether cause exists to modify, revoke and reissue, or terminate the permit or to determine compliance with the permit. Upon request, the permittee shall furnish the EPA with copies of records required to be kept by the permit, including information claimed to be confidential. Information claimed to be confidential must be accompanied by a claim of confidentiality according to the provisions of 40 CFR Part 2, Subpart B. [40 CFR §§71.6(a)(6)(v) and 71.5(a)(3); 18 AAC 50.345(a)]

16. **Emergency Provisions.** In addition to any emergency or upset provision contained in any applicable requirement, the permittee may seek to establish that noncompliance with a technology-based emission limitation under this permit was due to an emergency.

    16.1. To do so, the permittee shall demonstrate the affirmative defense of emergency through properly signed, contemporaneous operating logs, or other relevant evidence that:

        16.1.1. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

        16.1.2. The permitted facility was at the time being properly operated;

        16.1.3. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards, or other requirements in this permit; and

        16.1.4. The permittee submitted notice of the emergency to EPA within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken. This notice fulfills the requirements of Condition A.17 of this permit, concerning prompt notification of deviations.

    [40 CFR §§ 71.6(g)(2), (3) and (5)]

    16.2. In any enforcement proceeding, the permittee attempting to establish the occurrence of an emergency has the burden of proof. [40 CFR § 71.6(g)(4)]

    16.3. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. [40 CFR § 71.6(g)(1)]

17. **Outer OCS Deviation Reports.** The permittee shall promptly report to EPA, by telephone or facsimile or email, deviations from permit conditions, including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. The report shall be made using the contact information provided in Condition A.11.

[40 CFR § 71.6(a)(3)(iii)(D)]

17.1. For the purposes of Conditions A.17 and A.18, deviation means any situation in which an emissions unit fails to meet a permit term or condition. A deviation is not always a violation. A deviation can be determined by observation or through review of data obtained from any testing, monitoring, or record keeping required by this permit. For a situation lasting more than 24 hours, each 24 hour period is considered a separate deviation. Included in the meaning of deviation are any of the following:

17.1.1. A situation where emissions exceed an emission limitation or standard;

17.1.2. A situation where process or emissions control device parameter values indicate that an emission limitation or standard has not been met;

17.1.3. A situation in which observations or data collected demonstrate noncompliance with an emission limitation or standard or any work practice or operating condition required by the permit (including indicators of compliance revealed through parameter monitoring);

17.1.4. A situation in which any testing, monitoring, recordkeeping or reporting required by this permit is not performed or not performed as required;

17.1.5. A situation in which an exceedance or an excursion, as defined in 40 CFR Part 64, occurs; and

17.1.6. Failure to comply with a permit term that requires submittal of a report.

[40 CFR § 71.6(a)(3)(iii)(C)]

17.2. For the purpose of Condition A.17 of the permit, prompt is defined as any definition of prompt or a specific time frame for reporting deviations provided in the underlying applicable requirement as identified in this permit. Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations shall be submitted based on the following schedule:

17.2.1. For emissions of a hazardous air pollutant that continue for more than an hour in excess of permit requirements, the report must be made within 24 hours of the occurrence;

17.2.2. For emissions of any regulated pollutant excluding those listed in Condition A.17.2.1 above, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours of the occurrence; or

17.2.3. For all other deviations from permit requirements, the report shall be submitted within 30 days of the occurrence.

[40 CFR §§ 71.6(a)(3)(iii)(B) and 71.6(a)(3)(iii)(B)]

17.3. Within 10 working days of the occurrence of a deviation as provided in Condition A.17.2.1 or A.17.2.2 above, the permittee shall also submit a written notice, which shall include a narrative description of the deviation and updated information as listed in Condition A.17, to EPA, certified consistent with Condition A.12 of this permit.

[40 CFR §§ 71.6(a)(3)(i)(B) and (iii)(D)]

18. **COA Excess Emission and Permit Deviation Reports.** Except as otherwise provided in this permit, the permittee shall report via fax or email, all emissions or operations that exceed or deviate from the requirements of this permit as follows:

18.1. As soon as possible after the event commences or is discovered, report:

18.1.1. Emissions that present a potential threat to human health or safety; and

18.1.2. Excess emissions that the permittee believes to be unavoidable.

18.2. Within two working days after the event commenced or was discovered, report an unavoidable emergency, malfunction, or non-routine repair that causes emissions in excess of a technology based emission standard; or any exceedance of an emission limit; or any exceedance of a throughput limit.

18.3. Report all other excess emissions and permit deviations:

18.3.1. Within 30 days after the end of the month during which the emissions or deviation occurred;

18.3.2. If a continuous or recurring excess emissions is not corrected within 48 hours of discovery, within 72 hours of discovery; and

18.3.3. For failure to monitor, as required in other applicable conditions of this permit.

18.4. When reporting excess emissions or permit deviations, the permittee must report using the form contained in Attachment A to this permit. The permittee must provide all information called for by the form.

18.5. If requested by the EPA, the permittee shall provide a more detailed written report as requested to follow up on an excess emissions report.

[18 AAC 50.346(b)(2)]

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19. **Semi-Annual and Annual Reporting.** During the life of this permit[1], the permittee shall submit the following:

19.1. An original and two copies of an Operating Report by August 31 for the period January 1 to June 30 of the current year and by February 28 for the period July 1 to December 31 of the previous year. The Operating Report must include all information required to be in Operating Reports by other conditions of this permit. All instances of deviations from permit requirements must be clearly identified in such Operating Reports as required below. All required reports must be certified by a responsible official consistent with 40 CFR § 71.5(d).

19.1.1. If excess emissions or permit deviations that occurred during the reporting period are not reported under Condition A.18, either

19.1.1.1. The permittee shall identify:

19.1.1.1.1. The date of the deviation,

19.1.1.1.2. The equipment involved;

19.1.1.1.3 The permit condition affected;

19.1.1.1.4. A description of the excess emissions or permit deviation; and

19.1.1.1.5. Any corrective action or preventive measures taken and the date or dates of such actions; or

19.1.1.2. When excess emissions or permit deviations have already been reported under Condition A.18, the permittee shall cite the date or dates of those reports.

19.1.2. The Operating Report must include, for the period covered by the report, a listing of emissions monitored which trigger additional testing or monitoring, whether or not the emissions monitored exceed an emission standard. The permittee shall include in the report:

19.1.2.1. The date of the emissions;

19.1.2.2. The equipment involved;

19.1.2.3. The permit condition affected; and

19.1.2.4. The monitoring result which triggered the additional monitoring.

19.1.3. The Operating Report shall include reports of any required monitoring, including all emission calculations required by the permit.

[40 CFR §§ 71.9(h)(1),71.6(a)(3)(iii)(A), and 71.6(a)(3)(i)(B); 18 AAC 50.346(b)(6)]

[1] "Life of this permit" is defined as the permit effective dates, including any periods of reporting obligations that extend beyond the permit effective date. For example, if a permit expires prior to the end of a calendar year, there is still a reporting obligation to provide operating reports for the periods when the permit was in effect.

19.2. The permittee shall submit to EPA an annual certification of compliance with permit terms and conditions, including emission limitations, standards, or work practices, by February 28 of each year and covering the permit or permits in effect during the previous calendar year. The compliance certification shall be certified as to the truth, accuracy, and completeness by a responsible official consistent with Condition A.12 of this permit. The annual compliance certification shall include the following:

19.2.1. The identification of each permit term or condition that is the basis of the certification;

19.2.2. The identification of the method(s) or other means used by the permittee for determining the compliance status with each term and condition during the certification period. Such methods and other means shall include, at a minimum, the methods and means required in this permit. If necessary, the permittee also shall identify any other material information that must be included in the certification to comply with section 113(c)(2) of the CAA, which prohibits knowingly making a false certification or omitting material information;

19.2.3. The status of compliance with each term and condition of the permit for the period covered by the certification, including whether compliance was continuous or intermittent. The certification shall be based on the method or means designated above. The certification shall identify each deviation and take it into account in the compliance certification. The certification shall also identify as possible exceptions to compliance any periods during which compliance is required and in which an exclusion or exceedance as defined under 40 CFR Part 64 occurred; and

19.2.4. Such other facts as the permitting authority may require to determine the compliance status of the source.

[40 CFR § 71.6(c)(5); 18 AAC 50.326(a)]

20. **Off Permit Changes.** The permittee is allowed to make certain changes without a permit revision, provided that the following requirements are met:

20.1. Each change is not addressed or prohibited by this permit;

20.2. Each change meets all applicable requirements and does not violate any existing permit term or condition;

20.3. The changes are not changes subject to any requirement of 40 CFR Parts 72 through 78 or modifications under any provision of Title I of the CAA;

20.4. The permittee provides contemporaneous written notice to EPA of each change, except for changes that qualify as insignificant activities under 40 CFR § 71.5(c)(11), that describes each change, the date of the change, any change in

emissions, pollutants emitted, and any applicable requirements that would apply as a result of the change;

20.5. The changes are not covered by a permit shield provided under 40 CFR § 71.6(f) and Condition A.4 of this permit; and

20.6. The permittee keeps a record describing all changes that result in emissions of any regulated air pollutant subject to any applicable requirement not otherwise regulated under this permit, and the emissions resulting from those changes.

[40 CFR §71.6(a)(12); 18 AAC 50.326(a)]

21. **Emissions Trading and Operational Flexibility.** The permittee is allowed to make a limited class of changes under section 502(b)(10) of the CAA within this permitted facility that contravene the specific terms of this permit without applying for a permit revision, provided:

21.1. The changes do not exceed the emissions allowable under this permit (whether expressed therein as a rate of emission or in terms of total emissions);

21.2. The changes are not Title I modifications;

21.3. The changes do not violate applicable requirements;

21.4. The changes do not contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements;

21.5. The permittee sends a notice to EPA, at least 7 days in advance of any change made under this provision, that describes the change, when it will occur and any change in emissions and identifies any permit terms of conditions made inapplicable as a result of the change and the permittee attaches each notice to its copy of this permit; and

21.6. The changes are not covered by a permit shield provided under 40 CFR § 71.6(f) and Condition A.4 of this permit.

[40 CFR § 71.6(a)(13)(i); 18 AAC 50.326(a)]

22. **COA Administration Fees.** The permittee shall pay to the EPA all assessed permit administration fees. Administration fee rates are set out in 18 AAC 50.400 – 50.403. [18 AAC 50.400 – 50.403]

23. **COA Assessable Emissions.** The permittee shall pay to the EPA annual emission fees based on the OCS source's (including the Associated Fleet) assessable emissions as determined by the EPA under 18 AAC 50.410. The assessable emission fee rate is set out in 18 AAC 50.410. The EPA will assess fees per ton of each air pollutant that the OCS source emits or has the potential to emit in quantities greater than 10 tons per year (tpy). The quantity for which fees will be assessed is the lesser of:

23.1. The OCS source's (including the Associated Fleet) assessable potential to emit of 459 tpy; or

23.2. The OCS source's (including the Associated Fleet) projected annual rate of emissions that will occur from July 1 to the following June 30, based upon actual annual emissions emitted during the most recent calendar year or another 12 month period approved in writing by the EPA, when demonstrated by:

23.2.1. An enforceable test method described in 18 AAC 50.220;

23.2.2. Material balance calculations;

23.2.3. Emission factors from EPA's publication AP-42, Vol. I, adopted by reference in 18 AAC 50.035; or

23.2.4. Other methods and calculations approved by the EPA.

[18 AAC 50.410 – 50.420]

24. **COA Assessable Emissions Estimates.** Emission fees will be assessed as follows:

24.1. No later than March 31 of each year, the permittee may submit an estimate of the OCS source's assessable emissions to the EPA at the address listed in Condition A.11, Agency Notification. The submittal must include all of the assumptions and calculations used to estimate the assessable emissions in sufficient detail so that EPA can verify the estimates; or

24.2. If no estimate is received on or before March 31 of each year, emission fees for the next fiscal year will be based on the potential to emit set out in Condition A.23.1.

[18 AAC 50.410 – 50.420]

25. **Outer OCS Part 71 Emission and Fee Reporting.**

25.1. Part 71 Annual Emission Report. No later than the date specified in Condition A.19.2 of each year, the permittee shall submit to EPA an annual report of actual emissions for the preceding calendar year. [40 CFR § 71.9(h)(1)]

25.1.1. "Actual emissions" means the actual rate of emissions in tons per year of any "regulated pollutant (for fee calculation)," as defined in 40 CFR § 72.2, emitted from a Part 71 source over the preceding calendar year. Actual emissions shall be calculated using each emissions unit's actual operating hours, production rates, in-place control equipment, and types of materials processed, stored, or combusted during the preceding calendar year. [40 CFR § 71.9(c)(6)]

25.1.2. Actual emissions shall be computed using methods required by the permit for determining compliance, such as monitoring or source testing data. [40 CFR § 71.9(h)(3)]

25.1.3. Actual emissions shall include fugitive emissions. [40 CFR § 71.9(c)(1)]

25.2. Part 71 Fee Calculation Worksheet. Based on the annual emission report required in Condition A.25.1 and no later than the date specified in Condition A.19.2 of each year, the permittee shall submit to EPA a fee calculation worksheet (blank

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forms provided by EPA) and a photocopy of each fee payment check (or other confirmation of actual fee paid). [40 CFR §§ 71.9(c)(1), 71.9(e)(1) and 71.9(h)(1)]

25.2.1. The annual emissions fee shall be calculated by multiplying the total tons of actual emissions of each "regulated pollutant (for fee calculation)," emitted from the source by the presumptive emission fee (in dollars/ton) in effect at the time of calculation. The presumptive emission fee is revised each calendar year and is available from EPA prior to the start of each calendar year. [40 CFR § 71.9(c)(1)]

25.2.2. The permittee shall exclude the following emissions from the calculation of fees:

25.2.2.1. The amount of actual emission of each regulated pollutant (for fee calculation) that the source emits in excess of 4,000 tons per year;

25.2.2.2. Actual emissions of any regulated pollutant (for fee calculation) already included in the fee calculation; and

25.2.2.3. The insignificant quantities of actual emissions not required to be listed or calculated in a permit application pursuant to 40 CFR § 71.5(c)(11).

[40 CFR § 71.9(c)(5)]

25.3. Part 71 Annual Fee Payment. No later than the date specified in Condition A.19.2 of each year, the permittee shall submit to EPA full payment of the annual permit fee based on the fee calculation worksheet required in Condition A.25.2. [40 CFR §§ 71.9(a), 71.9(c)(1) and 71.9(h)(1)]

25.3.1. The fee payment and a completed fee filing form shall be sent to:

U.S. EPA
FOIA and Miscellaneous Payments
Cincinnati Finance Center
P.O. Box 979078
St Louis, MO 63197-9000

[40 CFR § 71.9(k)(2)]

25.3.2. The fee payment shall be in United States currency and shall be paid by money order, bank draft, certified check, corporate check, or electronic funds transfer payable to the order of the U.S. Environmental Protection Agency. [40 CFR § 71.9(k)(1)]

25.3.3. The permittee, when notified by EPA of additional amounts due, shall remit full payment within 30 days of receipt of an invoice from EPA. [40 CFR § 71.9(j)(2)]

25.3.4. If the permittee thinks an EPA assessed fee is in error and wishes to challenge such fee, the permittee shall provide a written explanation of the alleged error to EPA along with full payment of the EPA assessed fee. [40 CFR § 71.9(j)(3)]

25.3.5. Failure of the permittee to pay fees in a timely manner shall subject the permittee to assessment of penalties and interest in accordance with 40 CFR § 71.9(l). [40 CFR § 71.9(l)]

25.4. The annual emission report and fee calculation worksheet (and photocopy of each fee payment check), required in Conditions A.25.1 and A.25.2, shall be submitted to EPA at the address listed in Condition A.11 of this permit.[1] [40 CFR § 71.9(k)(1)]

25.5. The annual emission report and fee calculation worksheet (and photocopy of each fee payment check), required in Conditions A.25.1 and A.25.2, shall be certified by a responsible official in accordance with Condition A.12 of this permit. [40 CFR § 71.9(h)(2)]

25.6. The permittee shall retain in accordance with the provisions of Condition A.10 of this permit, all work sheets and other materials used to determine fee payments. Payments shall be retained for five years following the year in which the emissions data is submitted. [40 CFR § 71.9(i)]

26. COA General Source Test Requirements.

26.1. Requested Source Tests. In addition to any source testing explicitly required by this permit, the permittee shall conduct source testing as requested by the EPA to determine compliance with applicable permit requirements. [18 AAC 50.220(a) and 50.345(k)]

26.2. Operating Conditions. Unless otherwise specified by an applicable requirement or test method, the permittee shall conduct source testing:

26.2.1. At a point or points that characterize the actual discharge into the ambient air; and

26.2.2. At the maximum rated burning or operating capacity of the source or another rate determined by the EPA to characterize the actual discharge into the ambient air.

[18 AAC 50.220(b)]

26.3. Reference Test Methods. The permittee shall use the following as reference test methods when conducting source testing for compliance with this permit:

[1] The permittee should note that an annual emissions report, required at the same time as the fee calculation worksheet by 40 CFR § 71.9(h), has been incorporated into the fee calculation worksheet.

26.3.1. Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(a) must be conducted in accordance with the methods and procedures specified in 40 CFR 60.

26.3.2. Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(b) must be conducted in accordance with the methods and procedures specified in 40 CFR 61.

26.3.3. Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(c) must be conducted in accordance with the source test methods and procedures specified in 40 CFR 63.

26.3.4. Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in Reference Method 9. The permittee may use the form in Appendix B to record data.

26.3.5. Source testing for emissions of total particulate matter (PM), sulfur compounds, nitrogen compounds, carbon monoxide, lead, volatile organic compounds, fluorides, sulfuric acid mist, municipal waste combustor organics, metals, and acid gases must be conducted in accordance with the methods and procedures specified in 40 CFR 60, Appendix A.

26.3.6. Source testing for emissions of PM_{10} must be conducted in accordance with the procedures specified in 40 CFR 51, Appendix M, Method 201, or 201A and 202.

26.3.7. Source testing for emissions of any contaminant may be determined using an alternative method approved by the EPA in accordance with 40 CFR 63 Appendix A, Method 301.

[18 AAC 50.220(b)]

26.4. Excess Air Requirements. To determine compliance with this permit, standard exhaust gas volumes must include only the volume of gases formed from the theoretical combustion of fuel, plus the excess air volume normal for the specific source type, corrected to standard conditions (dry gas at 68° F and an absolute pressure of 760 millimeters of mercury). [18 AAC 50.220(b)]

26.5. Test Exemption. The permittee is not required to comply with Conditions E.1.2 when the exhaust is observed for visible emissions. [18 AAC 50.345(a)]

26.6. Test Deadline Extension. The permittee may request an extension to a source test deadline established by the EPA. The permittee may delay a source test beyond the original deadline only if the extension is approved in writing by the EPA. [18 AAC 50.345(l)]

26.7. Particulate Matter Calculation. In source testing for compliance with the PM standards in Condition B.5, the three-hour average is determined using the average of three one-hour test runs. [18 AAC 50.220(f)]

B. COA SOURCE-WIDE REQUIREMENTS

1. **COA Industrial Process and Fuel-Burning Equipment Visible Emissions Standard.** The permittee shall comply with the following.

1.1. Do not cause or allow visible emissions, excluding condensed water vapor, emitted from Units K-1A through K-7D5 listed in Table 1 to reduce visibility through the exhaust effluent by more than 20 percent averaged over any six consecutive minutes. [18 AAC 50.040(j), 50.326(j) and 50.055(a)(1); 40 CFR §71.6(a)(1)]

1.2. For Units K-1A through K-7D5, monitor, record, and report in accordance with Condition B.2.1 – B.2.4.

1.3. For Units K-1A through K-7D5, as long as they do not exceed the limits in Condition B.1, monitoring shall consist of an annual compliance certification (as provided in Condition A.19.1) with the opacity standard.

[18 AAC 50.326(j), 50.040(j), and 50.346(c); 40 CFR §71.6(a)(3)]

2. **COA Visible Emissions.**

2.1. Visible Emissions Monitoring. When required by any of the requirements for Units K-1A through K-7D5 specified in Sections B through G below, the permittee shall observe the exhaust of Units K-1A through K-7D5 listed in Table 1 for visible emissions using either the Method 9 Plan under Condition B.2.2 or the Smoke/No-Smoke Plan under Condition B.2.3. The permittee may change visible-emissions plans for an emission unit at any time unless prohibited from doing so by Condition B.2.4. The permittee may, for each unit, elect to continue the visible emission monitoring schedule in effect from the previous permit at the time a renewal permit is issued, if applicable.

2.2. Method 9 Plan. For all 18-minute observations in this plan, observe exhaust, following 40 CFR 60, Appendix A-4, Method 9, adopted by reference in 18 AAC 50.040(a), for 18 minutes to obtain 72 consecutive 15-second opacity observations.

2.2.1. First Method 9 Observation. Within 30 days of the Kulluk becoming an OCS source or within 30 days of startup of the emission unit, whichever is later, observe exhaust for 18 minutes . For any emission unit, observe exhaust for 18 minutes within 14 calendar days after changing from the Smoke/No-Smoke Plan of Condition B.2.3. For any emission units replaced during the term of this permit, observe exhaust for 18 minutes within 30 days of startup.

2.2.2. Monthly Method 9 Observations. After the first Method 9 observation, perform 18-minute observations at least once in each calendar month that an emission unit operates.

2.2.3. Annual Method 9 Observations. After observing emissions for three consecutive operating months under Condition B.2.2.1, unless a six-

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minute average is greater than 15 percent and one or more observations are greater than 20 percent, perform 15-minute observations at least annually.

2.2.4. Increased Method 9 Frequency. If a six-minute average opacity is observed during the most recent set of observations to be greater than 15 percent and one or more observations are greater than 20 percent, then increase or maintain the 15-minute observation frequency for that emission unit to at least monthly intervals, until the criteria in Condition B.2.2.3 for annual monitoring are met.

2.3. Smoke/No Smoke Plan. Observe the exhaust for the presence or absence of visible emissions, excluding condensed water vapor.

2.3.1. Initial Monitoring Frequency. Observe the exhaust during each calendar day that an emission unit operates.

2.3.2. Reduced Monitoring Frequency. After the emission unit has been observed on 30 consecutive operating days, if the emission unit operated without visible smoke in the exhaust for those 30 days, then observe emissions at least once in every calendar month that an emission unit operates.

2.3.3. Smoke Observed. If smoke is observed, either begin the Method 9 Plan of Condition B.2.2 or perform the corrective action required under Condition B.2.4.

2.4. Corrective Actions Based on Smoke/No Smoke Observations. If visible emissions are present in the exhaust during an observation performed under the Smoke/No Smoke Plan of Condition B.2.3, then the permittee shall either follow the Method 9 plan of Condition B.2.2 or:

2.4.1. Initiate actions to eliminate smoke from the emission unit within 24 hours of the observation;

2.4.2. Keep a written record of the starting date, the completion date, and a description of the actions taken to reduce smoke; and

2.4.3. After completing the actions required under Condition B.2.4.1,

2.4.3.1. Take Smoke/No Smoke observations in accordance with Condition B.2.3,

2.4.3.1.1. At least once per day for the next seven operating days and until the initial 30 day observation period is completed; and

2.4.3.1.2. Continue as described in Condition B.2.3.2; or

2.4.3.2. If the actions taken under Condition B.2.4.1 do not eliminate the smoke, or if subsequent smoke is observed under the

schedule of Condition B.2.4.3.1.1, then observe the exhaust using the Method 9 Plan unless the EPA gives written approval to resume observations under the Smoke/No Smoke Plan; after observing smoke and making observations under the Method 9 Plan, the permittee may at any time take corrective action that eliminates smoke and restart the Smoke/No Smoke Plan under Condition B.2.3.1.

[18 AAC 50.326(a), 50.326(f), 50.040(j), and 50.346(c); 40 CFR §71.6(a)(3)(i)]

3. COA Visible Emissions Recordkeeping. The permittee shall keep records as follows.

3.1. If using the Method 9 Plan of Condition B.2.2,

3.1.1. The observer shall record:

3.1.1.1. The name of the OCS Source, emission unit and location, emission unit type, observer's name and affiliation, and the date on the Visible Emissions Field Data Sheet in Appendix B;

3.1.1.2. The time, estimated distance to the emissions location, sun location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), plume background, and operating rate (load or fuel consumption rate) on the sheet at the time opacity observations are initiated and completed;

3.1.1.3. The presence or absence of an attached or detached plume and the approximate distance from the emissions outlet to the point in the plume at which the observations are made;

3.1.1.4. Opacity observations to the nearest five percent at 15-second intervals on the Visible Emissions Field Data Sheet in Appendix B;

3.1.1.5. The minimum number of observations required by the permit; each momentary observation recorded shall be deemed to represent the average opacity of emissions for a 15-second period.

3.1.2. To determine the six-minute average opacity, divide the observations recorded on the record sheet into sets of 24 consecutive observations; sets need not be consecutive in time and in no case shall two sets overlap; for each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24; record the average opacity on the sheet;

3.1.3. Calculate and record the highest 15-consecutive-minute averages observed.

3.2. If using the Smoke/No Smoke Plan of Condition B.2.3, record the following information in a written log for each observation and submit copies of the recorded information upon request of the EPA:

3.2.1. The date and time of the observation;

3.2.2. From Table 1, the emission unit identification number of the emission unit observed;

3.2.3. Whether visible emissions are present or absent in the exhaust;

3.2.4. A description of the background to the exhaust during the observation;

3.2.5. If the emission unit starts operation on the day of the observation, the startup time of the emission unit;

3.2.6. Name and title of the person making the observation; and

3.2.7. Operating rate (load or fuel consumption rate).

[18 AAC 50.326(a), 50.326(a), 50.040(j), and 50.346(c); 40 CFR 71.6(a)(3)(i)]

4. **COA Visible Emissions Reporting.** The permittee shall report visible emissions as follows.

4.1. Include in each Operating Report under Condition A.19:

4.1.1. Which visible-emissions plan of Condition B.2.1 was used for each emission unit; if more than one plan was used, give the time periods covered by each plan;

4.1.2. For each emission unit under the Method 9 Plan,

4.1.2.1. Copies of the observation results (i.e. opacity observations) for each emission unit that used the Method 9 Plan, except for the observations the permittee has already supplied to the EPA; and

4.1.2.2. A summary to include:

4.1.2.2.1. Number of days observations were made;

4.1.2.2.2. Highest six-minute average observed; and

4.1.2.2.3. Dates when one or more observed six-minute averages were greater than 20 percent.

4.1.3. For each emission unit under the Smoke/No Smoke Plan, the number of days that Smoke/No Smoke observations were made and which days, if any, that smoke was observed; and

4.1.4. A summary of any monitoring or record keeping required under Conditions B.2.1 and B.2.4.3.2 that was not done.

4.2. Report under Condition A.18.

4.2.1. The results of Method 9 observations that exceed an average 20 percent for any six-minute period; and

4.2.2. If any monitoring under Condition B.2.1 was not performed when required, report within three days of the date the monitoring was required.

[18 AAC 50.326(a), 50.326(j), 50.040(j), and 50.346(c); 40 CFR 71.6(a)(3)(iii)]

5. **COA Industrial Process and Fuel-Burning Equipment Particulate Matter Standard.** The permittee shall not cause or allow PM emitted from Units K-1A through K-7D5 listed in Table 1 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours. [18 AAC 50.040(j), 50.326(a), 50.326(j), and 50.055(b)(1); 40 CFR 71.6(a)(1)]

5.1. For Units K-1A through K-7D5 listed in Table 1, monitor, record and report in accordance with Conditions B.6 – B.7.

5.2. For emission Units K-1A through K-7D5, as long as they do not exceed the limits in Condition B.5, monitoring shall consist of an annual compliance certification (as provided in Condition A.19.1) with the PM standard. [18 AAC 50.326(j), 18 AAC 50.040(j)(4) and 40 CFR 71.6(a)(3)(i)(B)]

5.3. In source testing for compliance with the PM standards in 18 AAC 50.050 or 18 AAC 50.055, the three-hour average is determined using the average of three one-hour test runs. The source test must account for those emissions caused by soot blowing, grate cleaning, or other routine maintenance activities by ensuring that at least one test run includes the emissions caused by the routine maintenance activity and is conducted under conditions that lead to representative emissions from that activity. The emissions must be quantified using the following equation:

$$E = E_M\left[(A+B)\times\frac{S}{R\times A}\right]+E_{NM}\left[\frac{(R-S)}{R}-\frac{BS}{R\times A}\right]$$

Where:

E = the total particulate emissions of the source in grains per dry standard cubic foot (gr/dscf).

E_M = the particulate emissions in gr/dscf measured during the test that included the routine maintenance activity.

E_{NM} = the arithmetic average of particulate emissions in gr/dscf measured by the test runs that did not include routine maintenance activity.

A = the period of routine maintenance activity occurring during the test run that included routine maintenance activity, expressed to the nearest hundredth of an hour.

B = the total period of the test run, less A.

R = the maximum period of source operation per 24 hours, expressed to the nearest hundredth of an hour.

S = the maximum period of routine maintenance activity per 24 hours, expressed to the nearest hundredth of an hour.

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[18 AAC 50.326(j), 18 AAC 50.040(j), 18 AAC 50.346(c) and 40 CFR 71.6(a)(3)]

6. **COA Particulate Matter Monitoring for Diesel Engines.** The permittee shall conduct source tests on Units K-1A through K-4C and K-6 through K-7DS to determine the concentration of PM in the exhaust of a source in accordance with Condition B.6.

6.1. Within six months of exceeding the criteria of Conditions B.6.2 or B.6.2.1, either:

6.1.1. Conduct a PM source test according to requirements set out in Condition E.1, or

6.1.2. Make repairs so that emissions no longer exceed the criteria of Condition B.6.1.2 to show that emissions are below these criteria, observe emissions as described in Condition B.2.1 under load conditions comparable to those when the criteria were exceeded.

6.2. Conduct the test according to Condition 6 if:

6.2.1. 18 consecutive minutes of Method 9 observations result in an 18-minute average opacity greater than 20 percent; or

6.2.2. For a source with an exhaust stack diameter that is less than 18 inches, 18 consecutive minutes of Method 9 observations result in an 18-minute average opacity that is greater than 15 percent and not more than 20 percent, unless the EPA has waived this requirement in writing.

6.3. During each one-hour PM source test run, observe the exhaust for 60 minutes in accordance with Method 9 and calculate the average opacity measured during each one-hour test run. Submit a copy of these observations with the source test report.

6.4. The automatic PM source test requirements in Conditions B.6 and B.6.1.2 is waived for an emissions unit if a PM source test on that emission unit has shown compliance with the PM standard during this permit term.

[18 AAC 50.326(j), 18 AAC 50.040(j), 18 AAC 50.346(c) and 40 CFR §71.6(a)(3)(i)(B)]

7. **COA Particulate Matter Record Keeping and Reporting for Diesel Engines.** Within 180 calendar days after the effective date of this permit, the permittee shall record the exhaust stack diameter(s) of Units K-1A through K-4C and Units K-6 through K-7DS from Table 1 in the permit. Report the stack diameter(s) in the next Operating Report under Condition A.19.

7.1. PM Reporting for Diesel Engines. The permittee shall report as follows:

7.1.1. Report under Condition A.18:

7.1.1.1. The results of any PM source test that exceeds the PM emissions limit; or

7.1.1.2. If one of the criteria of Condition B.6.1.2 was exceeded and the permittee did not comply with either Condition B.6.1 or B.6.1.1, this must be reported by the day following the day compliance with Condition B.6 was regained.

7.2. Report observations in excess of the threshold of Condition B.6.2.1 within 30 days of the end of the month in which the observations occur.

7.3. In each OCS source Operating Report under Condition A.19, include:

7.3.1. The dates, emission unit FU ID(s), and results when an observed 18-minute average was greater than an applicable threshold in Condition B.6.1.2;

7.3.2. A summary of the results of any PM testing under Condition B.6; and

7.3.3. Copies of any visible emissions observation results (opacity observations) greater than the thresholds of Condition B.6.1.2, if they were not already submitted.

[18 AAC 50.326(j), 18 AAC 50.040(j), 18 AAC 50.346(c) and 40 CFR §71.6(a)(3)(i)]

8. **COA Particulate Matter Monitoring for Liquid-Fired Boilers and Heaters.** The permittee shall conduct source tests on Units K-5A through K-5Z to determine the concentration of PM in the exhaust of the units as follows:

8.1. Conduct a PM source test according to the requirements set out in Condition E.2.1 no later than 90 calendar days after any time corrective maintenance fails to eliminate visible emissions greater than the 20 percent opacity threshold for two or more 18-minute observations in a consecutive six-month period.

8.2. During each one-hour PM source test run, observe the exhaust for 60 minutes in accordance with Method 9 and calculate the average opacity measured during each one-hour test run.

8.3. The PM source test requirement in Condition B.8 is waived for an emission unit if:

8.3.1. A PM source test during the most recent annual reporting period on that emission unit shows compliance with the PM standard since permit issuance; or

8.3.2. If a follow-up visible emission observation conducted using Method 9 during the 90 days shows that the excess visible emissions described in Condition B.2.2.3 no longer occur.

[18 AAC 50.326(j)(4), 18 AAC 50.040(j), 40 CFR §§71.6(a)(3)(i) and 71.6(c)(6)]

9. **COA Particulate Matter Recordkeeping for Liquid-Fired Boilers and Heaters.** The permittee shall keep records of the results of any PM testing and visible emissions observations conducted under Condition B.8. The permittee shall report as follows:

9.1. In each OCS source Operating Report required by Condition A.19, include:

9.1.1. The dates, emission units, and results when an 18-minute opacity observation was greater than the applicable threshold criterion in Condition B.2.2.3; and

9.1.2. A summary of the results of any PM testing and visible emissions observations conducted under Condition B.8.

9.2. Report as excess emissions, in accordance with Condition A.18, any time the results of a source test for PM exceeds the PM emission limit stated in Condition B.5.

[18 AAC 50.326(j)(4), 18 AAC 50.040(j), 40 CFR §§71.6(a)(3)(ii), (iii) and 71.6(c)(6)]

10. **COA Sulfur Compound Emissions Standard.** Sulfur Compound Emissions. In accordance with 18 AAC 50.055(c), the permittee shall not cause or allow sulfur compound emissions, expressed as SO_2, from Units K-1A through K-7D5 listed in Table 1 to exceed 500 parts per million (ppm) averaged over three hours. [18 AAC 50.055(c)]

10.1. For Units K-1A through K-7D5, monitor, record and report in accordance with Conditions B.11 through B.12. [18 AAC 50.326(j), 18 AAC 50.040(j), 40 CFR §71.6(a)(3)(i)(B)]

11. **COA Sulfur Compound Monitoring and Record Keeping Liquid Fuel-fired Sources.** Sulfur Compound Emissions – Monitoring and Recordkeeping.

11.1. If a load of fuel contains greater than 0.01 percent sulfur by weight, the permittee shall calculate SO_2 emissions in ppm using the SO_2 Material Balance Calculation as described below or Method 19 of 40 CFR 60, Appendix A-7, adopted by reference in 18 AAC 50.040(a).

SO_2 Material Balance Calculation

If a fuel shipment contains more than 0.01 percent sulfur by weight, calculate the three-hour exhaust concentration of SO_2 using the following equations:

$A = 31{,}200 \times [wt\%S_{fuel}] = 31{,}200 \times$ _____ = _____

$B = 0.148 \times [wt\%S_{fuel}] = 0.148 \times$ _____ = _____

$C = 0.396 \times [wt\%C_{fuel}] = 0.396 \times$ _____ = _____

$D = 0.933 \times [wt\%H_{fuel}] = 0.933 \times$ _____ = _____

$E = B + C + D =$ _____ + _____ + _____ = _____

$F = 21 - [vol\%dryO_{2,\ exhaust}] = 21 -$ _____ = _____

$G = [vol\%dryO_{2,\ exhaust}] \div F =$ _____ ÷ _____ = _____

$H = 1 + G = 1 +$ _____ = _____

$I = E \times H =$ _____ x _____ = _____

SO_2 concentration = A ÷ I = _____ ÷ _____ = _____ PPM

The $wt\%S_{fuel}$, $wt\%C_{fuel}$, and $wt\%H_{fuel}$ are equal to the weight percents of sulfur, carbon, and hydrogen in the fuel. These percentages should total 100%.

The fuel weight percent (wt%) of sulfur is obtained pursuant to Condition F.2.3. The fuel weight percents of carbon and hydrogen are obtained from the fuel refiner.

The volume percent of oxygen in the exhaust ($vol\%dryO_{2,\ exhaust}$) is obtained from oxygen meters, manufacturer's data, or from the most recent analysis under 40 C.F.R. 60, Appendix A-2, Method 3, adopted by reference in 18 AAC 50.040(a), at the same engine load used in the calculation.

[18 AAC 50.326(j), 18 AAC 50.040(j), 40 CFR §71.6(a)(3)(i)(B)]

12. **COA Sulfur Compound Emissions – Reporting.** The permittee shall report as follows.

12.1. If SO_2 emissions are calculated under Condition B.11 to exceed 500 ppm, the permittee shall report under Condition A.18. When reporting under this Condition B.12 include the calculation under Condition B.11.

12.2. The permittee shall include in the report required by Condition A.19 a list of the fuel grades received at the OCS Source during the reporting period:

12.2.1. For any grade with a maximum fuel sulfur greater than 0.0015 percent sulfur, the fuel sulfur of each shipment; and

12.2.2. For fuel with a sulfur content greater than 0.0015 percent, the calculated SO_2 emissions in ppm.

[18 AAC 50.326(j), 18 AAC 50.040(j), 40 CFR §71.6(a)(3)(i)(B)]

13. **COA Incinerator Visible Emissions.** The permittee shall comply with the following.

13.1. Do not cause or allow visible emissions, excluding condensed water vapor, through the exhaust of Unit K-8, to reduce visibility by more than 20 percent averaged over any six consecutive minutes. [18 AAC 50.040(j), 18 AAC 50.326(j),18 AAC 50.050(a), and 40 CFR 71.6(a)(1)]

13.2. Observe, record, and report the exhaust of Unit K-8 using the visible emission monitoring, recordkeeping, and reporting Conditions B.2 through B.4.

[18 AAC 50.326(j), 18 AAC 50.040(j), 18 AAC 50.346(c) and 40 CFR §71.6(a)(3)(i)]

14. **COA Good Air Pollution Control Practice.** The permittee shall do the following for Units K-1A through K-8:

14.1. Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;

14.2. Keep records of any maintenance that would have a significant effect on emissions; the records may be kept in electronic format; and

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14.3. Keep a copy of either the manufacturer's or the operator's maintenance procedures.

[18 AAC 50.346(b)(5)]

15. **COA Air Pollution Prohibited.** No person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

15.1. If emissions present a potential threat to human health or safety, the permittee shall report any such emissions according to Condition A.18.

15.2. As soon as practicable after becoming aware of a complaint that is attributable to emissions from the emission units regulated under this permit, the permittee shall investigate the complaint to identify emissions that the permittee believes have caused or are causing a violation of Condition B.15.

15.3. The permittee shall initiate and complete corrective action necessary to eliminate any violation identified by a complaint or investigation as soon as practicable if:

15.3.1. After an investigation because of a complaint or other reason, the permittee believes that emissions from the OCS source have caused or are causing a violation of Condition B.15; or

15.3.2. The EPA notifies the permittee that it has found a violation of Condition B.15.

15.4. The permittee shall keep records of:

15.4.1. The date, time, and nature of all emissions complaints received;

15.4.2. The name of the person or persons that complained, if known;

15.4.3. A summary of any investigation, including reasons the permittee does or does not believe the emissions have caused a violation of Condition B.15; and

15.4.4. Any corrective actions taken or planned for complaints attributable to emissions from the OCS source.

15.5. With each OCS Operating Report under Condition A.19, the permittee shall include a brief summary report which must include:

15.5.1. The number of complaints received;

15.5.2. The number of times the permittee or the EPA found corrective action necessary;

15.5.3. The number of times action was taken on a complaint within 24 hours; and

15.5.4. The status of corrective actions the permittee or EPA found necessary that were not taken within 24 hours.

15.6. The permittee shall notify the EPA of a complaint that is attributable to emissions from the emission units regulated under this permit within 24 hours after receiving the complaint, unless the permittee has initiated corrective action within 24 hours of receiving the complaint.

[18 AAC 50.110, 18 AAC 50.326(j), 18 AAC 50.040(j) and 40 CFR §71.6(a)(3)(i)(B)]

16. **COA Obligations for Modifications Subject to 18 AAC Article 5 Minor Permits.** Nothing in this permit relieves the permittee from the requirements to obtain a minor permit for modifications that are subject to 18 AAC Article 5 Minor Permits. [18 AAC 50.502, 40 CFR 71.6(a)(1)]

17. **COA Emission Inventory Reporting.** The permittee shall submit to EPA reports of actual emissions, by emission unit, of CO, NH_3, NO_X, PM_{10}, $PM_{2.5}$, SO_2, VOC's and lead (Pb) (and lead compounds) using the form in Attachment C of this permit, as follows:

17.1. Each year by March 31, if the Kulluk and Associated Fleet's potential to emit (PTE) emissions for the previous calendar year:

17.1.1. Equal or exceed 250 tpy of NH_3, PM_{10}, $PM_{2.5}$ or VOCs; or

17.1.2. Equal or exceed 2500 tpy of CO, NO_X or SO_2.

17.2. Every third year by March 31 if the Kulluk and Associated Fleet's PTE emissions for the previous calendar year exceed:

17.2.1. 5 tpy of lead, 1000 tpy of CO; or

17.2.2. 100 tpy of SO_2, NH_3, PM_{10}, $PM_{2.5}$, NO_X or VOC's.

17.3. The permittee shall commence reporting in 2013 for the calendar year of 2012, 2015 for calendar year 2014, etc.

17.4. Include in the report required by this condition, the required data elements contained within the stack description section of the form or those contained in Table 2A of Appendix A to Subpart A of 40 CFR 51 (final rule published in 73 FR 76556 (December 17, 2008)) for each stack associated with an emission unit.

[40 CFR §§ 51.13, 51.30(a)(1) and (b)(1) and 40 CFR 51, Appendix A to Subpart A, 73 FR 76556 (12/17/08), and 18 AAC 50.346(b)(8), 18 AAC 50.200]

C. SOURCE-WIDE NOTIFICATIONS

1. **Drill Site Notification.** By April 1 each year, the permittee shall notify EPA via facsimile or email of the following information:

1.1. The location of the proposed drill site, using coordinates in the following formats:

1.1.1. Latitude and longitude, and

1.1.2. Universal Transverse Mercator grid system.

1.2. The lease block where the drill site is located; and

1.3. The proposed date that the Kulluk will become an OCS Source at that drill site.

[40 CFR §§ 55.8(a), 71.6(a)(3)(iii) and 71.6(e), 18 AAC 50.326(a)]

2. **Drilling Season Notification.** Each drilling season, the permittee shall report to EPA via facsimile or email the information below, within 3 days of occurrence:

   2.1. The date and hour that the Kulluk became an OCS Source at the first drill site of that drilling season; and

   2.2. The date and hour that the Kulluk ceased to be an OCS Source at the last drill site of that drilling season.

[40 CFR §§ 55.8(a), 71.6(a)(3)(iii) and 71.6(e), 18 AAC 50.326(a)]

3. **Seasonal Notification of Specific Vessels and Emission Units.** By April 1 of each year, the permittee shall submit to EPA information identifying the specific vessels in the Associated Fleet and all equipment that will be operated as emission units under this permit. The information submitted shall include at a minimum:

   3.1. A complete listing of all air pollution emitting equipment onboard the Kulluk along with identification numbers and photos and/or schematic diagrams.

   3.2. Information clearly identifying each vessel in the Associated Fleet, including name, identification numbers, photos and/or schematic diagrams, role in the Associated Fleet under this permit, and a complete listing of all air pollution emitting equipment onboard.

   3.3. Information clearly identifying each piece of equipment whose operation will emit air pollution, both as listed under the categories and units covered by this permit and any unlisted emission units. For each emission unit, include the type of unit, make, model, manufacturer's rated capacity (kW-hr and gal/hr for engines, MMBtu/hr and gal/hr for boilers and heaters, ton/hr for incinerators) and fuel used.

[40 CFR §§ 55.8(a) and 71.6(a)(3)(iii), 18 AAC 50.326(a)]

4. **Demonstration of Compliance with NAAQS.** By April 1 of each drilling season, the permittee shall submit to EPA a modeling analysis for the specific vessels in the Associated Fleet, all equipment, and all emission units on the Kulluk and Associated Fleet proposed for operation under this permit for the upcoming drilling season. If the proposed combination of Associated Fleet, equipment, and emission units has previously been modeled, the permittee may submit a certification referencing the previous modeling analysis in lieu of a new modeling analysis.

   4.1. Modeling analyses conducted under this permit condition shall be identical in all respects to the modeling analysis conducted in support of the initial permitting action, except that the subsequent modeling analyses shall reflect any actual changes to the Kulluk, Associated Fleet, equipment, and emission units from those assumed in the initial modeling analysis. Modeling analyses shall be conducted using the same model, meteorological data, and other assumptions used in the initial modeling analysis. For equipment that is not changing, the modeling analyses shall use the same stack characteristics and other source parameters as

those used in the initial modeling analysis. In addition, the subsequent modeling analyses shall use the same non-project sources that were included in any cumulative impact analysis and the same background ambient air quality values as set forth in the Statement of Basis.

   4.2. The information supporting the initial permit is contained in the application materials prepared and submitted by the permittee or their contractors as part of, or supporting, the permit application.

   4.3. The modeling analyses shall demonstrate that, for the Kulluk, Associated Fleet, equipment, and emission units actually proposed for operation in the upcoming drilling season, the total modeled air quality impacts (including background) are predicted to be less than the NAAQS.

[40 CFR §§ 55.8(a), 71.6(a)(1), 71.6(a)(3)(iii) and 71.6(e)]

D. SOURCE-WIDE EMISSION LIMITS & OPERATIONAL RESTRICTIONS

1. **Emission Calculations.**

   1.1. By Friday of each week, the permittee shall calculate and record the hourly emissions of NOx and the daily emissions of NO_X, CO, $PM_{2.5}$ and PM_{10} from each emission unit or group of emission units for the previous week.

   1.2. By Friday of each week, the permittee shall calculate and record the daily rolling 365-day emissions of NO_X and CO for each day of the previous week by using the daily emissions calculated for the previous 365 days pursuant to Condition D.1.1.

   1.3. By the tenth of each month, the permittee shall calculate and record the monthly emissions of GHGs from each emission unit or group of emission units for the preceding month.

   1.4. By the tenth of each month, the permittee shall calculate and record the rolling 12-month emissions of GHG by using the monthly emissions calculated for the previous 12 months pursuant to Condition D.1.3.

   1.5. For groups of emission units required to perform source testing to determine test-derived emission factors pursuant to Condition E.3.1 and that only measure fuel used by the group, rather than by individual emission units, use the worst case group emission factor as specified in Condition E.2.2.1.4 and the fuel combusted by the group of emission units in calculations required in Condition D.1.

[40 CFR §§ 71.6(a)(3)(i)(B) and 71.6(a)(3)(ii), 18 AAC 50.326(a)]

2. **Emission Factors.** The emission factors included in the Tables D.2.1 – D.2.2 shall be used for purposes of this permit until an alternative test-derived emission factor has been determined according to Condition E.2 of this permit.

[40 CFR §§ 71.2, 71.6(a)(1) and 71.6(c)(1), 18 AAC 50.326(a)]

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Table D.2.1 – Kulluk Emission Factors[1]

EMISSION UNIT ID	Description	Emission Unit Rating	Emission Factor Units[2]	NO_x[3]	CO[3]	PM_{10}[3]	$PM_{2.5}$[3]	CO_2	N_2O	CH_4
K-1A – 1D	Electricity Generation Engines	Various	lb/gal	C 0.049 U 0.49	C 0.022 U 0.112	C 0.009 U 0.018	C 0.009 U 0.018	22.5	0.0002	0.0009
K-2A – 2Z K-3A – 3Z K-4A – 4C	MI C4HP1 MI C Air Compressor Deck Crane Engines	> 600 hp	lb/gal	0.376	C 0.022 U 0.112	C 0.009 U 0.018	C 0.009 U 0.018	22.5	0.0002	0.0009
		< 600 hp	lb/gal	0.462	C 0.025 U 0.125	C 0.018 U 0.037	C 0.018 U 0.037	22.5	0.0002	0.0009
K-5A – 5Z	Heaters and Boilers	Various	lb/gal	0.02	0.007	0.0033	0.0033	22.5	0.0002	0.0009
K-6	Emergency Generator	> 600 hp	lb/gal	0.399	0.112	0.038	0.038	22.5	0.0002	0.0009
K-7A – 7D	Seldom-Used Sources	< 600 hp	lb/gal	0.462	0.125	0.037	0.037	22.5	0.0002	0.0009
K-8	Incinerator	226 ton/hr	lb/ton	3	300	16.4	14	1981	0.092	0.702
K-10	Drilling Mud System	NA	lb/gal/h	NA	NA	NA	NA	NA	NA	1.89

[1] Footnotes in Table D.2.1 also apply to Table D.2.2.
[2] Emission factors are in terms of pounds of emissions per unit of operation except for the drilling mud system which are worst-case emission per month; lb/gal means pounds of pollutant emitted per gallon of diesel burned; lb/ton means pounds of pollutant emitted per ton of waste incinerated; lb/month means pounds of pollutant emitted per month.

[3] "C" = controlled, "U" = uncontrolled. Controlled NO_x emission factors for emission units K-1A – 1D, BH-1A – 1Z and BH2-1A – 1Z reflect an [illegible] emission level.
"C" = controlled, "U" = uncontrolled. Controlled CO emission factors for emission units K-1A – 1D, K-2A – 2Z, K-3A – 3Z, K-4A – 4C, BH-1A – 1Z and BH2-1A – 1Z reflect an oxidation catalyst with [illegible] efficiency of 50%.
"C" = controlled, "U" = uncontrolled. Controlled PM_{10} emission factors for emission units K-1A – 1D, K-2A – 2Z, K-3A – 3Z, K-4A – 4C, BH-1A – 1Z and BH2-1A – 1Z reflect an oxidation catalyst [illegible] efficiency and 30%.
"C" = controlled, "U" = uncontrolled. Controlled $PM_{2.5}$ emission factors for emission units K-1A – 1D, K-2A – 2Z, K-3A – 3Z, K-4A – 4C, BH-1A – 1Z and BH2-1A – 1Z reflect an oxidation catalyst [illegible] efficiency and 30%.

Table D.2.2 – Associated Fleet Emission Factors

EMISSION UNIT ID	Description	Emission Unit Rating	Emission Factor Units	NO_x	CO	PM_{10}	$PM_{2.5}$	CO_2	N_2O	CH_4
BH-1A – 1Z BH2-1A – 1Z	Propulsion Engines and Generator Engines on Icebreakers	Various	lb/gal	C 0.049 U 0.49	C 0.022 U 0.112	C 0.009 U 0.018	C 0.009 U 0.018	22.5	0.0002	0.0009
BH-2A – 2Z BH2-2A – 2Z	Heaters and Boilers on Icebreakers	Various	lb/gal	0.02	0.007	0.0033	0.0033	22.5	0.0002	0.0009
RV BH-1A – 1Z OSRV-1A – 1Z	Propulsion Engines and Generator Engines on Resupply Vessel Barge and Tug	> 600 hp	lb/gal	0.376	0.112	0.018	0.018	22.5	0.0002	0.0009
		< 600 hp	lb/gal	0.462	0.125	0.037	0.037	22.5	0.0002	0.0009
OSRV WB-1A - 1Z	Oil Spill Response Vessel and Oil Spill Response Vessel Work Boats	> 600 hp	lb/gal	0.399	0.112	0.038	0.038	22.5	0.0002	0.0009
		< 600 hp	lb/gal	0.462	0.125	0.037	0.037	22.5	0.0002	0.0009
BH-3A – 3Z BH2-3A – 3Z RV BH-2A – 2Z OSRV-2A – 2Z	Seldom-Used Sources on Associated Fleet	< 600 hp	lb/gal	0.462	0.125	0.037	0.037	22.5	0.0002	0.0009
BH-4 BH2-4 OSRV-3	Incinerators on Icebreakers and Oil Spill Response Vessel	Various	lb/ton	3	300	16.4	14	1981	0.092	0.702

3. Duration of Exploration Operations.

3.1. The permittee shall only conduct exploration drilling operations in the Beaufort Sea between July 1 and November 30 each year (referred to hereafter as the "drilling season").

3.2. During the drilling season, the permittee shall not operate the Kulluk as an OCS Source in excess of 120 calendar days. Each partial day shall be counted as a calendar day.

3.3. The permittee shall not conduct any Drilling Activity in excess of 1,632 hours within a drilling season. Drilling Activity includes MLC Drilling Activity and Well Drilling Activity.

3.4. The permittee shall not conduct any MLC Drilling Activity in excess of 480 hours within a drilling season.

3.5. For the purpose of this permit, the following definitions apply:

3.5.1. MLC Drilling Activity is defined as any time when any MLC HPU engine or MLC air compressor engine is operating.

3.5.2. Well Drilling Activity is defined as any time when the top drive is engaged and turning the conventional rotary bit.

3.6. For each drill site at which the Kulluk operates, the permittee shall record the following:

3.6.1. The lease block within the Beaufort Sea lease sales 186, 195 or 202 where the drill site is located;

3.6.2. The date and hour that the Kulluk became an OCS Source at that drill site;

3.6.3. The date and hour that the Kulluk ceased to be an OCS Source at that drill site.

3.7. For each period of Well Drilling Activity, the permittee shall record the following:

3.7.1. The date and hour at which the top drive is first engaged and turning the conventional rotary bit; and

3.7.2. The date and hour at which the top drive is disengaged and no longer turning the conventional rotary bit.

3.8. For each period of MLC Drilling Activity the permittee shall record the following:

3.8.1. The date and hour in which the first MLC HPU engine or MLC air compressor engine begins operation; and

3.8.2. The date and hour in which the last MLC HPU engine or MLC air compressor engine ceases operation.

3.9. Any time spent drilling a relief well shall be included in the time recorded in Conditions D.3.2 and D.3.3.

3.10. By the 10th of each month, the permittee shall calculate and record the following operating parameters for the previous month and a running total for the current drilling season based upon recordkeeping performed pursuant to Conditions D.3.6, 3.7and 3.8:

3.10.1. The number of days the Kulluk operated as an OCS source;

3.10.2. The number of hours of Drilling Activity; and

3.10.3. The number of hours of MLC Drilling Activity.

[40 CFR §§71.2, 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(ii), 71.6(e), 55.8(a), 18 AAC 50.326(a)]

4. Synthetic Minor PTE Limits.

4.1. Nitrogen oxides (NO_X) emissions from the Kulluk and Associated Fleet shall not exceed 240 tpy as determined on a rolling 365-day basis by calculating the emissions (tons) for each day and adding the emissions (tons) calculated for the previous 364 days.

4.1.1. Daily NO_X emissions (tons) from each emission unit or group of emission units shall be determined by multiplying the appropriate emission factor (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Condition E.2) by the recorded daily operation rate (units/day) and dividing by 2000 lb/ton.

4.1.1.1. For the Kulluk electricity generation engines (Units K-1A – 1D), Icebreaker No. 1 propulsion engines and generator engines (IB1-1A – 1Z), and Icebreaker No. 2 propulsion and generator engines (IB2-1A – 1Z), the permittee shall use the appropriate uncontrolled emission factor from Tables D.2.1 and D.2.2 for all periods when any of the deviations described in Condition F.3.7 exist.

4.1.2. For the Kulluk incinerator (Unit K-8), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 multiplied by 12 in place of the recorded daily operation rate when calculating emissions pursuant to Condition D.4.1.1.

4.1.3. For the icebreaker and OSRV incinerators (Units IB1-4, IB2-4 and OSRV-3), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 multiplied by 24 in place of the recorded daily operation rate when calculating emission pursuant to Condition D.4.1.1.

4.2. Carbon monoxide (CO) emissions from the Kulluk and Associated Fleet shall not exceed 200 tpy as determined on a rolling 365-day basis by calculating the emissions (tons) for each day and adding the emissions (tons) calculated for the previous 364 days.

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4.2.1. Daily CO emissions (tons) from each emission unit or group of emission units shall be determined by multiplying the appropriate emission factor (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Condition E.2) by the recorded daily operation rate (units/day) and dividing by 2000 lb/ton.

4.2.1.1. For Kulluk electricity generation engines (Units K-1A – 1D), Kulluk MLC HPU engines (Units K-2A – 2Z), Kulluk MLC air compressor engines (Units K-3A – 3Z), Kulluk deck crane engines (Units K-4A – 4C), Icebreaker No. 1 propulsion engines and generator engines (IB1-1A – 1Z), and Icebreaker No. 2 propulsion and generator engines (IB2-1A – 1Z), the permittee shall use the appropriate uncontrolled emission factor from Tables D.2.1 and D.2.2 for all periods when any of the deviations described in Condition E.4.7 exist.

4.2.2. For the Kulluk incinerator (Unit K-8), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 multiplied by 12 in place of the recorded daily operation rate when calculating emissions pursuant to Condition D.4.2.1.

4.2.3. For the icebreaker and OSRV incinerators (Units IB1-4, IB2-4 and OSRV-3), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 multiplied by 24 in place of the recorded daily operation rate when calculating emission pursuant to Condition D.4.2.1.

4.3. Sulfur dioxide (SO_2) emissions from the Kulluk and Associated Fleet shall not exceed 10 tpy as determined on a rolling 12-month basis by confirming compliance with Conditions D.4.5 and D.4.6 as specified in this permit.

4.4. Greenhouse gas (GHG) emissions as defined in 40 CFR § 52.21(b)(49) from the Kulluk and Associated Fleet shall not exceed 80,000 tons carbon dioxide equivalent (CO_2e) as determined on a rolling 12-month basis by calculating the emissions (tons) for each month and adding the emissions (tons) calculated for the previous 11 months.

4.4.1. For each emission unit or group of emission units, monthly carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emissions (tons) shall be determined by multiplying the appropriate emission factors (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Condition E. 2) by the recorded monthly operation rate (units/month) and dividing by 2000 lb/ton.

4.4.2. To account for mud off-gassing from the drilling mud system (Unit K-10), monthly CH_4 emissions from the drilling mud shall be assumed to be the emission rate specified in Table D.2.1.

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4.4.3. For the Kulluk incinerator (Unit K-8), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 multiplied by 12 in place of the recorded daily operation rate when calculating emissions pursuant to Condition D.4.4.1.

4.4.4. For the icebreaker and OSRV incinerators (Units IB1-4, IB2-4 and OSRV-3), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 multiplied by 24 in place of the recorded daily operation rate when calculating emission pursuant to Condition D.4.4.1.

4.4.5. Monthly CO_2e emissions (tons) shall be determined by multiplying the calculated monthly emissions for CO_2, CH_4, and N_2O from all emission units or group of emission units and activities by the applicable global warming potential factors from 40 CFR Part 98, Subpart A, Table A-1, and summing the products.

4.5. The permittee shall not combust any liquid fuel with sulfur content greater than 0.01 percent by weight, as determined by Condition E.2.3, in any emission unit on the Kulluk or the Associated Fleet.

4.6. The total amount of fuel combusted in engines and boilers on the Kulluk and Associated Fleet shall not exceed 7,004,428 gallons during any rolling 12-month period.

4.7. The total capacity of incinerators on the Kulluk and Associated Fleet, considering enforceable conditions on hours of operation, to incinerate waste shall not exceed 13,704 pounds per day.

4.8. The permittee shall not operate the Kulluk in the Beaufort Sea within the same drilling season as the Noble Discoverer drillship.

4.9. All fuel purchased for use in the Kulluk and Associated Fleet shall have amaximum sulfur content of 0.0015 percent by weight for all emission units on the Kulluk and Associated Fleet.

4.9.1. Compliance with Condition D.4.9 shall be determined for each diesel fuel purchase based upon recordkeeping required by Condition D.4.9.2.

4.9.2. Keep diesel fuel purchase records for each batch of fuel that documents sulfur content.

[40 CFR §§ 52.21, 71.6(a)(1) and 71.6(b), 18 AAC 50.326(a), 18 AAC 50.225, 18 AAC 50.508]

5. **Operational Restrictions to Protect the NAAQS.** The permittee shall comply with the following:

5.1. The permit does not authorize operation unless:

5.1.1. The Kulluk is subject to a currently effective safety zone established by the United Sates Coast Guard (USCG) which encompasses an area within

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at least 500 meters from the hull of the Kulluk and which prohibits members of the public from entering this area except for attending vessels or vessels authorized by the USGC (such area shall be referred to as the "Safety Zone"); and

5.1.2. The permittee has developed in writing and is implementing a public access control program to:

5.1.2.1. Locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the Safety Zone; and

5.1.2.2. Communicate to the North Slope communities on the Beaufort Sea on a periodic basis when exploration activities are expected to begin and end at a drill site, the location of the drill site, and any restrictions on activities in the vicinity of the Kulluk's exploration operations.

5.2. The permittee shall equip each emission unit on the Kulluk and on any RV/BT that operates in dynamic positioning mode with a vertical uncapped stack. A stack equipped with a "flapper valve" rain cover or similar design that does not hinder the vertical momentum of the exhaust plume is considered an uncapped stack.

5.3. The permittee shall not operate the Kulluk Emergency Generator Engine (Unit K-6) more than one day for every 30 calendar days. On that one day of operation, the permittee shall not operate emission unit K-6 more than a combined 2 hours.

5.4. The permittee shall not operate the Kulluk Incinerator (Unit K-8) more than 12 hours each day.

5.5. The total number of events during which RV/BT transit to and from the Kulluk and operate in dynamic positioning mode shall not exceed 24 in any drilling season. Each full or partial day of operation in dynamic positioning mode is considered a separate event.

[40 CFR §§ 71.2, 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(ii), 71.6(e) and 55.8(a), 18 AAC 50.326(a), 18 AAC 50.502]

6. Emission Limits to Protect the NAAQS. The permittee shall comply with the following emission limits to protect the 1-hour NO_2 NAAQS and the 24-Hour PM_{10} and $PM_{2.5}$ NAAQS:

6.1. Kulluk Generator Engines (Units K-1A – 1D)

6.1.1. During Drilling Activity, combined emissions from Units K-1A – 1D shall not exceed the limits specified below:

6.1.1.1. NO_X: 19.0 lb/hr

6.1.1.2. $PM_{2.5}$: 71.3 lb/day

6.1.1.3. PM_{10}: 71.3 lb/day

6.1.2. During all times other than Drilling Activity, combined emissions from Units K-1A – 1D shall not exceed the emission limits specified for each of the pollutants below.

6.1.2.1. NO_X: 13.4 lb/hr

6.1.2.2. $PM_{2.5}$: 50.4 lb/day

6.1.2.3. PM_{10}: 50.4 lb/day

6.2. Kulluk MLC HPU Engines (Units K-2A – 2Z)

6.2.1. Combined emissions from Units K-2A – 2Z shall not exceed the emission limits specified for each of the pollutants below.

6.2.1.1. NO_X: 37.0 lb/hr

6.2.1.2. $PM_{2.5}$: 35.5 lb/day

6.2.1.3. PM_{10}: 35.5 lb/day

6.3. Kulluk MLC Air Compressor Engines (Units K-3A – 3Z)

6.3.1. Combined emissions from Port MLC air compressor engines shall not exceed the emission limits specified for each of the pollutants below.

6.3.1.1. NO_X: 14.8 lb/hr

6.3.1.2. $PM_{2.5}$: 7.4 lb/day

6.3.1.3. PM_{10}: 7.4 lb/day

6.3.2. Combined emissions from Starboard MLC air compressor engines shall not exceed the emission limits specified for each of the pollutants below.

6.3.2.1. NO_X: 14.8 lb/hr

6.3.2.2. $PM_{2.5}$: 7.4 lb/day

6.3.2.3. PM_{10}: 7.4 lb/day

6.4. Deck Crane Engines (Units K-4A – 4C)

6.4.1. During Drilling Activity, combined emissions from Units K-4A – 4C shall not exceed the emission limits specified for each of the pollutants below.

6.4.1.1. NO_X: 12.0 lb/hr

6.4.1.2. $PM_{2.5}$: 3.4 lb/day

6.4.1.3. PM_{10}: 3.4 lb/day

6.4.2. During all times other than Drilling Activity, combined emissions from Units K-4A – 4C shall not exceed the emission limits specified for each of the pollutants below.

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6.4.2.1. NO_X: 12.0 lb/hr

6.4.2.2. $PM_{2.5}$: 5.7 lb/day

6.4.2.3. PM_{10}: 5.7 lb/day

6.5. Heaters and Boilers (Units K-5A – 5Z)

6.5.1. Combined emissions from Units K-5A – 5Z shall not exceed the emission limits specified for each of the pollutants below.

6.5.1.1. NO_X: 0.9 lb/hr

6.5.1.2. $PM_{2.5}$: 3.6 lb/day

6.5.1.3. PM_{10}: 3.6 lb/day

6.6. Emergency Generator (Unit K-6)

6.6.1. Emissions from Unit K-6 shall not exceed the emission limits specified for each of the pollutants below.

6.6.1.1. NO_X: 17.8 lb/hr

6.6.1.2. $PM_{2.5}$: 2.8 lb/day

6.6.1.3. PM_{10}: 2.8 lb/day

6.7. Seldom Used Sources (Units K-7A – 7D5)

6.7.1. Combined emissions from Units K-7A – 7D5 shall not exceed the emission limits specified for each of the pollutants below.

6.7.1.1. NO_X: 0.4 lb/hr

6.7.1.2. $PM_{2.5}$: 0.7 lb/day

6.7.1.3. PM_{10}: 0.7 lb/day

6.8. Waste Incinerator (Unit K-8)

6.8.1. Emissions from Unit K-8 shall not exceed the emission limits specified for each of the pollutants below.

6.8.1.1. NO_X: 0.4 lb/hr

6.8.1.2. $PM_{2.5}$: 23.2 lb/day

6.8.1.3. PM_{10}: 23.1 lb/day

6.9. Icebreaker No. 1 (IB1) and No. 2 (IB2)

6.9.1. Combined emissions from emission units on IB1 and IB2 shall not exceed the emission limits specified for each of the pollutants below.

6.9.1.1. NO_X: 174 lb/hr

6.9.1.2. $PM_{2.5}$: 700.8 lb/day

6.9.1.3. PM_{10}: 710.4 lb/day

6.10. Resupply Vessel/Barge and Tug (RV/BT)

6.10.1. During dynamic positioning mode, combined emissions from emission units on RV/BT shall not exceed the emission limits specified for each of the pollutants below.

6.10.1.1. NO_X: 74.0 lb/hr

6.10.1.2. $PM_{2.5}$: 74.4 lb/day

6.10.1.3. PM_{10}: 74.4 lb/day

6.11. Oil Spill Response Vessel (OSRV)

6.11.1. Combined emissions from emission units on OSRV shall not exceed the emission limits specified for each of the pollutants below.

6.11.1.1. NO_X: 43.5 lb/hr

6.11.1.2. $PM_{2.5}$: 64.6 lb/day

6.11.1.3. PM_{10}: 68.2 lb/day

6.12. OSRV Work Boats (OSRV WB)

6.12.1. Combined emissions from emission units on OSRV WB shall not exceed the emission limits specified for each of the pollutants below.

6.12.1.1. NO_X: 10.4 lb/hr

6.12.1.2. $PM_{2.5}$: 19.9 lb/day

6.12.1.3. PM_{10}: 19.9 lb/day

6.13. For emission unit groups K-2A – 2Z and K-3A – 3Z, compliance with the hourly NO_X emission limit contained in Condition D.6.2 and D.6.3 shall be determined by summing the pounds per hour (pph) emission test results from each engine in the group using the test results at the highest engine load as required in Condition E.3.1.1.

6.14. For all emission units and emission unit groups, except K-2A – 2Z and K-3A – 3Z, compliance with the hourly NO_X emission limits contained in Conditions D.6.1 through D.6.12 shall be determined by multiplying the appropriate emission factors (lb/unit) specified in Tables D.2.1 – D.2.2 (until a test-derived emission factor has been determined according to Condition E.2) by the recorded hourly operation rate (units/hour).

6.14.1. For the Kulluk electricity generation engines (Units K-1A – 1D), icebreaker No. 1 propulsion engines and generator engines (Units IB1-1A – 1Z) and icebreaker No. 2 propulsion and generator engines (Units IB2-1A – 1Z) the permittee shall use the appropriate uncontrolled emission

factor from Tables D.2.1 and D.2.2 for all periods when any of the deviations described in Condition F.3.7 exist.

6.14.2. For the Kulluk, icebreaker and OSRV incinerators (Units K-8, IB1-4, IB2-4 and OSRV-3), the permittee shall use the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 in place of the recorded daily operation rate when calculating emissions pursuant to Condition D.6.14.

6.15. For all emission units and emission unit groups, compliance with the daily $PM_{2.5}$ and PM_{10} emission limits contained in Conditions D.6.1 through D.6.12 shall be determined by multiplying the appropriate emission factors (lb/unit) specified in Tables D.2.1 – D.2.5 (until a test-derived emission factor has been determined according to Condition E.2) by the recorded daily operation rate (units/day).

6.15.1. For the Kulluk electricity generation engines (Units K-1A – 1D), Kulluk MLC HPU engines (Units K-2A – 2Z), Kulluk MLC air compressor engines (Units K-3A – 3Z), Kulluk deck crane engines (Units K-4A – 4C), Icebreaker No. 1 propulsion engines and generator engines (Units IB1-1A – 1Z) and Icebreaker No. 2 propulsion and generator engines (Units IB2-1A – 1Z), the permittee shall use the appropriate uncontrolled emission factor from Tables D.2.1 and D.2.2 for all periods when any of the deviations described in Condition F.4.7 exist.

6.15.2. For the Kulluk incinerator (Unit K-8), the permittee shall use 12 times the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 in place of the recorded daily operation rate when calculating emissions pursuant to Condition D.6.15.

6.15.3. For the icebreaker and OSRV incinerators (Units IB1-4, IB2-4 and OSRV-3), the permittee shall use 24 times the maximum incineration capacity (ton/hr) documented pursuant to Condition C.3.3 in place of the recorded daily operation rate when calculating emissions pursuant to Condition D.6.15.

[40 CFR §§ 71.2, 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(ii), 71.6(c) and 55.8(a), 18 AAC 50.502, 18 AAC 50.326(a)]

7. **Prohibited Activities.** The permittee shall not:

7.1. Flow test wells;

7.2. Flare gas;

7.3. Store liquid hydrocarbons recovered during well testing;

7.4. Allow any vessel associated with this project, and that is not listed in Tables 1 and 2 of this permit, to approach within 25 miles of the Kulluk, while the Kulluk is an OCS Source; and

7.5. Emit any regulated NSR pollutants or GHGs from the shallow gas diverter system.

7.5.1. The permittee shall record the date, time and duration of each shallow gas diversion.

[40 CFR §§ 52.21, 71.2, 71.6(a)(1), 71.6(c) and 71.6(b), 18 AAC 50.502, 18 AAC 50.326(a)]

8. **Good Operating and Maintenance Requirements.** At all times, including periods of startup, shutdown, maintenance, and malfunction, the permittee shall, to the extent practicable, maintain and operate each emission unit, including any associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions and considering the manufacturer's recommended operating procedures. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to EPA which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. The Permittee shall:

8.1. Ensure that a full-time equipment maintenance specialist is on board the Kulluk at all times during operation as an OCS Source;

8.2. Ensure that a crew member on each vessel in the Associated Fleet is responsible for fulfilling the requirements of this Condition;

8.3. Train operating personnel to identify signs of improper operation and maintenance, including visible plumes, and to report these events to the maintenance specialist as soon as possible, but no later than within three hours of identification;

8.4. Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures;

8.5. Routinely inspect each emission unit for proper operation and maintenance consistent with the manufacturer's recommendations;

8.6. Ensure that the operation and maintenance manual provided by the manufacturer for each emission unit is kept on board the subject vessel at all times; and

8.7. Maintain on board each vessel a log documenting when reporting, inspections and maintenance are conducted. Logs for the OSRV WB may be maintained on the OSRV.

[40 CFR §§ 52.21, 55.8(a), 60.11(d), 63.6(e), 71.2, 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(b) and 71.6(c)(1), 18 AAC 50.326(a)]

9. **Closed Crankcase Ventilation.** Each internal combustion engine on the Kulluk and the Associated Fleet shall be equipped with a closed crankcase ventilation (CCV) system. [40 CFR §§ 52.21, 55.8(a), 71.2, 71.6(a)(1), 71.6(a)(3)(i)(C), 71.6(b) and 71.6(c)(1), 18 AAC 50.502, 18 AAC 50.326(a)]

10. **Selective Catalytic Reduction (SCR) Control Device.** Exhaust from each of the following emission units shall be directed to an operating SCR control device unit at all times:

10.1. Kulluk electricity generation engines (Units K-1A – 1D).

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10.2. Icebreaker No. 1 propulsion and generator engines (Units IB1-1A – 1Z).

10.3. Icebreaker No. 2 propulsion and generator engines (Units IB2-1A – 1Z)

[40 CFR §§ 52.21, 55.8(a), 60.11(d), 63.6(e), 71.2, 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(b) and 71.6(e)(1), 18 AAC 50.502, 18 AAC 50.326(a)]

11. **Oxidation Catalyst Control Device.** Exhaust from each of the following emission units shall be directed to an operating oxidation catalyst control device at all times:

11.1. Kulluk electricity generation engines (Units K-1A – 4D).

11.2. Kulluk MLC HPU engines (Units K-2A – 2Z).

11.3. Kulluk MLC air compressor engines (Units K-3A – 3Z).

11.4. Kulluk deck crane engines (Units K-4A – 4C).

11.5. Icebreaker No. 1 propulsion engines and generator engines (Units IB1-1A – 1Z).

11.6 Icebreaker No. 2 propulsion and generator engines (Units IB2-1A – 1Z).

[40 CFR §§ 52.21, 55.8(a), 60.11(d), 63.6(e), 71.2, 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(b) and 71.6(e)(1), 18 AAC 50.502, 18 AAC 50.326(a)]

E. SOURCE-WIDE TESTING CONDITIONS

1. **General Testing Requirements.** Whenever conducting a stack test required by this permit, and unless specifically stated otherwise in this permit, the permittee shall comply with the following testing requirements in addition to the specific testing requirements contained in the emission unit sections of this permit:

1.1. The permittee shall provide EPA at least 30 days prior notice of any stack test. If after 30 days notice for an initially scheduled stack test, there is a delay in conducting the scheduled stack test, the permittee shall notify EPA as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the stack test, or by arranging a rescheduled date with EPA by mutual agreement.

1.2. The permittee shall submit to EPA a complete stack test plan within 60 days after receiving a request under Condition E.1.14 and at least 30 days prior to any required testing unless EPA agrees in writing to some other time period. Retesting may be done without resubmitting the plan provided it is conducted in accordance with the previously submitted plan. The permittee shall follow the submitted test plan except as otherwise agreed to in writing by EPA prior to the testing. The source test plan shall include and address the following elements:

1.2.1. Purpose and scope of testing;

1.2.2. Source description (including groups of emission units), nameplate and actual capacity of the equipment, including a description of the operating

scenarios and mode of operation during testing and including fuel sampling and analysis procedures;

1.2.3. Schedule/dates of testing;

1.2.4. Process data to be collected during the test and reported with the results, including source-specific data identified in the emission unit sections of this permit;

1.2.5. Information from the manufacturer of the fuel flow meter so as to determine its accuracy;

1.2.6. Sampling and analysis procedures, specifically requesting approval for any proposed alternatives to the reference test methods, and addressing minimum test length (e.g., one hour, 8 hours, 24 hours, etc.) and minimum sample volume;

1.2.7. Sampling location description and compliance with the reference test methods;

1.2.8. Analysis procedures and laboratory identification;

1.2.9. Quality assurance plan;

1.2.10. Calibration procedures and frequency;

1.2.11. Sample recovery and field documentation;

1.2.12. Chain of custody procedures;

1.2.13. Quality Assurance (QA)/Quality Control (QC) project flow chart;

1.2.14. Data processing and reporting;

1.2.15. Description of data handling and QC procedures; and

1.2.16. Report content and timing.

1.3. Unless otherwise specified in this permit, or EPA determines in writing, that other operating conditions are representative of normal operations or unless specified in the emission unit sections of this permit, the source shall be operated at a capacity of at least 90% but no more than 100% of maximum capacity during all tests.

1.4. Unless otherwise specified by an applicable requirement or test method, the permittee shall conduct source testing at a point or points that characterize the actual discharge into the ambient air.

1.5. Only regular operating staff may adjust the processes or emission control devices during or within 2 hours prior to the start of a source test. Any operating adjustments made during a source test, that are a result of consultation during the tests with source testing personnel, equipment vendors, or consultants, may render the source test invalid.

1.6. For the duration of each test run (unless otherwise specified), the permittee shall record the following information:

1.6.1. All data which is required to be monitored during the test in the emission unit sections of this permit; and

1.6.2. All continuous monitoring system data which is required to be routinely monitored in the emission unit sections of this permit for the emission unit being tested.

1.7. Each source test shall follow the reference test methods specified by this permit and consist of at least three (3) valid test runs. For purposes of this permit:

1.7.1. EPA Test Methods 1, 2, 3A, 4, 5, 6C, 7E, 9, 10, 19, and 25A are set forth in 40 CFR Part 60, Appendix A;

1.7.2. EPA Test Methods 201, 201A and 202 are set forth in 40 CFR Part 51, Subpart M;

1.7.3. ASTM D 5453-09 is set forth at http://www.astm.org/Standards/D5453.htm

1.8. Facilities for performing and observing the emission testing shall be provided that meet the requirements of 40 CFR § 60.8(e) and EPA Method 1.

1.9. Emission test reports shall be submitted to EPA within 45 days of completing any emission test required by this permit along with items required to be recorded in Condition E.1.6 above.

1.10. EPA Methods 1, 2, 3A, 3B, 4 and 19 shall be used as necessary to convert the measured NO_X, PM, PM_{10}, $PM_{2.5}$ and CO emissions into units of the emission limits in the permit.

1.11. Source test emission data shall be reported as the arithmetic average of all valid test runs and in the unit terms of any applicable emission limit, unless otherwise specified in the emission unit sections of this permit.

1.12. An alternative test method or a deviation from a test method identified in this permit may be approved as follows:

1.12.1. The permittee must submit a written request to EPA at least 60 days before the stack test is scheduled to begin which includes the reasons why the alternative or deviation is needed and the rationale and data to demonstrate that the alternative test method or deviation from the reference test method:

1.12.1.1. Provides equal or improved accuracy and precision as compared to the specified reference test method; and

1.12.1.2. Does not decrease the stringency of the standard as compared to the specified reference test method.

1.12.2. If requested by EPA, the demonstration referred to in Condition E.1.12.1 must use Method 301 in 40 CFR Part 63, Appendix A, to validate the alternative test method or deviation.

1.12.3. EPA must approve the request in writing.

1.12.4. Until EPA has given written approval to use an alternative test method or to deviate from the test method specified in this permit, the permittee is required to use the test method specified in this permit when conducting a source test under this permit.

1.13. The permittee may request an extension to a source test deadline established by the EPA. The permittee may delay a source test beyond the original deadline only if the extension is approved in writing by EPA.

1.14. In addition to any source testing explicitly required by this permit, the permittee shall conduct source testing as requested by the EPA to determine compliance with applicable permit requirements.

1.15. For any source test requiring the use of Method 201A, the permittee may substitute the use of Method 5. In either case, Method 202 shall also be employed for condensable particulate matter.

[40 CFR § 71.6(a)(3)(i)(B) and 71.6(c)(1) 18 AAC 50.326(a)]

E 2. **Test-Derived Emission Factors.** The following conditions apply to the procedure for determining the equipment-specific emission factors as well as to the supporting testing for all emission units where this testing condition is cited in other conditions of this permit:

2.1. Testing Conditions for Engines.

2.1.1. Except as otherwise provided for specific emission units, testing shall be conducted by May 1 of the first two drilling seasons in which a specific emission unit is to be used. In addition, beginning with the second performance test, the following shall be used to determine the frequency of any future testing for each emission unit and pollutant: If the worst case emission factor results from the most recent two tests vary by less than 20% from their average, the testing frequency may be reduced thereafter to every 5 years; if the worst case emission factor results vary by 20% or more from their average, testing frequency shall be every 2 years. EPA may require that specific test results be excluded from use for purposes of this procedure if EPA determines in writing that the results are invalid.

2.1.2. During testing, the permittee shall equip each emission unit with a device to measure fuel injection timing.

2.1.3. During testing, the permittee shall equip each emission unit with a electrical output monitoring device with an accuracy equal to or better than 2 percent of the engine's maximum output (in kWe). The permittee

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shall maintain the accuracy of each electrical output monitoring device in accordance with manufacturer's recommendations. The permittee may propose in writing to EPA an alternative method for determining operating load during performance testing. Any alternative method of determining operating load must be approved by EPA in writing. If the permittee requests and obtains EPA approval of an alternative method of measuring load, the accuracy and maintenance requirements of this condition apply to any related equipment or monitoring device relied upon by the alternative method.

2.1.4. If the emission unit is not equipped with a fuel flow meter as required by Condition F.2.2, during testing equip the emission unit with a fuel flow meter that meets the requirements of Condition F.2.2.1.

2.1.5. Each stack test shall consist of 3 one-hour runs conducted while operating within 5% of the following three loads: 95%, 65%, and 40%. Alternative loads for testing each emission unit may be proposed by the permittee in the test plan by providing justification for the proposed operating loads. Operating load shall be determined by expressing the electrical power produced (kWe-hr) in terms of percentage compared to the engine rated capacity. An alternative method for determining operating load may be proposed per Condition E.1.12.

2.1.6. During each test run, the permittee shall monitor and record the following information:

2.1.6.1. Quantity of fuel used (in gallons) by the emission unit being tested;

2.1.6.2. Percent load based on electrical power produced (in kWe-hr) or alternative method per Condition E.1.12.

2.1.6.3. Fuel injection timing.

2.1.7. Testing shall comply with all general testing requirements under Condition E.1 of this permit.

2.2. Emission Factor Derivation Procedure for Engines.

2.2.1. A worst-case emission factor for each pollutant shall be determined in units of pounds of pollutant per gallon of fuel combusted for each emission unit, as follows:

2.2.1.1. The pounds of pollutant per gallon of fuel combusted emission factor shall be determined by dividing the pounds of pollutant emitted during each test run by the gallons of fuel combusted during each test run;

2.2.1.2. The emission factor for all three test runs conducted at each operating load shall be averaged arithmetically to determine

the final emission unit specific test derived emission factor (pounds of pollutant per gallon of fuel combusted) for each operating load and pollutant from each emission unit;

2.2.1.3. The permittee shall use the highest emission unit specific test derived emission factor of any load tested as the worst-case emission factor for that pollutant.

2.2.1.4. For groups of emission units, the permittee shall use the highest emission unit specific derived emission factor of any emission unit in the group for that pollutant.

2.2.2. Within 45 days of completing the testing required under Condition E.3, the permittee shall submit to EPA complete documentation of each emission unit specific test-derived emission factor.

2.2.3. The permittee shall begin using each test-derived emission factor to calculate emissions as required by this permit beginning with the drilling season that follows the testing for a specific emission unit.

2.3. Testing Conditions for Incinerators.

2.3.1. Except as otherwise provided for specific emission units, testing shall be conducted by May 1 of the first two drilling seasons in which a specific emission unit is to be used. In addition, beginning with the second performance test, the following shall be used to determine the frequency of any future testing for each emission unit and pollutant: If the worst case emission factor results from the most recent two tests vary by less than 20% from their average, the testing frequency may be reduced thereafter to every 5 years; if the worst case emission factor results vary by 20% or more from their average, testing frequency shall be every 2 years. EPA may require that specific test results be excluded from use for purposes of this procedure if EPA determines in writing that the results are invalid.

2.3.2. During testing, the permittee shall determine the mass of waste being fed to the incinerator by using a weigh scale that shall be accurate to within 1 lb.

2.3.3. Each stack test shall consist of 3 one-hour runs conducted while operating within 10% of the maximum rated capacity. Operating load shall be determined by expressing the feed rate (lb/hr) in terms of percentage compared to the incinerator rated capacity.

2.3.4. During each test run, the permittee shall monitor and record the following information:

2.3.4.1. Quantity of waste consumed (in pounds) by the emission unit being tested;

2.3.4.2. Percent load based on waste feed rate (in lb/hr).

2.3.5. Testing shall comply with all general testing requirements under Condition E.1 of this permit.

2.4. Emission Factor Derivation Procedure for Incinerator.

2.4.1. An emission factor for each pollutant shall be determined in units of pounds of pollutant per ton of waste consumed for each emission unit, as follows:

2.4.1.1. The pounds of pollutant per ton of waste consumed emission factor shall be determined by dividing the pounds of pollutant emitted during each test run by the pounds of waste consumed during each test run;

2.4.1.2. The emission factor for all three test runs conducted shall be averaged arithmetically to determine the final emission unit specific test derived emission factor (pounds of pollutant per ton of waste consumed) for each pollutant from each emission unit;

2.4.2. Within 45 days of completing the testing required under Condition E.3, the permittee shall submit to EPA complete documentation of each emission unit specific test-derived emission factor.

2.4.3. The permittee shall begin using each valid test-derived emission factor to calculate emissions as required by this permit beginning with the drilling season that follows the testing for a specific emission unit.

[40 CFR §§ 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(ii), 71.6(a)(3)(iii), and 71.6(c)(1), 18 AAC 50.326(a)]

3. **Source Test Requirements.**

3.1. The permittee shall perform source testing to determine test-derived emission factors for NO_X, $PM_{2.5}$, PM_{10}, CO using the procedures in Conditions E.1, E.2.1 and E.2.2 of this permit for the following emission units: K-1A – 1D, K-2A – 2Z, K-3A – 3Z, K-4A – 4C, IB1-1A – 1Z, IB2-1A – 1Z, RV-1A – 1Z, and OSRV-1A – 1Z. Testing for the following units shall be conducted in accordance with Conditions E.1, E.2.1 and E.2.2 except that testing shall be conducted every 5 years after the first test: K-4A - 4C.

3.1.1. The permittee shall also report the NO_X test results for the highest operating load in terms of pph NO_X emissions for the following emission units: K-2A – 2Z, K-3A – 3Z.

3.1.2 The permittee shall measure, record and report NO_2 emissions in the same units as NO_X for each NO_X test performed.

3.1.3. For each emission unit tested that is controlled by an SCR unit, the permittee shall report the average inlet temperature to the SCR unit recorded during the emission test that represents the worst case emission factor for that emission unit.

3.1.4. For each emission unit tested that is controlled by an oxidation catalyst, the permittee shall report the average inlet temperature to the catalyst recorded during the emission test that represents the worst case emission factor for that emission unit.

3.1.5. The permittee shall measure, record and report visible emissions for the duration of all particulate emission tests.

3.1.6. All tests shall be performed using the test methods specified in this permit.

3.2. The permittee shall perform source testing to determine test-derived emission factors for CO, NO_X, $PM_{2.5}$ and PM_{10} using the procedures in Conditions E.1, E.2.3 and E.2.4 of this permit for the following emission units: K-8, IB1-4, IB2-4 and OSRV-3.

3.2.1. The permittee shall report the average incinerator exit temperature recorded during the emission test.

3.2.2. The permittee shall measure, record and report visible emissions for the duration of all particulate emission tests.

3.2.3. All tests shall be performed using the test methods specified in this permit.

[40 CFR §§ 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(ii), 71.6(a)(3)(iii), and 71.6(c)(1), 18 AAC 50.326(a)]

F. SOURCE-WIDE MONITORING & RECORDKEEPING CONDITIONS

1. **Global Positioning System.** The permittee shall use a modern global positioning system on the Kulluk and Associated Fleet (except OSRV WB) as follows:

1.1. Monitor and record the date, time and location of the Kulluk and Associated Fleet at the following frequency and on the following occasions:

1.1.1. Once each hour;

1.1.2. When the Kulluk becomes and ceases to be an OCS source, and

1.1.3. When each vessel in the Associated Fleet enters or leaves the 25 mile radius around the Kulluk.

1.2. Location shall be recorded by providing coordinates in the following formats:

1.2.1. Latitude and longitude; and

1.2.2. Universal Transverse Mercator grid system.

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1.2.3 Graphical location representation, including a line or points showing the locations of each vessel, the location of the Kulluk, and circles depicting distances of 5 and 10 miles around the Kulluk.

1.3. For any vessel performing a resupply trip to the Kulluk, monitor and record the following time points for each resupply trip and vessel:

1.3.1. The date and time the vessel approaches within 25 miles of the Kulluk;

1.3.2 The date and time the vessel arrives at the Kulluk;

1.3.3. The date and time the vessel departs the Kulluk, and

1.3.4. The date and time the vessel reaches a distance of 25 miles from the Kulluk upon departure.

[40 CFR §§ 55.8(a), 71.6(a)(1), 71.6(a)(3)(i)(D), 71.6(a)(3)(ii) and 71.6(c)(1), 18 AAC 50.326(a)]

2. Operations and Fuel Monitoring.

2.1. The permittee shall install, calibrate, maintain and operate equipment or systems to measure and record the operation information required by this permit.

2.2. Except as provided in Condition F.2.3, the permittee shall measure continuously and record the hourly, daily and monthly total fuel combusted by each emission unit or group of emission units on the Kulluk and Associated Fleet that combusts fuel, except for the Kulluk emergency generator, seldom used sources and OSRV work boats, using a fuel flow meter such that emissions can be calculated on the required time frames required by this permit.

2.2.1. Each fuel flow meter required under this permit shall meet the following requirements:

2.2.1.1. Each fuel flow meter shall be located so that there are no fuel inflows or outflows between it and the emission unit or emission unit group being served by the meter.

2.2.1.2. Each fuel flow meter shall be totalizing and non-resettable in units of gallons.

2.2.1.3. Each fuel flow meter shall continuously measure the fuel flow rate with accuracy equal to or better than 2 percent of the meter's upper range value.

2.2.1.4. By April 1 of the first drill season, the permittee shall collect and submit to EPA information from the manufacturer of the fuel flow meter so as to determine its accuracy.

2.2.1.5. The permittee shall maintain the accuracy of each fuel flow meter in accordance with manufacturer's recommendations.

2.2.2. The permittee shall measure and record the fuel combusted by the Kulluk emergency generator, each seldom used source and OSRV work boat before and after each use using one of the following methods:

2.2.2.1. Measure the fuel combusted using the fuel tank sight glass;

2.2.2.2. Measure the fuel combusted by manually measuring the amount of fuel in the tank using a graduated dip stick;

2.2.2.3. Measure the fuel combusted using a fuel tank gauge; or

2.2.2.4. Measure the fuel combusted using a fuel flow meter.

2.2.3. For the Kulluk emergency generator, each seldom used source or OSRV work boat, the permittee shall record the start and end times before and after each use.

2.2.4. For the Kulluk emergency generator, each seldom used source or OSRV work boat, the permittee shall determine the average fuel combusted per hour by dividing the total fuel recorded per use in Condition F.2.2.2 by the total hours operated recorded per use in Condition F.2.2.3. The permittee shall use this value for each hour of operation where needed in this permit for compliance purposes.

2.2.5. The permittee shall calculate and record the total gallons of fuel burned each month and each rolling 12-month period by emission units on the Kulluk and Associated Fleet.

2.3. As an alternative to measuring and recording the total fuel combusted by an emission unit that combusts fuel, the permittee may continuously measure and record, on an hourly, daily and monthly basis, the time the emission unit operates using a non-resettable hour meter.

2.3.1. For those emission units that the permittee elects to monitor operating time instead of fuel flow, the permittee shall determine the volume (gallons) of fuel combusted each hour by multiplying the recorded operating time (whole hour or fraction of an hour) by the rated capacity of the unit to consume fuel (gallons per hour). The permittee shall use this value where needed in this permit for compliance purposes.

2.4. The permittee shall obtain representative fuel samples and fuel sulfur content (ppm) as follows:

2.4.1. Prior to mobilizing the Kulluk and combusting any fuel in the Kulluk for the first time at the beginning of a drilling season, determine (by sampling and analysis using one of the sampling methods in 40 CFR § 80.330(b) and the analytical method in ASTM D 5453-09) and record the sulfur content in each fuel oil storage tank on the Kulluk and the Associated Fleet.

2.4.2. After mobilizing the Kulluk, determine the sulfur content of each delivery of fuel to the Kulluk and Associated Fleet as follows:

2.4.2.1. Determine (by sampling and analysis using one of the sampling methods in 40 CFR § 80.330(b) and the analytical method in ASTM D 5453 09) and record the sulfur content of each delivery ; or

2.4.2.2. Obtain from the fuel supplier certification of the sulfur content of the fuel as purchased, and obtain documentation that each storage tank transporting the fuel between purchase and delivery has not caused the fuel delivered to become higher than 100 ppm sulfur content.

2.4.3. Maintain all records of all sampling and analysis including:

2.4.3.1. Sample and analysis locations, dates and times; and

2.4.3.2. Sampling and analytical method used; and

2.4.3.3. Copies of any certifications and documentation relied upon.

2.5. Upon introducing waste to the incinerator, continuously monitor and record every 15 minutes the incinerator exit temperature of each incinerator while operating.

2.5.1. Report as a permit deviation under Conditions A.17 and A.18 any periods during which the exit temperature is 90% or less than the most recent average exit temperature reported in Condition E.3.2.1.

2.6. The permittee shall record the number of hours the Kulluk incinerator operates each day.

2.7. The permittee shall record both the number of hours the Kulluk emergency generator operates each day and the number of days it operates each month.

[40 CFR §§ 55.8(a), 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(i)(C), 71.6(a)(3)(ii) and 71.6(c)(1), 18 AAC 50.326(a)].

3. **Selective Catalytic Reduction (SCR) Control Device Monitoring.** For any emission unit that is required by this permit to be controlled by an SCR control device, the permittee shall install, calibrate, operate, and maintain (in accordance with manufacturer specifications) continuous monitoring system (CMS) to measure and record inlet temperature in degrees Fahrenheit (°F), urea feed rate (gallons/min), and catalyst activity (NO_X ppm concentration) as follows:

3.1. Prepare and submit with the source test protocol required by Condition E.12 a site-specific monitoring plan that addresses the monitoring system design, data collection, quality assurance, and quality control elements outlined in this condition. The plan shall address the performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, sensor tolerance and sensitivity, and data acquisition and

calculations; sampling interface (e.g., thermocouple, flow meter) location such that the monitoring system will provide representative measurements; equipment performance checks, system accuracy audits, or other audit procedures; ongoing operation and maintenance procedures; and ongoing reporting and recordkeeping procedures.

3.2. Upon introducing diesel fuel to the engine and continuing until the flow of diesel fuel to the engine is stopped, the temperature and urea CMS shall collect data at least once every 15 minutes.

3.3. Conduct the CMS equipment performance checks, system accuracy audits, or other audit procedures within 60 days prior to each drilling season and at least once every 3 months for the duration of the drilling season.

3.4. Conduct a performance evaluation of each CMS.

3.5. Except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, system accuracy audits and required zero and span adjustments), operate the CMS at all times the affected source is operating. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. Complete monitoring system repairs in response to monitoring system malfunctions and return the monitoring system to operation as expeditiously as practicable.

3.6. Monitor and record NO_X emissions (ppm) from the exhaust of each SCR unit once per week while engine exhaust gases are routed to the SCR unit using a portable NO_X monitor that meets the requirements of EPA OTM 13 found at http://www.epa.gov/ttn/emc/prelim/otm13.pdf.

3.7. Report as a deviation under Conditions 16 A.17 and A.18 any periods during which the urea pump is not operating, the inlet temperature is 90% or less than the most recent average inlet temperature reported in Condition E.3.1.3, or the NO_X concentration is 150% or more than the most recent NO_X concentration measured in Condition E.3.

[40 CFR §§ 55.8(a), 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(i)(C), 71.6(a)(3)(ii) and 71.6(c)(1), 18 AAC 50.326(a)]

4. **Oxidation Catalyst Control Device Monitoring.** For any emission unit that is required by this permit to be controlled by an oxidation catalyst control device, the permittee shall install, calibrate, operate, and maintain (in accordance with manufacturer specifications) CMS to measure and record inlet temperature (°F), and catalyst activity (CO ppm concentration) as follows:

4.1. Prepare and submit with the source test protocol required by Condition E.12 a site-specific monitoring plan that addresses the monitoring system design, data

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collection, quality assurance, and quality control elements outlined in this condition. Install, calibrate, operate, and maintain each CMS. The plan shall address the performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, sensor tolerance and sensitivity, and data acquisition and calculations; sampling interface (e.g., thermocouple) location such that the monitoring system will provide representative measurements; equipment performance checks, system accuracy audits, or other audit procedures; ongoing operation and maintenance procedures; and ongoing reporting and recordkeeping procedures.

4.2. Upon introducing diesel fuel to the engine and continuing until the flow of diesel fuel to the engine is stopped, the temperature CMS shall collect data at least once every 15 minutes.

4.3. Conduct the CMS equipment performance checks, system accuracy audits, or other audit procedures within 60 days prior to each drilling season and at least once every 3 months for the duration of the drilling season.

4.4. Conduct a performance evaluation of each CMS.

4.5. Except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system quality assurance or quality control activities (including, as applicable, system accuracy audits and required zero and span adjustments), operate the CMS at all times the affected source is operating. A monitoring system malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring system failures that are caused in part by poor maintenance or careless operation are not malfunctions. Complete monitoring system repairs in response to monitoring system malfunctions and return the monitoring system to operation as expeditiously as practicable.

4.6. Monitor and record CO emissions (ppm) from the exhaust of each oxidation catalyst unit once per week using a portable CO monitor that meets the requirements of EPA OTM 13 found at http://www.epa.gov/ttn/emc/prelim/otm13.pdf.

4.7. Report as a permit deviation under Conditions A.17 and A.18 any periods during which the inlet temperature is 90% or less than the most recent average inlet temperature reported in Condition E.3.1.4, or the CO concentration is 120% or more than the CO concentration measured during the most recent previous source test that produced compliance data or emission factors for this permit.

[40 CFR §§ 55.8(a), 71.6(a)(1), 71.6(a)(3)(i)(B), 71.6(a)(3)(i)(C), 71.6(a)(3)(ii) and 71.6(c)(1), 18 AAC 50.326(a)]

G. NESHAP & NSPS CONDITIONS[9]

1. **NESHAP ZZZZ & NSPS IIII for K-1A – 1D, K-2A – 2Z, K-3A – 3Z, K-6.** The permittee shall comply with the applicable requirements of 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart IIII for Units K-1A – 1D, K-2A – 2Z, K-3A – 3Z and K-6 as follows:

1.1. All engines installed as Units K-1A – 1D, K-2A – 2Z, K-3A – 3Z and K-6 shall be units that are subject to 40 CFR Part 60, Subpart IIII based on their per-cylinder displacement and model year. [40 CFR §§ 71.6(a) and 71.6(b)]

1.2. For Units K-1A – 1D, the permittee shall purchase or lease an engine certified to the emission standards in 40 CFR 60.4201(a), for the same model year and maximum engine power. [40 CFR 60.4201(a), 60.4204(b) and 60.4211(c)]

1.3. For Unit K-6, the permittee shall purchase or lease an engine certified to the emission standards in 40 CFR 60.4202(a)(2), for the same model year and maximum engine power. [40 CFR 60.4202(a)(2), 60.4205(b) and 60.4211(c)]

1.4. For Units K-2A – 2Z and K-3A – 3Z, if the permittee purchase or lease an engine that is a 2007 or later model year engine, it must be certified to the emission standards in 40 CFR 60.4201(a), for the same model year and maximum engine power. If the permittee purchase a pre-2007 model year engine, it must be certified to the emission standards in Table 1 to 40 CFR 60, Subpart IIII. [40 CFR 60.4201(a), 60.4204(b) and 60.4211(c)]

1.5. Compliance with Conditions G.1.2 through G.1.4 shall be determined based upon recordkeeping required by Condition G.1.5.1.

1.5.1. Keep records documenting that the engine is certified to meet the applicable emission standards.

[40 CFR §§ 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

1.6. Install and configure the engine according to the manufacturer's specifications. [40 CFR §§ 60.4211(c), 63.6590(c)]

1.6.1. Compliance with Condition G.1.6 shall be determined based upon recordkeeping required by Condition G.1.6.2.

1.6.2. Keep records documenting that that the engine was installed and configured according to the manufacturer's specifications. Such records shall include, but not be limited to, the manufacturer's specifications.

[40 CFR §§ 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

1.7. Operate and maintain the engine and control device according to the manufacturer's written instructions or the procedures developed by the permittee that are approved in writing by the engine manufacturer. The permittee shall only change those

[9] 18 AAC 50.326(a)(2), 50.040(a) and 50.040(c)

settings that are approved by the manufacturer. [40 CFR §§ 60.4211(a) and 63.6590(c)]

1.7.1. Compliance with Condition G.1.7 shall be determined based upon recordkeeping required by Conditions G.1.7.2, G.1.7.3 and G.1.7.4.

1.7.2. Keep records of the manufacturer's written instructions for operation and maintenance of the engine and control device or the procedures the permittee developed that are approved in writing by the manufacturer. Such records shall include, but not be limited to engine and control device settings established or approved in writing by the manufacturer.

[40 CFR §§ 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

1.7.3. If the permittee is implementing procedures or settings developed to operate and maintain the engine and control device, keep records of the manufacturer's written approval of those procedures and settings.

[40 CFR §§ 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

1.7.4. At least once each day, observe and record the actual instrument settings that reflect the performance of the engine and control device. The settings that the permittee is to observe are identified by either the manufacturer or the permittee in the records required by Condition G.1.7.2.

[40 CFR §§ 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

1.8. For storage tanks serving Units K-1A – 1D, K-2A – 2Z, K-3A – 3Z and K-6 and for diesel fuel intended to be combusted in these units while the Kulluk is an OCS source, deliver into these tanks diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel as follows: (1) maximum sulfur content of 15 ppm by weight, and either (2a) minimum cetane index of 40 or (2b) maximum aromatic content of 35 percent by volume. [40 CFR §§ 60.4207(b), 63.6590(c)]

1.8.1. Compliance with Condition G.1.8 shall be determined as follows:

1.8.1.1. Determine and record the sulfur content, cetane index and aromatic content of each delivery in accordance with one of the sampling methods in 40 CFR § 80.330(b), and by analyzing the fuel in accordance with the following analytical methods: ASTM D 5453-09 for sulfur content, ASTM D 976-80 for cetane index and ASTM D 1319-03 for aromatic content; or

1.8.1.2. Obtain from the fuel supplier certification of the sulfur content and either the cetane index or aromatic content of the fuel as purchased, and obtain documentation that each storage tank transporting the fuel between purchase and delivery has not caused the fuel delivered to become higher than 15 ppm sulfur content.

1.8.2. Maintain all records of all sampling and analysis including:

1.8.2.1. Sample and analysis locations, dates and times; and

1.8.2.2. Sampling and analytical method used; and

1.8.2.3. Copies of any certifications relied upon.

[40 CFR §§ 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

1.9. Comply with the requirements of 40 CFR 89 and 1068 as they apply to the permittee.

[40 CFR §§ 60.4211(a), 63.6590(c)]

1.10. Comply with the applicable provisions of Subpart A as specified in Table 8 to 40 CFR 60, Subpart IIII

[40 CFR § 60.4218 and Table 8 to 40 CFR Part 60, Subpart IIII]

2. **NESHAP ZZZZ for K-7A – K-7D5.** Beginning May 3, 2013, the permittee shall comply with the applicable requirements of 40 CFR 63, Subpart ZZZZ for Units K-7A, K-7B, K-7C and K-7D1 – 7D5 as follows:

2.1. Change the oil and filter annually, or (a) for Units K-7B, K-7C and K-7D1 – K-7D5, every 500 hours of operation or (b) for Unit K-7A, every 1,000 hours of operation, whichever comes first, or at a frequency determined by an oil sample and analysis program as follows:

2.1.1. Sample and analyze the oil annually, or (a) for Units K-7B, K-7C and K-7D1 – K-7D5, every 500 hours of operation or (b) for Unit K-7A, every 1,000 hours of operation, whichever comes first, to determine total base number, viscosity, and water content by volume.

2.1.2. Change oil and oil filter within the applicable time period specified in Condition G.2.1.3 if the oil analysis confirms any of the following conditions:

2.1.2.1. The total base number of the oil sample is less than 30 percent of the total base number of the oil when new;

2.1.2.2. The viscosity of the oil sample has changed by more than 20 percent from the viscosity of the oil when new; or

2.1.2.3. The water content of the oil sample is greater than 0.5 percent by volume.

2.1.3. Change oil and oil filter within 2 days of receiving the results of the oil analysis unless the engine is not in operation when the results of the analysis are received. If the engine is not in operation when the results of the analysis are received, the permittee must change the oil and oil filter within either 2 days of receiving the results or before commencing operation, whichever is later.

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2.1.4. Keep records of the oil analysis results and the engine oil and filter changes.

[40 CFR 63.6595(a), 63.6603(a), 63.6625(i), and Table 2d to 40 CFR 63, Subpart ZZZZ.]

2.2. The permittee shall inspect air cleaner every 1,000 hours of operation or annually, whichever comes first [40 CFR 63 6603(a) and Table 2d to 40 CFR 63, Subpart ZZZZ.]

2.2.1. Keep records of the air cleaner inspections. [40 CFR 71.6(a)(3)(i)(B)]

2.3. The permittee shall inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. [40 CFR 63.6603(a) and Table 2d to 40 CFR 63, Subpart ZZZZ.]

2.3.1. Keep records of the hose and belt inspections and the hose and belt replacements. [40 CFR 71.6(a)(3)(i)(B)]

2.4. For Units K-7B, K-7C and K-7D1 – 7D5, the management practices required by Conditions G.2.1, G.2.2 and G.2.3 can be delayed as follows:

2.4.1. If an emergency engine is operating during an emergency and it is not possible to shut down the engine in order to perform the management practice on schedule, the management practice can be delayed until the emergency is over.

2.4.1.1. Report any failure to perform management practice on the schedule required.

2.4.2. If performing the management practice on schedule would otherwise pose an unacceptable risk under Federal law, the management practice can be delayed until unacceptable risk is over or the unacceptable risk under Federal law has abated.

2.4.2.1. Report any failure to perform management practice on the schedule required and report the Federal law under which the risk was deemed unacceptable.

[40 CFR 63.6603(a) and Table 2d to 40 CFR 63, Subpart ZZZZ]

2.5. During periods of startup, the permittee shall minimize the engine's time spent at idle and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. [40 CFR 63.6603(a), 40 CFR 63.6625(h) and Table 2d to 40 CFR 63, Subpart ZZZZ]

2.6. The permittee shall be in compliance with the emission limitations and operating limitations in this subpart that apply to the permittee at all times. [40 CFR 63.6605(a)]

2.7. At all times the permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing

emissions. The general duty to minimize emissions does not require the permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

2.8. For Units K-7B, K-7C and K-7D1 – 7D5, the permittee shall install a non-resettable hour meter if one is not already installed. [40 CFR 63.6625(f)]

2.8.1. The permittee shall keep records of the hours of operation of the engine. The permittee shall document how many hours are spent for emergency operation, including what classified the operation as emergency. [40 CFR 63.6655(f)]

2.8.2. The permittee shall document how many hours are spent for non-emergency operation, including the reason for non-emergency operation. [40 CFR 63.6655(f) and 71.6(a)(3)(i)(B)]

2.9. The permittee shall operate and maintain the engine and after-treatment control device (if any) according to the manufacturer's emission-related operation and maintenance instruction, or develop and follow the permittee's own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR 63.6625(e), 63.6640(a) and Table 6 to 40 CFR 63, Subpart ZZZZ]

2.9.1. The permittee shall keep records of either the manufacturer's emission-related operation and maintenance instruction, or the permittee's own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR 63.6655(d)]

2.9.2. The permittee shall keep records of the maintenance the permittee conducted on the engine in order to demonstrate that the permittee operated and maintained the engine according to the permittee's own maintenance plan. [40 CFR 63.6655(e)]

2.10. The permittee shall report each instance in which the permittee did not meet each emission limitation or operating limitation in Table 2d to this subpart that apply to the permittee. These instances are deviations from the emission and operating limitations in this subpart. These deviations must be reported according to the requirements in 40 CFR 63.6650. [40 CFR 63.6640(b)]

2.11. The permittee shall report each instance in which the permittee did not meet the requirements in Table 8 to this subpart that applies to the permittee. [40 CFR 63.6640(e) and Table 8 to 40 CFR 63, Subpart ZZZZ]

2.12. For Units K-7B, K-7C and K-7DI – D5, the permittee shall operate the engine as follows in order to be considered an emergency engine under 40 CFR 63, Subpart *ZZZZ*:

2.12.1. There is no time limit on the use of engine in emergency situations.

2.12.2. Except as provided for in Condition G.2.12.2.3, the permittee may operate the engine for up to a combined 100 hours per year in non-emergency situations to perform the following activities:

2.12.2.1. Maintenance checks and readiness testing that is recommended by the Federal government, the manufacturer, the vendor, or the insurance company associated with the engine; and

2.12.2.2. Any other activity not associated with maintenance checks and readiness testing, except that the duration of activities not associated with maintenance checks and readiness testing shall not exceed the lesser of the following time periods:

2.12.2.2.1. 50 hours per year; or

2.12.2.2.2. 100 hours per year less any hours utilized to conduct maintenance checks and readiness testing pursuant to Condition G.2.12.2.1.

2.12.2.3. The permittee may operate the engine to conduct maintenance checks and readiness testing that is recommended by Federal government, the manufacturer, the vendor, or the insurance company associated with the engine beyond 100 hours per year if either:

2.12.2.3.1. The permittee maintain records indicating that Federal standards require maintenance and testing beyond 100 hours per year; or

2.12.2.3.2. EPA approves a written request from the permittee to do so.

[40 CFR 63.6640(f)]

3. **NESHAP ZZZZ for K-4A – K-4C.** Beginning May 3, 2013, the permittee must comply with the applicable requirements of 40 CFR 63, Subpart *ZZZZ* for Units K-4A – 4C as follows:

3.1. Emission Limitation. At all times except during periods of startup, limit the concentration of CO in the engine's exhaust to 49 ppmvd at 15 percent O_2; or

reduce CO emissions by 70 percent or more. Compliance is based on the results of testing, the average of three 1-hour runs using the testing requirements and procedures in 40 CFR 63.6620 and Table 4 to 40 CFR 63, Subpart *ZZZZ*.

[40 CFR 63.6595(a), 63.6603(a), 63.6605(a) and Tables 2d and 5 to 40 CFR 63, Subpart *ZZZZ*]

3.2. Initial Compliance Demonstration.

3.2.1. Except as specified in Conditions G.3.2.1.1 and G.3.2.1.2, conduct an initial performance test between May 3, 2013 and October 30, 2013 in accordance with the applicable requirements in 40 CFR 63.6620 and Table 4 to 40 CFR 63, Subpart *ZZZZ*. [40 CFR 63.6612(a) and 63.6620]

3.2.1.1. The permittee is not required to conduct a performance test on an emission unit for which a performance test has been previously conducted if all of the following conditions are met:

3.2.1.1.1. The previous test was conducted using the same methods specified in 40 CFR 63, Subpart *ZZZZ*, and these methods were followed correctly,

3.2.1.1.2. The previous test was conducted after May 3, 2011 but before May 3, 2013,

3.2.1.1.3. EPA Region 10 accepts the previous test results, and

3.2.1.1.4. Either no process or equipment changes have been made since the previous test was performed, or the permittee demonstrates that the results of the previous test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes.

[40 CFR 63.6612(b)]

3.2.1.2. The permittee does not need to start up the engine solely to conduct the performance test if the engine is non-operational. Conduct the performance test for the non-operational engine when the engine is started up again.

[40 CFR 63.6620(b)]

3.2.2. Demonstrate initial compliance with the emission limitation according to Table 5 to 40 CFR 63, Subpart *ZZZZ*. [40 CFR 63.6630(a)]

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3.2.3. Submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements of 40 CFR 63.6645 and 40 CFR 63.9(h)(2)(ii). [40 CFR 63.6630(b) and 63.6645(h)]

3.3. Emission Limitation. During periods of startup, minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitation in Condition G.3.1 applies. [40 CFR 63.6603(a) and Table 2d to 40 CFR 63, Subpart ZZZZ]

3.4. Crankcase Ventilation System.

3.4.1. Install one of the following crankcase ventilation systems:

3.4.1.1. A closed crankcase ventilation system that prevents crankcase emission from being emitted to the atmosphere.

3.4.1.2. An open crankcase filtration emission control system that reduces emission from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals.

3.4.2. Follow one of the following maintenance requirements:

3.4.2.1. The manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation system and replacing the crankcase filters.

3.4.2.2. The maintenance requirements approved by EPA that are as protective as manufacturer requirements.

[40 CFR 63.6625(g)]

3.5. Fuel Requirement. Combust diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel as follows: (1) maximum sulfur content of 0.0015 percent by weight, and either (2a) minimum cetane index of 40 or (2b) maximum aromatic content of 35 percent by volume. [40 CFR 63.6604]

3.5.1. Diesel Fuel Sampling and Analysis Procedures.

3.5.1.1. A representative fuel sample is obtained by following any of the sampling methods listed in 40 CFR 80.330(b);

3.5.1.2. The sulfur content of a fuel sample is determined by following ASTM D 5453-09;

3.5.1.3. The cetane index of a fuel sample is determined by following ASTM D 976-80; and

3.5.1.4. The aromatic content of a fuel sample is determined by following ASTM D 1319-03.

3.5.2. Prior to mobilizing the Kulluk for the first time at the beginning of a drilling season, determine the sulfur content, cetane index and aromatic

content in each fuel oil storage tank on the Kulluk serving Units K-4A – 4C. The permittee must obtain a representative sample of the fuel and analyze the sample for sulfur content, cetane index and aromatic content using the procedures in Condition G.3.5.1.

3.5.3. Thereafter, determine and record the sulfur content, cetane index and aromatic content upon receiving each fuel shipment, as follows:

3.5.3.1. Obtain a representative sample of the fuel delivered and analyze the sample for sulfur content, cetane index andaromatic content using the procedures in Condition G.3.5.1; or

3.5.3.2. Obtain a single certification of sulfur content, cetane index and aromatic content for each shipment of fuel from the fuel supplier based on an analysis of the fuel, provided that the certification indicates that the sulfur content, cetane index and aromatic content have been determined by the methods listed in Condition G.3.5.1.

3.5.4. Within 3 business days of identification, report to EPA any instance of a liquid fuel with sulfur content greater than 0.0015 percent by weight being combusted in Units K-4A – 4C.

[40 CFR 71.6(a)(3)(i)(B)]

3.6. General Compliance Requirements. At all times the permittee must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to EPA which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.6605(b)]

3.7. Comply with the requirements of 40 CFR 63.1 through 63.15 that apply as specified in Table 8 to 40 CFR 63, Subpart ZZZZ.[40 CFR 63.6665]

3.7.1. Report each instance in which the requirements in Table 8 to 40 CFR 63, Subpart ZZZZ were not met.[40 CFR 63.6640(e)]

3.8. Submit all of the notification in 40 CFR 63.7(b) and (c), (f)(4), and (f)(6), 63.9(b) through (e), and (g) and (h) that apply by the dates specified. [40 CFR 63.6645(a)]

3.9. Submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in 40 CFR 63.7(b)(1). [40 CFR 63.6645(g)]

3.10. Submit the information specified in 40 CFR 63.6650(e) and Table 7 to 40 CFR 63, Subpart ZZZZ as part of the annual compliance report required in Condition A.19 of this permit. [40 CFR 63.6650]

3.11. Keep records of the following documents:

3.11.1. A copy of each notification and report submitted to comply with 40 CFR 63, Subpart ZZZZ, including all documentation supporting any Initial Notification or Notification of Compliance Status that the permittee submitted, according to the requirement in 40 CFR 63.10(b)(2)(xiv).

3.11.2. Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring equipment.

3.11.3. Records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(viii).

3.11.4. Records of all required maintenance performed on the air pollution control and monitoring equipment.

3.11.5. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.

[40 CFR 63.6655(a)]

3.12. Keep records as follows:

3.12.1. Records must be in a form suitable and readily available for expeditious review according to 40 CFR 63.10(b)(1).

3.12.2. Keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record as specified in 40 CFR 63.10(b)(1).

3.12.3. Keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or recording according to 40 CFR 63.10(b)(1).

[40 CFR 63.6660]

4. **NESHAP JJJJJ for K-5A – K-5Z.** Area Source Boiler MACT. The permittee shall comply with the applicable requirements of 40 CFR Part 63, Subpart JJJJJ for emission units in Source Group K-5 as follows:

4.1. Conduct an initial performance tune-up that meets the requirements of Condition G.4.2 and in accordance with the following: [40 CFR 63.11214(b)]

4.1.1. If the boiler is an existing boiler, the permittee must achieve compliance with the work practice standard of a tune-up no later than March 21, 2012. [40 CFR 63.11196(a)(1)]

4.1.1.1. The boiler is subject as an existing source if construction or reconstruction commenced on or before June 4, 2010. [40 CFR 63.11194(b)]

4.1.1.2. If the boiler is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup. [40 CFR 63.11223(b)(7)]

4.1.1.3. The permittee must submit a signed statement in the Notification of Compliance Status Report that indicates the permittee conducted a tune-up of the boiler. [40 CFR 63.11214(b)]

4.1.2. If the boiler is a new boiler, the permittee must achieve compliance with the provisions of this subpart upon startup. [40 CFR 63.11196(c)]

4.1.2.1. The boiler is subject as a new source if construction or reconstruction commenced after June 4, 2010. [40 CFR 63.11194(c)]

4.1.2.2. If the boiler is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup. [40 CFR 63.11223(b)(7)]

4.1.2.3. The permittee must submit a signed statement in the Notification of Compliance Status Report that indicates the permittee conducted a tune-up of the boiler. [40 CFR 63.11214(b)]

4.2. Conduct an initial and biennial performance tune-ups, subject to the following: [40 CFR 63.11223(a), (b)]

4.2.1. Each biennial performance tune-up shall be no later than 25 months following the previous tune-up. [40 CFR 63.11223(a)] If the boiler is not operating on the required date for a tune-up, the tune-up must be conducted within one week of startup. [40 CFR 63.11223(b)(7)]

4.2.2. As applicable, inspect the burner and clean or replace any components of the burner as necessary (the permittee may delay the burner inspection until the next scheduled unit shutdown, but the permittee must inspect each burner at least once every 36 months). [40 CFR 63.11223(b)(1)]

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4.2.3. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. [40 CFR 63.11223(b)(2)]

4.2.4. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly. [40 CFR 63.11223(b)(3)]

4.2.5. Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications, if available. [40 CFR 63.11223(b)(4)]

4.2.6. Measure the concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). [40 CFR 63.11223(b)(5)]

4.3. Maintain the following records onsite and submit, if requested by EPA:

4.3.1. A copy of each notification and report that the permittee submitted to comply with this subpart and all documentation supporting any Initial Notification or Notification of Compliance Status that the permittee submitted. [40 CFR §§ 63.10(b)(2)(xiv), 63.11223(a) and 63.11225(c)(1)]

4.3.2. Records to document conformance with the tune-up requirements. Records must identify each boiler, the date of tune-up, the manufacturer's specification to which the boiler was tuned, records documenting the fuel type used monthly by each boiler (including, but not limited to, a description of the fuel, including whether the fuel has received a non-waste determination by the permittee or EPA), and the total fuel usage amount in gallons. [40 CFR 63.11225(c)(2)]

4.3.3. Records of the occurrence and duration of each malfunction of the boiler, or of the associated air pollution control or monitoring equipment. Records of actions taken during periods of malfunction to minimize emissions in accordance with Condition G.4.5, including corrective actions to restore the malfunctioning boiler, air pollution control or monitoring equipment to its normal or usual manner of operation. [40 CFR 63.11225(c)(4), (5)]

4.3.4. A biennial report containing the following information:

4.3.4.1. The concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after each tune-up of the boiler. [40 CFR 63.11223(b)(6)(i)]

4.3.4.2. A description of any corrective actions taken as part of the tune-up of the boiler. [40 CFR 63.11223(b)(6)(ii)]

4.3.4.3. The type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler. [40 CFR 63.11223(b)(6)(iii)]

4.3.5. The permittee's records must be in a form suitable and readily available for expeditious review. The permittee must keep each record for 5 years following the date of each recorded action. The permittee must keep each record onsite for at least 2 years after the date of each recorded action. [40 CFR §§ 63.10(b)(1) and 63.11225(d)]

4.4. Submit the following to EPA:

4.4.1. An Initial Notification to EPA no later than 120 days after the Kulluk becomes an OCS source in its first drilling season. The Initial Notification shall include: [40 CFR 63.9(b)(2)]

4.4.1.1. The name and address of the owner or operator.

4.4.1.2. The physical location of the affected source.

4.4.1.3. An identification of the requirement which is the basis of the notification and the source's compliance date.

4.4.1.4. A brief description of the nature, size, design and method of operation of the source and an identification of the types of emission points within the affected source subject to the relevant standard and types of hazardous air pollutants emitted.

4.4.1.5. A statement of whether the affected source is a major source or an area source.

4.4.2. Notification of Compliance Status to EPA no later than 120 days after the applicable compliance date established under Condition G.4.1 and no later than 60 days after each biennial tune-up. Each Notification shall include the following: [40 CFR §§ 63.9(h), 63.9(b)(3), 63.11225(a)(1) and 63.11225(a)(4), (b)]

4.4.2.1. Company name and address. [40 CFR 63.11225(b)(1)]

4.4.2.2. Each notice shall be signed by the Responsible Official and shall certify its accuracy, attesting to whether the source has complied with the relevant standard (tune-up). [40 CFR §§ 63.9(h)(2)(i), 63.225(b)(2)]

4.4.2.3. The methods that were used to determine compliance. [40 CFR 63.9(h)(2)(i)(A)]

4.4.2.4. The results of any performance tests, opacity or visible emission observations, CMS performance evaluations, and/or other monitoring procedures or methods that were conducted. [40 CFR 63.9(h)(2)(i)(B)]

4.4.2.5. If the source experiences any deviation from the applicable requirements since the previous Notification of Compliance Status, include a description of the deviations, the time periods during which the deviations occurred and the corrective actions taken. [40 CFR 63.11225(b)(3)]

4.4.2.6. The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods. [40 CFR 63.9(h)(2)(i)(C)]

4.4.2.7. The type and quantity of hazardous air pollutants emitted by the source (or surrogate pollutants if specified in the relevant standard), reported in units and averaging times and in accordance with the test methods specified in the relevant standard. [40 CFR 63.9(h)(2)(i)(D)]

4.4.2.8. A description of the air pollution control equipment (or method) for each emission point, including each control device (or method) for each hazardous air pollutant and the control efficiency (percent) for each control device (or method). [40 CFR 63.9(h)(2)(i)(F)]

4.4.2.9. A statement by the owner or operator of the affected existing, new, or reconstructed source as to whether the source has complied with the relevant standard or other requirement. [40 CFR 63.9(h)(2)(i)(G)]

4.4.2.10. The following statement shall be included in the initial Notification of Compliance Status: "This facility complies with the requirements in §63.11214 to conduct an initial tune-up of the boiler". [40 CFR 63.11225(a)(4)(i)]

4.4.3. If the permittee intend to switch fuels, and this fuel switch may result in the applicability of a different subcategory or a switch out of subpart *JJJJJJ* due to a switch to 100% natural gas, the permittee must provide 30 days prior notice of the date upon which the permittee will switch fuels. This notification must include: [40 CFR 63.11225(g)]

4.4.3.1. The name of the owner or operator of the affected source, the location of the source, the boilers that will switch fuels and the date of the notice. [40 CFR 63.11225(g)(1)]

4.4.3.2. The currently applicable subcategory under this subpart. [40 CFR 63.11225(g)(2)]

4.4.3.3. The date on which the permittee became subject to the currently applicable standards. [40 CFR 63.11225(g)(3)]

4.4.3.4. The date upon which the permittee will commence the fuel switch. [40 CFR 63.11225(g)(4)]

4.5. At all times the permittee must operate and maintain the boiler in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the permittee to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to EPA that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records and inspection of the source. [40 CFR 63.11205(a)]

5. **NSPS CCCC for K-8.** NSPS Subpart CCCC Exemption. The permittee shall comply with the applicable requirements of 40 CFR Part 60, Subpart CCCC for Unit K-8 as follows:

5.1. Exemption. The permittee shall comply with the applicable requirements of 40 CFR 60, Subpart CCCC for Unit K-8 as follows in order to be exempt from the substantive requirements of 40 CFR 60, Subpart CCCC:

5.1.1. Install and operate an incineration unit that has the capacity to burn less than 35 tons per day of municipal solid waste or refuse-derived fuel (MSW/RDF), as defined in 40 CFR 60 subparts Ea, Eb, AAAA, and BBBB of 40 CFR 60.

5.1.1.1. Compliance with Condition G.5.1.1 shall be determined based upon recordkeeping as required by Condition G.5.2.

5.1.2. Burn commercial/industrial solid waste, as defined in 40 CFR 60 subpart CCCC, with a MSW/RDF concentration greater than 30 percent by weight.

5.1.2.1. Compliance with Condition G.5.1.2 shall be determined each day and is based upon monitoring and recordkeeping as required by Condition G.5.2.

[40 CFR 60.2020(c)(2)]

5.2. Monitoring, Recordkeeping and Reporting. The permittee shall:

5.2.1. Keep records of documentation from the manufacturer showing that the incinerator is incapable of burning 35 tons per day or greater of MSW/RDF.

[40 CFR 60.2020(c)(2)(i)]

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5.2.2. For each batch of waste charged to the incinerator:

5.2.2.1. Record the date and time that each batch of waste was charged to the incinerator;

5.2.2.2. Weigh the mass of each batch of waste as follows:

5.2.2.2.1. Segregate and separately weigh MSW/RDF by using a weigh scale used that shall be accurate to within 1 lb;

5.2.2.2.2. Weigh the entire waste stream including MSW/RDF;

5.2.2.3. Record the mass of each batch and record the mass of MSW/RDF based upon observations conducted pursuant to Condition G.5.2.2.2.

[40 CFR §§ 55.8(a), 71.6(a)(3)(i)(B), 71.6(a)(3)(ii) and 71.6(c)(1)]

5.2.3. Each day after the last batch of waste has been charged to the incinerator, calculate the percent of MSW/RDF incinerated for that day by summing the recorded mass of MSW/RDF charged to the incinerator for that day, summing the recorded mass of all material charged to the incinerator for that day, dividing the summed mass MSW/RDF by the summed mass of the entire waste stream, and multiplying the quotient by 100. [40 CFR §71.6(a)(3)(i)(H)]

5.2.4. Keep records on a calendar quarter basis of the weight of municipal solid waste burned, and the weight of all other fuels and wastes burned in the unit. [40 CFR 60.2020(e)(2)(i)]

5.2.5 Report to EPA pursuant to Condition A.18 those occasions in which the value calculated pursuant to Condition G.5.2.3 does not exceed 30 percent. [40 CFR 71.6(a)(3)(iii)]

ATTACHMENT A: EPA NOTIFICATION FORM

Excess Emissions and Permit Deviation Reporting

OCS Source (Facility) Name **Air Quality Permit Number**

Company Name

When did you discover the Excess Emissions/Permit Deviation?
Date: / / Time: :

When did the event/deviation?
Begin: Date: / / Time: : (please use 24hr clock)
End: Date: / / Time: : (please use 24hr clock)

What was the duration of the event/deviation: : (hr:min) or days
(total # of hrs, min, or days, if intermittent then include only the duration of the actual emissions/deviation)

Reason for notification: (please check only 1 box and go to the corresponding section)
☐ Excess Emissions Complete Section 1 and Certify
☐ Deviation from Permit Conditions Complete Section 2 and Certify
☐ Deviation from COBC, CO, or Settlement Agreement Complete Section 2 and Certify

Section 1. Excess Emissions

(a) Was the exceedance ☐ Intermittent or ☐ Continuous

(b) Cause of Event (Check one that applies):
☐ Start Up/Shut Down ☐ Natural Cause (weather/earthquake/flood)
☐ Control Equipment Failure ☐ Scheduled Maintenance/Equipment Adjustments
☐ Bad fuel/coal/gas ☐ Upset Condition ☐ Other

(c) Description:
Describe briefly what happened and the cause. Include the parameters/operating conditions exceeded, limits, monitoring data and exceedance.

(d) Emission Units Involved:
Identify the emission units involved in the event, using the same identification number and name as in the permit. Identify each emission standard potentially exceeded during the event and the exceedance.

Unit ID	Emission Unit Name	Permit Condition Exceeded/Limit/ Potential Exceedance

(e) Type of Incident (please check only one):
☐Opacity % ☐Venting (gas/scf) ☐Control Equipment Down
☐Fugitive Emissions ☐Emission Limit Exceeded ☐Record Keeping Failure
☐Marine Vessel Opacity ☐Flaring ☐Other:

(f) Unavoidable Emissions:
Do you intend to assert that these excess emissions were unavoidable? ☐YES ☐NO
Do you intend to assert the affirmative defense of 18 AAC 50.235? ☐YES ☐NO

Certify Report (go to end of form)

Section 2. Permit Deviations

(a) Permit Deviation Type (check one only) (check boxes correspond with sections in permit):
☐Source Specific
☐Failure to monitor/report
☐General Source Test/Monitoring Requirements
☐Recordkeeping/Reporting/Compliance Certification
☐Standard Conditions Not Included in Permit
☐Generally Applicable Requirements
☐Reporting/Monitoring for Diesel Engines
☐Insignificant Source
☐Facility Wide
☐Other Section: (title of section and section # of your permit)

(b) Emission Units Involved:
Identify the emission units involved in the event, using the same identification number and name as in the permit. List the corresponding Permit condition and the deviation.

Unit ID	Emission Unit Name	Permit Condition /Potential Deviation

(c) Description of Potential Deviation:
Describe briefly what happened and the cause. Include the parameters/operating conditions and the potential deviation.

(d) Corrective Actions:
Describe actions taken to correct the deviation or potential deviation and to prevent future recurrence.

Certification:
Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Printed Name **Title** **Date**

Signature **Phone number**

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NOTE: *This document must be certified in accordance with 18 AAC 50.345(j)*

To Submit this Report:

1. Fax this form to: Facsimile no. 206-553-0110

   Or

2. E-mail to: R10OCSAirPermits_Reports@epa.gov

   Or

3. Mail to: OCS/PSD Air Quality Permits
   U.S. EPA - Region 10, AWT-107
   1200 Sixth Avenue, Suite 900
   Seattle, WA 98101

ATTACHMENT B: VISIBLE EMISSIONS FIELD DATA SHEET

Permit No. R10OCS030000

Certified Observer: _____

Company &
Stationary Source: _____

Location: _____

Test No.: _____ Date: _____

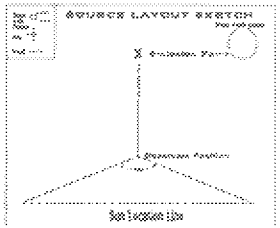
Emissions Unit: _____

Operating Rate: _____

_____

_____

_____



Clock Time	Initial				Final
Observation Distance (Distance to Emission)					
Observation Height (Height of Observer)					
Height of Emission Point					
Background Description					
Weather Conditions (Wind Direction)					
Wind Speed					
Ambient Temperature					
Relative Humidity					
Plume Background (Color of Background)					
Plume Description (Color)					
Plume Opacity					
Total Steam Plume Opacity (Attached or Detached)					
Other Observations					

Page ____ of ____

Company & Stationary Source _____ Certified Observer _____

Test Number _____ Clock time _____

Date		Visibility Reduction Over 15 Seconds (Opacity)				Steam Plume (check if applicable)		Comments
Hr	Min	0	15	30	45	Attached	Detached	

Additional information:

_____ _____

Observer Signature and Date Certified By and Date

Data Reduction:
Duration of Observation Period (minutes) _____ Duration Required by Permit (minutes) _____
Number of Observations _____ Highest Six - Minute Average Opacity (%) _____
Number of Observations exceeding 20 % _____

Average Opacity Summary

Set Number	Time Start – End	Opacity Sum	Opacity Average

ATTACHMENT C: EMISSION INVENTORY REPORTING

EPA Reporting Form
Emission Inventory Reporting

Emission Inventory Year – [ ]
Mandatory Information is Highlighted

Inventory Start Date: _____
Inventory End Date: _____
Inventory Type: _____

Facility Information:

(Stationary Source) Facility Name: _____
AFS ID: _____
Census Area/Community: _____
Line of Business (NAICS): _____
Contact/Owner Name: _____
Contact Owner Address: _____
Contact/Owner Phone Number: _____
Facility Physical Address: _____
Lat, Long: _____
Mailing Address: _____

Emission Unit:

ID: _____
Description: _____
Manufacturer: _____
Model Number: _____

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Serial Number:

Year of Manufacture:

Maximum Nameplate Capacity:

Design Capacity (BTU/hr):

Control Equipment (List All)

Control Equipment Type (Primary or Secondary):

ID:

Type:

Manufacturer:

Model:

Control Efficiency (%):

Capture Efficiency (%)

Total Capture Efficiency (%)

Pollutants Controlled

-

-

-

-

Process (List All):

PROCESS

SCC Code:

Materials Processed:

Operational Periods

FUEL INFORMATION

Ash Content (weight %):

Elem. Sulfur Content (weight %):

H2S Sulfur Content (ppmv):

Heat Content (MMBtu/1000 gal or MMBtu/MMscf):

Heat Input (MMBtu/hr):

Heat Output (MMBtu/hr):

THROUGHPUT

Total Amount:

Summer %:

Fall %:

Winter %:

Spring %:

Days/Week of Operation:

Weeks/Year of Operation:

Hours/Day of Operation:

Hours / Year of Operation:

EMISSIONS

Pollutant	Emission Factor	Emission Factor Numerator	Emission Factor Denominator	Emission Factor Source	Tons Emitted
CO					
NH_3					
NO_X					
PM_{10}, PRI					
$PM_{2.5}$, PRI					
SO_2					
VOC					
Lead and Lead Compounds					

Stack Description:	
	Stack Details:
	ID:
	Type:
	Measurement Units:
	Base Elevation:
	Stack Height:
	Stack Diameter:
	Exit Gas Temp:
	Exit Gas Velocity:
	Actual Exit Gas Flow Rate:
	Data Source:
	Description:
	Latitude:
	Longitude:
	Location Description:
	Accuracy (m):
	Datum:

Certification:
Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Printed Name:_____ Title:_____ Date:_____

Signature:_____ Phone Number:_____

R011766

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

SEATTLE, WASHINGTON

RESPONSE TO COMMENTS
FOR
OUTER CONTINENTAL SHELF
PERMIT TO CONSTRUCT AND
TITLE V AIR QUALITY OPERATING PERMIT
CONICAL DRILLING UNIT KULLUK

SHELL OFFSHORE INC.
BEAUFORT SEA EXPLORATION DRILLING PROGRAM
PERMIT NO. R10OCS030000

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Abbreviations and Acronyms

AAC ..... Alaska Administrative Code
ADEC ..... Alaska Department of Environmental Conservation
AERMOD ..... American Meteorological Society/EPA Regulatory Model
BACT ..... Best Available Control Technology
BOEMRE ..... Bureau of Ocean and Energy Management and Regulatory Enforcement
CAA ..... Clean Air Act
CFR ..... Code of Federal Regulations
CO ..... Carbon Monoxide
CO_2 ..... Carbon Dioxide
CO_2e ..... Carbon Dioxide Equivalent
COA ..... Corresponding Onshore Area
COARE ..... Coupled Ocean-Atmosphere Response Experiment
Discoverer ..... Noble Discoverer Drillship
Draft Permit ..... Draft Permit to Construct and Title V Air Quality Operating Permit No. R10OSC030000
EAB ..... Environmental Appeals Board
EPA ..... United States Environmental Protection Agency
Fed. Reg. ..... Federal Register
GHG or GHGs ..... Greenhouse Gas or Greenhouse Gases
ICAS ..... Inupiat Community of the Arctic Slope
km ..... Kilometers
Kulluk ..... Kulluk Conical Drilling Unit
kW-h ..... KiloWatts Hour
$\mu g/m^3$ ..... Microgram per Cubic Meter
LCC ..... Logging, Cementing and Casing
MLC ..... Mud Line Cellar
MMS ..... Minerals Management Service
NAAQS ..... National Ambient Air Quality Standards
NEPA ..... National Environmental Policy Act
NO ..... Nitric Oxide
NO_2 ..... Nitrogen Dioxide
NO_x ..... Oxides of Nitrogen
NSB ..... North Slope Borough
NSR ..... New Source Review

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OCD..... Offshore and Coastal Dispersion
OCS..... Outer Continental Shelf
OCSLA..... Outer Continental Shelf Lands Act
OSRV..... Oil Spill Response Vessel
OxyCat..... Oxidation Catalyst
PM..... Particulate Matter
$PM_{2.5}$..... PM with an Aerodynamic Diameter less than 2.5 Microns
PM_{10}..... PM with an Aerodynamic Diameter less than 10 Microns
ppm..... Parts Per Million
PTE..... Potential to Emit
PDF..... Portable Document Format
PSD..... Prevention of Significant Deterioration
PVMRM..... Plume Volume Molar Ratio Method
QAPP..... Quality Assurance Project Plans
Region 10..... Environmental Protection Agency, Region 10
SCR..... Selective Catalytic Reduction
Shell..... Shell Offshore Inc.
SILs..... Significant Impact Levels
SO_2..... Sulfur Dioxide
tpy..... Tons per Year
ULSD..... Ultra Low Sulfur Diesel
VOC..... Volatile Organic Compound

I. INTRODUCTION

On October 21, 2011, pursuant to Clean Air Act (CAA) section 328, 42 U.S.C. § 7627, the Environmental Protection Agency (EPA) Region 10 (Region 10) issued an Outer Continental Shelf (OCS) Permit to Construct and Title V Air Quality Operating Permit, Permit Number R10OCS030000 (Kulluk Permit), to Shell Offshore, Inc. (Shell).

The permit authorizes Shell to conduct air pollutant emitting activities for the purpose of oil exploration with the conical drilling unit Kulluk on lease blocks in the Beaufort Sea off the North Slope of Alaska, as authorized by the United States Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE).[1] The Kulluk Permit provides for the use of an associated fleet of support vessels (Associated Fleet), such as icebreakers, oil spill response vessels (OSRV), and a supply ship, in addition to the Kulluk.

Shell submitted an initial application to Region 10 for three air permits to cover air pollution from its exploratory drilling operations on OCS lease blocks in the Beaufort Sea: an OCS/Title V permit under 40 CFR Parts 55 and 71 for operations beyond 25 miles of Alaska's seaward boundary; an OCS/minor permit for air quality protection under 40 CFR Part 55 and 18 Alaska Administrative Code (AAC) 50.502 and for owner-requested limitations under 40 CFR Part 55 and 18 AAC 50.508 for operations within 25 miles of Alaska's seaward boundary; and an OCS/Title V permit under 40 CFR Part 55 and 18 AAC 50.326 for operations within 25 miles of Alaska's seaward boundary. Shell requested that the three permits be consolidated into a single permit (hereinafter "Kulluk Permit" or "OCS/Title V Permit").

Following the receipt of Shell's completed permit application, Region 10 published notice of the issuance of a draft permit on July 22, 2011 (Draft Permit), and requested public comment on the Draft Permit by September 6, 2011. An informational meeting and public hearing on the Draft Permit were held in Barrow, Alaska on August 23, 2011, and a second public hearing was held in Anchorage, Alaska on August 26, 2011.

Region 10 received written comments on the Draft Permit from Shell (the applicant), the Alaska Eskimo Whaling Commission, the Iñupiat Community of the Arctic Slope, and the North Slope Borough in a combined comment letter (collectively the "North Slope commenters"); the Native Village of Point Hope; Alaska Wilderness League, Audubon Alaska, Center for Biological Diversity, Defenders of Wildlife, Greenpeace, Earthjustice, IYAK Preservation Council, National Wildlife Federation, Natural Resources Defense Council, Northern Alaska Environmental Center, Ocean Conservancy, Oceana, Pacific

[1] The Secretary of the U.S. Department of Interior (DOI) regulates and manages the development of mineral resources on the OCS. *See* 42 U.S.C. § 1334 (authorizing Secretary to administer leasing on the OCS). In particular, the BOEMRE is responsible for overseeing the safe and environmentally responsible development of energy and mineral resources on the OCS. BOEMRE was established as a result of Secretarial Order 3302, signed on June 18, 2010, by the Secretary of Interior. Secretary of Interior, U.S. Department of Interior, Secretarial Order No. 3302, *Change of the Name of the MMS to the Bureau of Ocean Energy Management, Regulation and Enforcement* (June 18, 2010), *available at* http://doi.gov/secretary/orders/upload/so3302.pdf.

Environment, REDOIL, Sierra Club, Wilderness Society, and World Wildlife Fund in a combined comment letter (collectively, the "Conservation commenters"); the Alaska Department of Natural Resources; the Alaska Oil and Gas Association; the Center for Water Advocacy; Alaska's Big Village Network; and other individual commenters. Region 10 also received more than 14,500 identical or similar comments resulting from a campaign sponsored by environmental organizations.

In addition to receiving written comments, Region 10 received numerous comments on the Draft Permit as oral testimony during the public hearings in Barrow and Anchorage. This testimony was transcribed and has been included in the permit record.

This Response to Comments document summarizes the written and oral comments received by Region 10 pertaining to the Draft Permit. After Region 10's careful review and consideration, responses to these comments are presented below. Comments have been condensed and similar comments have been combined for purposes of this document. Complete copies of all comments are in the administrative record for the Kulluk Permit.

RESPONSE TO COMMENTS

A. CATEGORY – COMMENTS OF GENERAL SUPPORT

Comment A.1: Several commenters, including the State of Alaska, express general support for issuance of the permit and urge Region 10 to issue the permit without further delay. The commenters, several of whom submitted identical or similar form comments, stated that other countries are moving ahead to develop Arctic resources and expressed concern that the United States was behind in these efforts. Some commenters support private sector-led energy development to the fullest extent possible and assert the benefits of such development to Alaska and Alaska's rural communities. The commenters also cite to a study titled, Potential National-Level Benefits of Alaska OCS Development by Northern Economics and Institute of Social and Economic Research, University of Alaska Anchorage, which projects that drilling on Alaska's OCS could make Alaska the eighth largest oil resource province in the world. Commenters also contend that the Alaska OCS region is a vast, yet untapped resource which has the potential to increase the United States' energy security, provide thousands of high-paying jobs in Alaska and the rest of the United States, and generate billions of dollars in revenue.

Response: Region 10 is proceeding with issuance of the final permit based on Region 10's determination that all Clean Air Act requirements will be met. Region 10 understands that some individuals support this project due to the expected benefits to the economy and the potential for additional oil and gas resources. Region 10 notes, however, that the potential for economic benefits to Alaska or the United States does not affect the standards for issuing this permit.

Region 10 also notes that Shell needs a number of other regulatory approvals before it is authorized to engage in exploration operations in the Beaufort Sea. These include approvals of Applications for Permits to Drill from BOEMRE, Marine Mammal Protection Act authorization from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service and a corresponding Endangered Species Act Incidental Take Statement, as well as other approvals. See, e.g., Letter from Jeff Walker, BOEMRE, to Susan Childs, Shell, re: 2012 Revised Camden Bay Exploration Plan, dated August 4, 2011.

Comment A.2: A commenter states that it is important to remember that the Draft Permit does not provide Shell authorization to drill and only authorizes air pollutant emissions from the Kulluk and the Associated Fleet. The commenter asserts that Shell must also obtain at least 10 other federal permits and authorizations in order to proceed with an exploratory drilling program and that this drilling project is not occurring without adequate oversight and necessary approvals.

Response: As discussed in response to comment A.1, Region 10 agrees that this permit does not authorize Shell to conduct exploratory operation, but rather authorizes emissions from any such operations, and that several other regulatory approvals are needed before Shell is authorized to conduct exploratory operations in the Beaufort Sea.

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Comment A.3: In its comment, Shell states that a significant amount of effort has gone into obtaining the Draft Permit. Shell states that it has committed to many operational restrictions and measures to ensure its operation's emissions are as low as the practicable application of current technology affords, including the commitment to use ultra-low sulfur diesel fuel in all of its vessels, not just the Kulluk, as well as installing selective catalytic reduction (SCR) and other control technologies on not only the Kulluk but also its ice management and anchor handling vessels. Finally, Shell states that it has voluntarily agreed to reduce the number of potential drilling days to further confirm that operations will be conducted with emissions as low as is practicably allowable. These emissions are low enough, Shell continues, that the Kulluk will meet the EPA's minor source permitting thresholds.

Response: Region 10 agrees that the permit terms and conditions should ensure that the Kulluk and the Associated Fleet operate as a minor source (that is, that emissions will be less than the PSD major source thresholds). Note that, although the use of ultra-low sulfur diesel, SCR, and other control technologies, as well as the limits on the number of drilling days, were initially requested by Shell in its permit application, they are not "voluntary." Instead, they are included in the permit as terms and conditions needed to assure compliance with Clean Air Act requirements.

B. CATEGORY – COMMENTS OF GENERAL OPPOSITION

Comment B.1: Region 10 received over 11,500 identical and similar comments during the public comment period for this permit opposing issuance of OCS air permits in the Arctic Seas. A number of comments of general opposition were also made during the public hearings on the Draft Permit. The commenters ask Region 10 to adopt the strongest and most protective standards for this and other drillship air permits and to permit the proposed emissions only when their impact to the health and welfare of North Slope residents is minimized to the greatest extent possible. The commenters state that air emissions from large scale and long term oil and gas activities in the Arctic Seas, including drillships and icebreakers, result in a large amount of air pollution that puts workers and nearby communities at risk, and accelerates already rapid climate change in the region. The commenters encourage EPA and other federal agencies to consider the impacts of oil and gas development on the ecosystem of the Arctic because they believe there is a lack of sufficient scientific data to demonstrate that oil development in this remote area is safe. The commenters are concerned that an oil spill in these waters would be catastrophic for endangered and threatened species and would devastate nearby subsistence communities, and assert that no technology currently exists that safely and effectively contains and cleans up oil spilled in icy waters. Many of these commenters point to the oil spill in the Gulf of Mexico in 2010 as evidence of the risk of offshore drilling and assert that the risks of drilling in the Arctic are even higher than the risks of drilling offshore in the Gulf of Mexico. The commenters encourage Region 10 to consider the cumulative impacts of this and other dangers prior to moving forward with oil drilling in the Arctic Ocean.

Response: As an initial matter, it is important to note that issuance of this Clean Air Act permit does not provide Shell authorization to drill on the OCS. Rather, issuance of this permit authorizes air emissions from Shell's operations and requires compliance with air quality regulations and permit terms and conditions when and if drilling commences. BOEMRE is the federal agency that provides authorization to drill. See also response to comment A.1.

After thorough review and careful consideration of the comments requesting that this permit be denied, Region 10 is proceeding to issue the permit. The permit complies with the requirements of CAA § 328 (governing air pollution from OCS sources), EPA's OCS regulations at 40 CFR Part 55 (OCS regulations), Title V regulations in 40 CFR part 71 and the regulations of the Corresponding Offshore Area (COA), including the COA regulations for minor new source review. As discussed in more detail in the response to comments for Categories O through Y, Section 4 of the Statement of Basis, and Appendix A to the Statement of Basis (Technical Support Document),[1] Region 10 has conducted an extensive analysis of the air quality impacts of the project and has determined that issuance of the permit will not cause or contribute to a violation of currently applicable NAAQS.

Comments and concerns with noise and the possibility of oil spills are outside the scope of the Clean Air Act OCS and Title V programs.

Comment B.2: One commenter states that, even though this permit is for experimental arctic drilling, eventually it really becomes an oilfield or production facility that will emit dangerous gases that can kill people or animals.

Response: Shell will need to apply for additional permits to operate a production facility if such facility will involve any equipment or activities not authorized under this permit. The air quality impacts from such production facility will be considered at that time.

C. CATEGORY – PUBLIC COMMENT PROCESS

Comment C.1: Commenters note that CAA regulations require a minimum of 30 days for public comment on permits, but that a comment period of more than 30 days may be necessary to provide additional time for complicated proceedings. Commenters also note that the Environmental Appeals Board (EAB) has recognized the adequacy of public participation as an important factor and found inadequate participation as a basis for objecting to a permit. Commenters state that an inadequate public comment period opens the door to raising issues on appeal that were not raised during the comment period and that this can complicate the permitting process.

Response: Region 10 agrees with the commenters that CAA regulations require a minimum of 30 days for public comment on the Draft Permit, and that the regulations

[1] Technical Support Document: Review of Shell's Ambient Air Quality Impact Analysis for the Kulluk OCS Permit Application, dated July 18, 2011.

acknowledge a period of more than 30 days may be necessary for complicated proceedings. Region 10 proposed the Draft Permit for public comment on July 22, 2011, and requested that comments be submitted by September 6, 2011. The 46-day comment period provided for the Draft Permit complies with the 30-day public comment period required by 40 CFR §§ 71.11(d)(2) and 124.10(b)[3] and provides an additional 16 days for the submission of comments. Region 10 believes that the length of the comment period provided the public a reasonable opportunity to comment on the Kulluk Draft Permit.

The commenters are correct that the EAB has recognized the important role public participation plays in the permitting process, and has remanded permits for inadequate public participation. However, EAB remands for inadequate public participation typically involve the permit issuer's failure to comply with applicable public participation requirements. *See In re Russell Energy Center*, PSD Appeal Nos. 10-01 to 10-05 (EAB Nov. 18, 2011)(remanding for failure to comply with notice requirements); *In re Rockgen Energy Center*, 8 E.A.D. 536 (EAB Aug. 25, 1999)(remanding because the record did not show that the permit issuer considered comments before issuing the permit); and *In re Hoechst N. Am.*, 3 E.A.D. 498 (EAB Jan. 24, 1991)(remanding for failure to respond to comments). Region 10 has complied with its statutory and regulatory obligations regarding public notice and comment and believes that the public participation process was adequate.

Region 10 takes seriously its responsibility to ensure that the public has a meaningful opportunity to participate in permitting decisions. Prior to and during the public comment period, Region 10 took a number of affirmative steps to promote meaningful public involvement. To inform the North Slope community of the Draft Permit and to describe opportunities for public participation, Region 10 conducted three separate informational meetings in Barrow and Kaktovik, Alaska from June 15 – 17, 2011, more than a month prior to the start of the public comment period. At the start of the comment period, Region 10 distributed copies of the Draft Permit and supporting materials to a number of information repositories located in North Slope communities and made these documents available on its website. In addition, documents that will be contained in the administrative record were burned onto compact discs and provided to commenters who requested the documents during the comment period. On August 23, 2011, Region 10 held an informational meeting and a public hearing on the Draft Permit in Barrow, Alaska. On August 26, 2011, a second public hearing was held on the Draft Permit in Anchorage, Alaska.

[3] The portion of this permit that is a Part 71 permit (e.g., the portion of the permit that applies on the Outer OCS) is issued under 40 CFR Part 55 and 40 CFR Part 71 and subject to the procedural requirements of 40 CFR Part 71 as provided in 40 CFR § 71.4(d). The portion of this permit that is a COA Title V permit and a COA minor source permit (e.g., the portion of the permit that applies on the Inner OCS) is issued under 40 CFR Part 55 and, in the absence of other applicable procedures, subject to the permit issuance procedures for PSD permits under 40 CFR Part 124, Subpart A and C. See 40 CFR §§ 55.6(a)(3) and 124.1. Note that the Statement of Basis (at 10) erroneously stated in discussing the public participation requirements that this permit is a Part 71 permit subject to the procedures of 40 CFR Part 71. The Statement of Basis makes clear in other discussions (at page 4 and Section 2) that this permit is in fact a permit issued under Parts 55 and 71 as well as under the COA regulations for minor permits and Part 70 permits. Requirements for issuance of permits under 40 CFR Parts 71 and 124 are the same or very similar in most respects.

Commenters cite to 40 CFR § 71.11(f)(1) as support for the statement that an inadequate public comment period opens the door for raising issues on appeal that were not raised during the comment period. Region 10 disagrees with the commenters characterization of this regulatory provision. The pertinent question is not the adequacy of the public comment period but whether it was impracticable for commenters to raise objections during the public comment period. Although the commenters object to the length of the comment period, Region 10 is not aware of any circumstances that would have made it impracticable for commenters to raise objections to the Kulluk Draft Permit during the comment period provided.

Comment C.2: Commenters contend that the public comment period for the Draft Permit was inadequate. As support for this contention, the commenters reference the fact that the 46-day public comment period for the Draft Permit, which ran from July 22 to September 6, overlapped with the comment period for the 2011 Discoverer Permits, which ran from July 6 to August 5. Commenters also note that the comment period for ConocoPhillip's air permit ran from July 22 to September 21. The commenters calculate that Region 10 has provided a total of 60 calendar days to review four different air permits, all of which are technically and legally complex. The commenters contend that this schedule effectively limits stakeholders to 15 days to review each permit. The commenters request a minimum of 45-day comment periods for each air permit, without overlap, to conduct a comprehensive review of the permits and for residents most impacted by the permits to adequately engage in the public process. Finally, commenters state that there does not seem to be a reason for Region 10 to rush the permits and that the Region has eighteen months to review Title V permits once applications are complete. Commenters reference the July 19, 2011 date on which Region 10 issued its completeness determination for the permit application and state that there is plenty of time remaining to extend the public comment period for the Draft Permit.

Response: The 46-day comment period provided adequate opportunity for meaningful public involvement and exceeded the 30 day comment period required by 40 CFR §§ 71.11(d)(2) and 124.10(b). Region 10 understands that the commenters would like additional time for public participation. However, the commenters have not demonstrated that a period of more than 46 days is necessary to give the public a reasonable opportunity to comment. See 40 CFR §§ 71.11(g) and 124.13.

Although Region 10 denied the North Slope commenters' request to hold non-overlapping 45-day comment periods for each draft air permit in a letter dated July 21, 2011, the Region did subsequently extend the comment period on the ConocoPhillips draft permit for an additional two weeks in response to the fact, noted by the commenters, that ConocoPhillips does not intend to begin operations until July 2013. On September 26, 2011, Region 10 received notification from ConocoPhillips that it was withdrawing its permit application and would resubmit a new application in the future. Shell, on the other hand, intends to begin its exploratory drill operations with the Kulluk in July 2012.

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The Region agrees with the commenters that some aspects of the Draft Permit are technically and legally complex. The comments submitted, however, demonstrate that the public was able to review, evaluate, and comment on many complex issues during the comment period provided. The Region received more than 14,500 public comments. Although a majority of these comments were practically identical and contained general statements of support or opposition, the Region received a number of substantive comments on, among other issues, the definition of OCS Source, limits on the source's potential to emit, choice of model, modeling data, ambient air boundary, source testing, emission factors, air quality analysis, applicability of increments and visibility, and cumulative impacts. The volume of comments received and the substantive issues addressing technically and legally complex issues demonstrate that the public was able to meaningfully review and comment on the Draft Permit.

Region 10 agrees that 40 CFR § 71.7(n)(2) requires that it take a final action on a Title V permit application within 18 months of receiving a complete application. That the Region may be able to take a final action on a permit application prior to the end of the 18-month period cited by the commenters does not mean that the permitting process was rushed. Although Shell's application was not deemed complete until July 2011, the Region has been carefully reviewing components of the application since it was first submitted in February 2011. In conducting the permitting process, Region 10 must strike a balance between its obligation to provide for meaningful public participation and its responsibility to make a final permitting decision in a timely manner. The Region has complied with the applicable requirements for public involvement and provided more than the required amount of time for public comment.

Comment C.3: Commenters contend that expert review of the new algorithms used in the modeling analysis proved impossible. To support this statement, commenters contend that they were unable to hire a consultant with the requisite expertise to review the algorithms and were told by the experts they talked to that it would be very difficult to conduct a comprehensive review in the time allowed. As a result, commenters state that it was impossible to identify potential problems or shortcomings with the modeling or to conduct a comprehensive review.

Response: It is important to note that the revised modeling approach was used for both the Shell Kulluk and Discoverer draft permits, and both public notices refer to the same supporting documentation. The commenters who raised this issue on the Draft Permit also commented on the modeling supporting the Discoverer permits. Therefore, the commenters in fact had a period of 60 days to review AERMOD-COARE prior to submitting comments on the Draft Permit. The inability to hire someone to assist with the preparation of comments does not mean that the public process provided was inadequate. In fact, the Region received substantive comments on a number of complex modeling issues, including the use of the new algorithms. The model used to support the permits, AERMOD, is an EPA guideline model that has, after notice and comment rulemaking, been approved as a guideline model. See 40 CFR Part 51, Appendix W, Section 4.2.2(b). Region 10 approved partial changes to AERMOD for purposes of this permitting action, comprised of two permit-specific algorithms for use with the guideline model: Coupled Ocean-Atmosphere Response Experiment (COARE) for the pre-processing of meteorological data and the Plume Volume Molar Ratio Method (PVRM) that is considered on a case-by-case basis as a non-regulatory default option under Section 5.2.4.d of Appendix W. Region 10 believes that the public was provided with sufficient time to review and comment on the use of the new algorithms.

Comment C.4: Commenters contend that the August 23, 2011 public hearing for the Draft Permit held in Barrow was problematic because the teleconference system that Region 10 established for other North Slope villages to participate proved problematic. Commenters state that the telephone connection was poor on both ends which is not uncommon for the North Slope, and that all parties involved acknowledged difficulty hearing the participants. The commenters also state that Region 10 did not make the PowerPoint presentation available to those attending the hearing by teleconference. The commenters urge Region 10 to give thought to how to effectively engage communities on the North Slope and, ideally, to visit each of the communities to hear directly from the residents.

Response: Region 10 recognizes that the Draft Permit is of interest to individuals and communities dispersed over a broad geographic area, and it made a concerted effort to foster public participation at the Barrow public hearing by providing a teleconferencing option. It is not practical for Region 10 to hold public hearings in each of the North Slope communities that have an interest in the Draft Permit. The rules governing the issuance of the permit do not require, if a hearing is held, that a hearing be held in more than one location. In this case, Region 10 determined that Barrow was the most appropriate location for the hearing. Barrow is an important center for the North Slope communities and a location with the infrastructure to hold and broadcast the hearing. Entities such as the Inupiat Community of the Arctic Slope and the Arctic Slope Regional Corporation have offices in Barrow, and members of the Alaska Eskimo Whaling Commission come from Barrow as well as other villages. To increase the opportunity for participation in the hearing, Region 10 made arrangements for North Slope communities outside of Barrow to participate by teleconference. Region 10 acknowledges that there were some problems with the teleconference, and, as the commenters acknowledge, telecommunication problems on the North Slope are not uncommon. To address potential issues, Region 10 recorded the public hearing in addition to having the hearing transcribed by a court reporter. From these two sources, Region 10 was able to capture the comments provided during the public hearing.

Comment C.5: A number of oral comments concerning public participation were received during the public hearing. Commenters said that the public comment period was insufficient and requested that it be extended to at least 45 days, and two commenters specifically requested that it be extended to September 19, 2011. A number of commenters described the permits as confusing and difficult to decipher and noted that an additional public process for ConocoPhillips was being conducted during the same time as the public process for the Draft Permit. Commenters referenced the highly technical nature of the permit and the use of a new model as reasons to extend the comment period.

One commenter stated that the public process schedule lends the appearance that the Region is checking a box and not working with the communities on the Draft Permit and that this decreases public confidence in the Region's permitting decisions. Two commenters requested that the ConocoPhillips permit be delayed because they are not planning to drill until 2013.

Commenters also addressed the Region's public hearing process. One commenter expressed appreciation for the steps Region 10 took to set up the teleconference line but stated that the communities have a right to meet with the Region in person. A number of commenters stated that the Region should hold hearings in other communities, especially Nuiqsut, to hear from the people who will be most affected. One commenter noted that technology is sometimes a problem on the North Slope and another commenter stated that the presenters at the public hearing kept fading in and out over the phone line and that the Region has not made improvements to how it conducts public hearings. Another commenter suggested that there were other ways to hold a public hearing and suggested that the Region use a video teleconference system. One commenter noted that communities of the Arctic are bilingual and that Inupiak is the first language for many people and it is difficult for these people to understand the issues and provide meaningful testimony.

Response: Region 10 appreciates the comments provided during the public hearing and recognizes that members of the North Slope communities have a significant interest in the permitting process. As described in response to comment C.2, the 46-day comment period for the Draft Permit provided meaningful opportunity for public participation. The Draft Permit involves consideration of complex issues but the commenters have not demonstrated that additional time is necessary to address these issues. As described in response to comment C.1, Region 10 has taken a number of affirmative steps to facilitate public involvement by the North Slope communities in the permitting process. With respect to the public comment process for ConocoPhillips, as described in response to comment C.2, Region 10 extended the public comment period by two weeks. On September 27, 2011, Region 10 received notification from ConocoPhillips that it was withdrawing its permit application and would submit a new application in the future.

As described in response to comment C.4, Region 10 conducted an inclusive public hearing process and selected Barrow as the most appropriate location for a public hearing. The Region understands that commenters would prefer that public hearings be held in other villages as well and that there may be better technological options for remote participation. However, considering the logistical limitations of holding a public hearing on the North Slope, the Region believes that the Barrow hearing provided an adequate opportunity for public participation.

Prior to the Barrow public hearing, Region 10 contacted the Iñupiat Community of the Arctic Slope to arrange for an Iñupiat speaker to be available to provide Iñupiat interpretation at the hearing if requested by any participant. At the beginning of the hearing, participants were provided the opportunity to request Iñupiat interpretation during the hearing. No participant requested translation and therefore an interpreter was not used. Region 10 encourages public participation of North Slope communities and is open to additional suggestions from community members as to the best way to ensure meaningful participation of individuals who speak Iñupiat as a primary language.

D. CATEGORY – DEFINITION OF OCS SOURCE

Comment D.1: Commenters requested that because Shell is currently proposing only exploration for offshore oil and gas resources, that Region 10 classify Shell's operations as a new "exploratory OCS source."

Response: Region 10 agrees that the Kulluk is a new exploratory OCS source. 40 CFR § 55.2 defines the term "exploratory source" or "exploratory OCS source" as "any OCS source that is a temporary operation conducted for the sole purpose of gathering information. This includes an operation conducted during the exploratory phase to determine the characteristics of the reservoir and formation and may involve the extraction of oil and gas." Shell has identified its activities in its permit application as exploratory. See OCS Permit Applications, Conical Drilling Unit Kulluk, Beaufort Sea – Supplemental Information, dated June 29, 2011 (Permit Application Supplement) at 1 and 9.

Note that the Kulluk is considered "temporary" under the Title V program because it is expected that the Kulluk will change locations over the life of this permit.

Comment D.2: Some commenters disagree with Region 10's proposal that the Kulluk be considered an OCS source only when its attachment to the seabed by an anchor occurs at a drill site. The commenters note that under section 328 of the CAA, an OCS source is any equipment, activity or facility which: 1) has the potential to emit air pollutants, 2) is regulated or authorized under OCSLA, and 3) is located on the OCS or in the waters above the OCS and specifically includes "drillship exploration." The commenters also cite to the regulatory definition of OCS source in the case of vessels. The commenters assert that because a vessel is an OCS source when it is "temporarily" attached to the seabed, "may be used" for the purpose of exploring for oil and gas resources, and is in an area authorized by OCSLA (*i.e.* Shell's lease blocks), the Kulluk should be considered to be an OCS source whenever it drops a single anchor within Shell's lease blocks. As support for this conclusion, the commenters cite to the EAB's discussion of OCSLA § 4(a)(1) in *Shell Gulf of Mexico, Inc. and Shell Offshore, Inc.*, Frontier Discoverer Drilling Units, OCS Appeal Nos. 10-01 through 10-04, Order Denying Review in Part and Remanding Permits, dated December 30, 2010 (Remand Order I), and to *Alliance to Protect Nantucket Sound, Inc. v. United States Dep't of the Army*, 288 F. Supp. 2d 64, 75 (D. Mass. 2003). The commenters also contend that Region 10 cannot argue both that Shell is "authorized" to operate at all of its lease blocks, which is necessary for CAA jurisdiction, and then limit Shell to being a source only where it has a permit to drill. The commenters request that Region 10 change the permit to read: "A drill site is any location at which Shell is the leaseholder of a lease from BOEMRE."

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Response: Region 10 proposed that the Kulluk be considered an OCS source any time it is attached to the seabed at a drill site by at least one anchor. A drill site is defined in the Kulluk Permit as any location at which Shell is authorized to operate under the applicable permit and for which Shell has received from BOEMRE an authorization to drill. Region 10 continues to believe this interpretation is consistent with the relevant statutes and regulations as applied to this specific permitting action.

Both EPA's regulatory definition of OCS source at 40 CFR § 55.2 and Section 4(a)(1) of the Outer Continental Shelf Lands Act (OCSLA)—which is referenced in EPA's regulatory definition of OCS source in the case of vessels—discuss more than attachment to the seabed. Both EPA's regulatory definition in the case of vessels and OCSLA § 4(a)(1) reference the additional considerations that the source be "erected" on the seabed as well as the purpose of the attachment. These additional elements in EPA's regulatory definition and the explanatory clause in OCSLA § 4(a)(1) make clear that attachment to the seabed at any location on the OCS is not sufficient to render the Kulluk an OCS source.[4] Region 10 continues to believe that, as in OCSLA § 4(a)(1), the reference to "erected thereon" in 40 CFR § 55.2 is intended to reflect the process by which a vessel becomes situated at the location where it will be used for the purpose of exploring, developing, or producing resources from the seabed. For the activities authorized under this permit, this requires that the location of the attachment occur at a location where the Kulluk is authorized to engage in such activities, namely at a drill site for which Shell has obtained an authorization for the Kulluk to drill.

The commenters do not argue that any attachment to the seabed alone is sufficient to render the Kulluk an OCS source. Instead, the commenters argue that the Kulluk should be considered an OCS source whenever it is attached to the seabed at any location within a Shell lease block. A review of the facts underlying this permitting action and the legal requirements for conducting exploratory operations under Shell's leases, however, reveals that the commenters' suggestion that the Kulluk be considered an OCS source whenever it is attached to the seabed in a Shell lease block is an overly broad approach that, if applied, could produce illogical results.

Shell's lease blocks in the Beaufort Sea comprise an area of approximately 1145 square miles. Under the commenters' proposed interpretation, the Kulluk could be considered an OCS source even though it was anchored many miles from a location in the same sea where it had authorization from BOEMRE to drill as long as the anchor location was in a Shell lease block. In contrast, the Kulluk would not be considered an OCS source under the commenters' proposed interpretation if it was located one mile from an authorized drill site waiting to move into location at the drill site if the location at which it was anchored was not in a Shell lease block. It makes little sense to regulate the Kulluk as an OCS source when it is a hundred miles or more from a location where it is authorized to engage in exploratory activities, as the commenters' approach would require, but not to regulate the Kulluk as an OCS source when it is not located on a lease block but is one mile from a location where it is authorized to engage in exploratory activities.

The fact that the Kulluk could potentially obtain authorization to drill anywhere within any valid lease block and that this permit would at that point authorize air emissions at such location is not a compelling basis for a different result. Even at locations where Shell holds leases, Shell would need to submit and obtain BOEMRE approval of an exploration plan and an application to drill (as well as obtain other approvals) before it would be authorized to conduct exploratory operations at a particular location in its lease holdings, a process that takes a minimum of several months. In this respect, a location on the OCS where Shell holds a lease but does not have authorization to drill is more similar to a location on the OCS where Shell does not hold a lease than it is to a location where Shell is the holder of a current authorization to drill from BOEMRE; it is not authorized to engage in exploratory operations at that time except at locations at which it holds a current authorization to drill from BOEMRE. Nor, as the commenters allege, is there an inconsistency in the fact that the permit authorizes operations at all identified lease blocks, provided that Shell is complying with all other federal requirements (see Condition A.4.1 of the Kulluk Permit), but then limits the location at which the Kulluk is considered an OCS source to those locations where the Kulluk is attached to the seabed at a location where it has a current authorization to engage in exploratory operations at the time of the attachment. Region 10 believes it is not the lease rights held by a company but the authorization to drill that determines the area where a drillship may be erected and used for the purpose of exploring, developing, or producing resources from the seabed.

Region 10 therefore rejects the commenters' suggestion that attachment of the Kulluk to the seabed at any location in a Shell lease block is sufficient to consider the Kulluk an OCS source within the meaning of 40 CFR § 55.2.

Comment D.3: Commenters state that, for the same reasons discussed in comment D.2, if any other vessel associated with Shell's operations anchors to the seabed floor, it should be considered an OCS source. The commenters note that Shell says the Oil Spill Response vessel and quartering vessel will be anchored. The commenters contend that anchored vessels have the potential to emit air pollutants, are authorized and regulated under OCSLA, are located on waters above the OCS, and are attached to the seabed and erected thereon for the purpose of aiding in the exploration of oil and gas.

Response: Based on the information in the permit application, as well as the regulatory definition of OCS source in the case of vessels and the language and legislative history of the statutory definition of OCS source and OCSLA § 4(a)(1), Region 10 does not agree that the other vessels that have been identified as associated with Shell's operations in this case are themselves "OCS sources" by the mere fact that they are anchored to the seabed. The vessels that comprise the Associated Fleet consist of icebreakers, supply ships, oil spill response vessels, and barges for removing drilling muds, as well as oil tankers and other support vessels associated with the Kulluk that will not be operating within 25 miles of the Kulluk when it is an OCS source.

[4] Region 10 is aware that the First Circuit has held that OCSLA § 4(a)(1) is not restricted to structures related to mineral extraction. *Alliance to Protect Nantucket Sound, Inc. v. United States Dept. of the Army*, 398 F.3d 105, 107 (1st Cir. 2005). There is nothing in that case to suggest, however, that a vessel that is simply anchored anywhere on the OCS or on leases that it holds is subject to OCSLA's jurisdiction.

In promulgating the regulatory definition of OCS source in the case of vessels, EPA required that a vessel be not only permanently or temporarily attached to the seabed, but also that it be erected on the seabed and used for the purpose of exploring, developing, or producing resources from the seabed. 40 CFR § 55.2. The commenters appear to be seeking an interpretation that a vessel is "used for the purpose of exploring, developing, or producing resources" from the seabed if it is, in the words of the commenters, "aiding" the effort of exploring, developing, or producing resources even though it is not itself directly engaged in such activities.

However, such a broad interpretation of OCS source is inconsistent with the distinction in the statutory definition of OCS source between the "OCS source" and a "vessel servicing or associated with an OCS source." As the EAB recognized, Section 328(a)(4)(c) maintains a distinction between support vessels and the OCS source. Remand Order I at 25 ("Specifically, without making the support vessels part of the OCS source, the statute directs that emissions from those vessels while within twenty-five miles of the OCS source "shall be considered direct emissions from the OCS source."). In promulgating the regulatory definition of OCS source in Part 55, EPA recognized this distinction, noting a drillship as an example of a vessel used for the purpose of exploring, developing, or producing resources, and discussing that the emissions of other vessels "related to OCS activity" would be included in the "potential to emit" of the OCS source, but be more appropriately regulated under Title II of the Act, and not regulated as an OCS source unless they were attached to an OCS source. 57 Fed. Reg. 40,792, 40,793-94 (September 4, 1992). Region 10 believes that the term "used for the purpose of exploring, developing, or producing resources" from the seabed is best interpreted in this instance as not encompassing the support vessels at issue in this permit that are used for activities such as icebreaking, resupply, and oil response activities conducted in support of the Kulluk drillship.

Important policy considerations also lead Region 10 to conclude that the anchoring of a vessel that aids or supports OCS activities but is not more directly engaged in exploration, development, or production —as is a jackup rig or drillship— is not sufficient to render the support vessel an OCS source. First, because support vessels may at times be used to support OCS activities and at other times to support other activities, it would require the agency to engage in complex decisions regarding when a vessel was sufficiently related to exploration, development, or production activity to become an OCS source upon anchoring to a seabed. Would, for example, an oil spill response vessel that had been stationed near a port in Washington State but was heading north to Alaska to provide support for a drill rig in Alaska be considered an OCS source if it anchored off the coast of Alaska to wait out a storm? Under Region 10's interpretation, decision-making would be more straight-forward: 1) vessels that support an OCS source but are more than 25 miles from the OCS source are not regulated in any respect under CAA § 328; 2) the emissions of vessels that support OCS activity are considered emissions of the OCS source when within 25 miles of the OCS source; and 3) the stationary source activities of vessels that support OCS activity are regulated as part of the OCS source when they are themselves attached to the OCS source.

In addition, considering vessels that support OCS sources to be themselves OCS sources if they are anchored on the OCS could lead to more emissions. This is because the operators of support vessels might decide to avoid anchoring and instead use their propulsion engines to hold position if anchoring would render the vessel an OCS source within the meaning of 40 CFR § 55.2. For example, Shell's application states that the oil spill response vessel will be stationed near the Kulluk and there is also likely to be a quartering vessel for the oil spill response vessel, and that these vessels will anchor when practicable. See Permit Application Supplemental at 38. A determination that the oil spill response or quartering vessels are themselves OCS sources if they anchor to the seabed could encourage a decision in which such vessels continue to use their propulsion engines to maintain position within 25 miles of the Kulluk. This would result in more emissions than would occur if such vessels were anchored.

In summary and for the reasons discussed above, Region 10 does not agree that the support vessels described in Shell's application will become OCS sources if they anchor on the seabed. Region 10's has determined that these vessels are not used for the purpose of exploring, developing, or producing resources from the seabed (as those terms are used in the definition of OCS source in 40 CFR § 55.2), but instead are being used to support such activity. Region 10 made this decision based on the specific support vessels at issue in this permit being used as described in the application materials.

E. CATEGORY – OPERATIONS IN SAME SEA

Comment E.1: Commenters request that Region 10 change Draft Permit Condition D.4.8. to read: "the permittee shall not operate the Kulluk in the Beaufort Sea within the same drilling season as its operation of any other drillship or its lease of any other drillship, including the Noble Discoverer, to any other lessee with lease blocks in the Beaufort Sea." The commenters contend that this condition is necessary to clarify two points: 1) that Shell may not operate any two drillships in the Beaufort Sea at the same time, since such operations were not contemplated by the permit and supporting documents, and 2) Shell cannot work around this permit condition by leasing its drillships to another company that also holds leases in the Beaufort Sea.

Response: Region 10 has proposed permits for Shell projects in the Beaufort and Chukchi Seas. The Discoverer drillship is a major source subject to the PSD permitting program. On September 19, 2011, Region 10 issued one permit covering operation of the Discoverer in the Beaufort Sea and one permit covering operation of the Discoverer in the Chukchi Sea. In the current permitting action, Region 10 has proposed to issue Shell's Kulluk drilling unit a Title V permit for operation in the Beaufort Sea that contains "synthetic minor" limits that would allow the Kulluk to avoid the PSD permitting program and assure compliance with other applicable CAA requirements.

For two activities (such as drilling operations) to be considered one "source" for PSD applicability purposes, the two drilling operations must: belong to the same industrial grouping ("Major Group" Standard Industrial Classification code); be located on one or more contiguous or adjacent properties; and be under the control of the same person. See

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40 CFR §§ 52.21(b)(5) and (6). Shell's Discoverer and Kulluk drilling operations meet the first and third criteria. To ensure that the Kulluk would not be on "contiguous or adjacent properties" with the Discoverer's operations and thus considered a single source with the Discoverer for PSD applicability purposes, the Kulluk Permit restricts the permittee from operating the Kulluk in the Beaufort Sea within the same drilling season as the Discoverer. See Permit Condition D.4.8.

With respect to the concern that Shell could work around this permit condition by leasing its drillships to another company that also holds leases in the Beaufort Sea, Region 10 believes the current permit language is sufficient to address this concern. This permit authorizes Shell Offshore Inc. to operate the Kulluk under the terms and conditions of this permit. See Kulluk Permit (cover page). Similarly, the permit for the operation of the Discoverer in the Beaufort Sea authorizes Shell Offshore Inc. to operate the Discoverer. A permit revision would be required for a different entity to operate the Kulluk or Discoverer under either permit, at which time Region 10 would consider whether any additional permit changes are needed to ensure compliance with all applicable requirements. See 40 CFR § 71.7(d)(1)(iv). Alternatively, a new owner or operator could submit an application for a new permit.

With respect to the concern regarding other drillships or drilling mechanisms, the permits for the Discoverer and the Kulluk only authorize the operation of the equipment specified in those permits. A new permit application would need to be submitted to obtain authorization for air emissions in the Beaufort Sea from some other drillship or drilling mechanism. If such an application is received, Region 10 would address at that time any issues regarding whether the Kulluk and such other vessel would be considered the same "source" for PSD applicability purposes and the cumulative impacts of the operations.

F. CATEGORY – REQUIREMENT TO OPERATE AIR POLLUTION CONTROLS

Comment F.1: Commenters express concern that Shell may not be able to demonstrate compliance with control requirements. As support for this concern, commenters reference Draft Permit Conditions D.6.14 and D.6.15 which specify that Shell must use uncontrolled emission factors for any period of control equipment deviations. The commenters next note that Draft Permit Conditions D.5.15 and D.6.15 allow for reporting under the emergency provisions of Draft Permit Condition A.16 when control devices do not operate according to the parameters specified in the Draft Permit. The commenters believe that this is a loophole that undermines the requirement to operate controls by enabling Shell to report deviations as emergencies. The commenters request that if Region 10 relies on the use of controls for NAAQS analysis, Shell be required to operate controls at all times, with no exception, and that if the controls fail Region 10 should consider it a violation that is not excusable under the emergency provisions in the Draft Permit.

Response: Permit Condition F.3.7 requires Shell to report to Region 10 those periods during which the selective catalytic reduction (SCR) control is not properly operating (urea pump is not operating, the inlet temperature is 90% or less than the most recent reported average inlet temperature, or the NO_X concentration is 150% or more than the most recent reported concentration). In writing this permit condition, Region 10 inadvertently made reference to the permit's emergency provisions rather the permit's deviation reporting obligations as was intended. This permit condition has been amended to correct the typographical error. With this correction, the SCR monitoring deviation reporting obligation is now consistent with the deviation reporting obligation for oxidation catalyst monitoring under Permit Condition F.4.7. Permit Condition F.3.7 now states:

> F.3.7 Report as a deviation under Conditions A.17 and A.18 any periods during which the urea pump is not operating, the inlet temperature is 90% or less than the most recent average inlet temperature reported in Condition F.3.1.3, or the NO_X concentration is 150% or more than the most recent NO_X concentration measured in Condition E.3.

The Region also notes that an additional typographical error in the Draft Permit condition has also been addressed so that the amended condition now references Permit Condition E.3 as was intended.

Region 10 disagrees that the permit conditions cited by the commenters undermine the requirement to operate the controls at all times. Permit Conditions D.10 and D.11 require Shell to direct the exhaust from certain engines to an operating control device. Permit Conditions F.3 and F.4 further require Shell to monitor the control devices to help assure that the emission factors Shell uses to calculate emissions are representative. In the event that control device monitoring detects a deviation from normal operation Shell is required to report the occurrence to Region 10 pursuant to Permit Conditions F.3.7 and F.4.7. This reporting will help determine whether Shell remained in compliance with Permit Conditions D.10 and D.11 during the periods of time in question. In addition, emissions for any time period identified as a deviation are required to be calculated and recorded assuming that the control device achieves no emission reductions pursuant to Permit Conditions D.6.14 and D.6.15. And if these calculations indicate emissions in excess of an emission limit, Shell is required to report each occurrence as a deviation pursuant to Permit Conditions A.17 and A.18. Thus, rather than undermining enforcement, these conditions require Shell to use a higher emission factor during those periods where the control equipment may not be controlling emissions effectively, and will require Shell to report higher emissions than would be the case without this requirement.

The conditions relating to permit deviations and emergencies (Permit Conditions A.16, A.17, and A.18) are required conditions in Part 71 permits, and in Alaska minor NSR and Part 70 permits, and are therefore required to be included in the permit. Region 10 will review all deviation reports and take enforcement action as appropriate. While Shell may submit information to Region 10 pursuant to Permit Condition A.16, claiming that noncompliance with a permit condition was due to an emergency, submittal of such a claim does not mean it qualifies as an emergency. Region 10 will carefully review each claim of emergency on a case-by-case basis. Similarly, Region 10 will carefully review

each report of a permit deviation to determine if the deviation is also a violation of a permit requirement.

G. CATEGORY – ULTRA LOW SULFUR DIESEL

Comment G.1: Commenters explain that their understanding is that Shell has committed to using Ultra Low Sulfur Diesel Fuel (ULSD) for its OCS exploration activities north of the Bering Strait. The commenters characterize this as a huge reduction in anticipated sulfur dioxide (SO_2) emissions that will reduce not only localized emissions of SO_2 but $PM_{2.5}$ pollution as well. However, the commenters continue, the Draft Permit does not include a requirement to use ULSD fuel for the Kulluk and the Associated Fleet. The commenters reference Draft Permit Condition D.4.5 which requires the use of liquid fuel with a sulfur content less than or equal to 100 parts per million (ppm), by weight, in any emission unit on the Kulluk or on the Associated Fleet. The commenters request that the permit require use of ULSD (15 ppm sulfur) in accordance with Shell's commitment to use ULSD and with EPA's June 6, 2006 Final Rule: Control of Air Pollution from Motor Vehicles and Nonroad Diesel Engines: Alternative Low-Sulfur Diesel Fuel Transition Program for Alaska. The commenters contend that this rule requires marine vessels to comply with a 15 ppm fuel sulfur standard as of June 1, 2010, and therefore applies to Shell's proposed operations.

The commenters note that Shell has acknowledged that, upon delivery, the fuel may have a higher sulfur content because the hull of the barge in which the fuel is transported will not be cleaned out. The commenters request that Region 10 explain how use of fuel with a sulfur content as high as 100 ppm is acceptable given the regulatory requirement to use fuel with a sulfur content of 15 ppm. The commenters further request that if the Region determines an exception must be allowed due to the logistics of transporting fuel, then the Region should fully evaluate whether Shell can comply with a limit lower than 100 ppm.

Response: Region 10 created Permit Condition D.4.5 at Shell's request. In its permit application, Shell requested the following source-wide potential to emit (PTE) restriction: "The permittee shall purchase only ultra low sulfur diesel (ULSD) and not combust any liquid fuel with sulfur content greater than 0.01 percent by weight in any emission unit on the Kulluk or a support vessel." This fuel sulfur content limit (Permit Condition D.4.5), coupled with the permitted restriction to combust only 7,004,428 gallons of diesel fuel during any rolling 12-month period (Permit Condition D.4.6), results in an SO_2 PTE of 4.9 tons per year.[5] This is less than 2 percent of the 250 ton per year (tpy) PSD major source threshold. Limiting the fuel sulfur content further from 100 ppm to 15 ppm is not necessary to establish the permitted activity as a PSD minor source.

The NSPS regulation referenced by the commenter (Stationary Compression Ignition Internal Combustion Engines - subpart IIII) was revised on June 28, 2011 (76 Fed. Reg. 37,954), and now requires sources that operate compression ignition engines ordered after July 11, 2005, and manufactured after April 1, 2006, to purchase diesel (beginning October 1, 2010) that meets the specification of 40 CFR § 80.510(b) which includes a fuel sulfur content of 15 ppm or less. 40 CFR § 60.4207(b). The NSPS allows a transition for engine fuel tanks with existing higher sulfur content diesel to continue burning the old fuel until it is used up as long any additional fuel added to the tank meets the 15 ppm limit. 76 Fed. Reg. 37,961. Over time, with batches of clean fuel being added to old fuel tanks, the fuel sulfur content will eventually meet the 15 ppm sulfur content limit. The NSPS only applies to newer engines on the Kulluk and not to engines on the Associated Fleet. Statement of Basis at 27 (NSPS apply to the "OSC Source"). The permit requires, however, that all of the fuel combusted by engines on the Kulluk or the Associated Fleet must meet the 100 ppm sulfur content limit to comply with the limit requested by Shell.

The permit should ensure that all diesel fuel delivered to the Kulluk for combustion in the NSPS-subject engines (Kulluk electricity generation engines, MLC HPU engines, MLC air compressor engines and the emergency generator engine) meets the 15 ppm sulfur content limit and all fuel combusted by all engines on the Kulluk or associated fleet meets the 100 ppm sulfur limit. Region 10 agrees with the commenters that the permit fails to expressly require and make enforceable Shell's request to be limited to purchasing ULSD for all emission units on the Kulluk and Associated Fleet. The Region has therefore included in the final permit the following condition:

D.4.9 All fuel purchased for use in the Kulluk and Associated Fleet shall have a maximum sulfur content of 15 ppm by weight for all emission units on the Kulluk and Associated Fleet.

4.9.1 Compliance with Condition D.4.9 shall be determined for each diesel fuel purchase based upon recordkeeping required by Condition D.4.9.2

4.9.2 Keep diesel fuel purchase records for each batch of fuel that documents sulfur content.

[40 CFR §§ 52.21, 71.6(a)(3) and 71.6(b), 18 AAC 50.326(a), 18 AAC 50.225, 18 AAC 50.508]

Together, Conditions D.4.5, D.4.6, and D.4.9 should better ensure that all diesel fuel delivered to the Kulluk for combustion in the NSPS-subject engines (Kulluk electricity generation engines, MLC HPU engines, MLC air compressor engines, and the emergency generator engine) meets the 15 ppm sulfur content limit and that all fuel combusted by engines on the Kulluk and the Associated Fleet meets the 100 ppm sulfur limit.

Note that NESHAP requirements (Stationary Reciprocating Internal Combustion Engines 40 CFR Part 63, Subpart ZZZZ) also apply to some equipment on the Kulluk. These requirements do not extend to the Associated Fleet because the support vessels are not part of the OCS source. Statement of Basis at 28. NESHAP ZZZZ applies to older engines on the Kulluk as discussed on page 46 of the Statement of Basis. For a subset of

[5] 4.9 ton SO_2/yr = (7,004,428 gal diesel/yr) x (7.0 lb diesel/gal diesel) x (1 lb S/10,000 lb diesel) x (2 lb SO_2/ 1 lb S) x (ton/2000 lb)

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these older engines, Shell is prohibited from combusting any diesel fuel other than diesel fuel that meets the requirements of 40 CFR § 80.510(b) for nonroad diesel fuel. This requirement to combust a fuel satisfying ULSD specifications as it enters the engine applies only to the deck crane engines, and compliance is required beginning May 3, 2013. See Permit Condition G.3.5 for language assuring compliance with 40 CFR § 63.6604. Compliance with the 15 ppm fuel sulfur content limit is determined based upon information gathered in accordance with monitoring and recordkeeping requirements established in Permit Condition G.3.5. Prior to the drilling season, the sulfur content of diesel fuel in each storage tank serving the Kulluk deck crane engines is to be determined and recorded. For each fuel shipment received thereafter, Shell is to determine and record the sulfur content of the shipment as received.

H. CATEGORY – PERMITTING THE KULLUK AS A MINOR SOURCE

H.1 SUBCATEGORY – IN GENERAL

Comment H.1a: Several commenters contend that the project should be permitted as a major source rather than a minor source. Commenters question why the Draft Permit authorizes Shell to operate the Kulluk as a minor source when the Discoverer was permitted as a major source subject to the PSD program. The commenters describe the Draft Permit as establishing less stringent protections and setting a precedent that will impair the Arctic environment as oil and gas activity intensifies.

Response: In its permit application Shell requested that the permit contain federally enforceable restrictions to limit its potential to emit CO, SO_2, and NO_x to below PSD major source thresholds, and its potential to emit for GHGs to below the level at which GHGs become subject to regulation under the Tailoring Rule. See 75 Fed. Reg. 31,514 (June 3, 2010). A source that would otherwise exceed the applicable PSD major source threshold, and therefore be subject to PSD requirements may, as Shell has done here, seek to avoid PSD regulation as a major source by requesting that the permitting authority impose federally enforceable limits on the source's capacity to emit. *In re Shell Offshore, Inc. Kulluk Drilling Unit and Frontier Discoverer Drilling Unit*, 12 E.A.D. 357, 391-92 (EAB Sept. 14, 2007).

The Kulluk Permit includes enforceable limits that will restrict Shell's emissions to below PSD major source thresholds. If, as suggested by the commenters, Shell is permitted as a major source subject to PSD it would not be subject to enforceable limits to ensure minor source status and instead could be authorized to emit pollutants in excess of the PSD major source threshold. For this reason, Region 10 disagrees with the commenters' characterization of the Kulluk Permit as setting less stringent protections, and the assertion that it will set a bad precedent that impairs the environment. As a PSD synthetic minor source, Shell must comply with federally enforceable limits intended to limit its emissions to levels below applicable PSD major source thresholds, whereas sources permitted as major sources subject to PSD can, depending on the permit requirements, emit pollutants at levels that exceed applicable major source thresholds.

Comment H.1b: Commenters contend that Shell's synthetic minor source status is based on arbitrary assumptions concerning Shell's operations. To support this contention, the commenters reference the NO_x emission limit of 240 tpy and state that this limit prevents Shell from operating its icebreakers for more than 38% of the operational period authorized under the Draft Permit, or roughly 46 days. The commenters note that unpredictable Arctic conditions may require more than 46 days of icebreaking during the operational period, and that it is unreasonable and arbitrary for Region 10 to expect that Shell can pack up and leave once emissions approach the permit limitations.

Response: As an initial matter, the 240 tpy NO_x limit referenced by the commenters does not limit the operation of the icebreakers to only 38% of the operational period. The NO_x limit is a source-wide limit that applies to all emission units in aggregate. Permit Condition D.4.1. Compliance with this limit will be determined through the monitoring, recordkeeping, and reporting requirements established in the permit.

As noted by the commenters, the frequency and intensity of ice conditions in the Arctic is difficult to predict. In its application, Shell relied on multi-year ice data from 2003-2005 to estimate that its icebreakers could be conducting ice management activities within 25 miles of the Kulluk for up to 38% of the time the Kulluk is an OCS Source. Permit Application Supplement at 37. Shell used this assumption along with many others (including the assumption that icebreakers would be operating at maximum load at all times while managing ice within 25 miles of the Kulluk) to estimate the maximum expected emissions for the purpose of assessing its ability to conduct exploratory operations while at the same time limiting emissions to less than PSD major source thresholds. OCS Permit Applications, Conical Drilling Unit Kulluk, Beaufort Sea – Application Forms (Permit Application), Appendix G. Shell estimates that icebreaking activity will account for 92 of the 229 tons of allowable NO_x emissions. For additional discussion of ice management see response to comments in Category FF.

The commenters concern appears to be that the assumption Shell relied on for ice management may not reflect actual ice conditions during operations. This may be the case. However, in requesting synthetic minor limits and relying on this assumption Shell has accepted the risk that, if ice conditions are greater than assumed, Shell may be required to reduce emissions from other units or curtail its drilling season to comply with the NO_x limit. See Response to comment FF.3. Furthermore, the ice management assumption relied upon by Shell does not necessarily mean that Shell would be effectively limited to 46 days (38% of 120 days) of ice management activities. In conjunction with the 38% ice management assumption, Shell assumed the icebreakers would be operating at maximum capacity when actual operations will likely be conducted at less than maximum capacity, and actual emissions would therefore be less than assumed. In addition, Shell's Camden Bay Exploration Plan includes an Ice Management Plan that describes how it will forecast and track ice and weather conditions, and describes procedures for operational curtailment. Therefore, the Region does not think it is arbitrary or unreasonable to expect that Shell will be able to forecast ice management needs and curtail or cease operations if necessary to comply with the NO_x limit.

Comment II.1.e: Commenters express concern that restrictions on the source's PTE are not consistent with Shell's representations to other agencies. The commenters refer to EPA guidance concerning a permittee's request for limits to avoid new source review when in reality the requested limits are not how the permittee intends to conduct operations. The commenters request that Region 10 ensure Shell will abide by the restrictions in the Draft Permit and cite to representations made by Shell to BOEMRE and in its Incidental Harassment Authorization that differ from representations made in its application to Region 10. Commenters further state that, based on information submitted in the Camden Bay Exploration Plan and its air permit application, Shell could only drill one well in Camden Bay this year and ask that Region 10 either confirm Shell will drill only one well or issue a major source PSD permit to Shell.

Response: The fact that Shell's Camden Bay Exploration Plan or some other authorization might authorize operation in a different manner or for a longer period of time than authorized under the Kulluk Permit does not relieve Shell of its obligation to comply fully with the Kulluk Permit. As an initial matter, the operational restrictions on drilling in the permit are not established by days but by hours of operation. See Permit Conditions D.3.3 and D.3.4. In its permit application, Shell assumes that it is engaged in the identified drilling activity for 24 hours a day for the specified number of days. The Environmental Impact Assessment cited by the commenters already includes the five additional days to construct the MLC in the estimate of 44 drilling days for the Torpedo prospect drill site and 34 drilling days for the Sivulliq prospect site. In addition, Shell's permit application describes scenarios in which it would not drill a well to depth but might only establish the MLC or any other portion of a well. Permit Application Supplement at 25. These factors make it possible that Shell could construct wells, or portions of wells, at both the Torpedo and Sivulliq prospects in a single season. Shell acknowledged in its permit application that it could only drill as many wells, or portions of wells, as ice conditions or the requested limits in the permit allow. Id. For these reasons, Region 10 does not agree with the commenters that it is necessary to confirm that Shell will only drill one well, or issue a major source PSD permit in the absence of this confirmation.

The discussion in the guidance cited by the commenters is a discussion of "sham operational limits" whereby a source applies for a permit as a minor source so as to be able to begin construction without obtaining a major source permit (such as a PSD permit) and then subsequently increases its emissions once it has received a major source permit. Limiting Potential to Emit in New Source Permitting, dated June 13, 1989, at 10-11 (1989 PTE Guidance). Although Shell has requested synthetic minor source limits, there is no indication in the permit record that Shell intends to later apply to Region 10 to remove these synthetic limits. Moreover, Shell must comply with all requirements of the Kulluk Permit and failure to do so is a violation of the CAA. See Permit Condition A.3. As explained in the 1989 PTE Guidance, "attempts to expedite construction by securing minor source status through the receipt of operational restrictions from which the source intends to free itself shortly after operation are to be treated as circumvention of the preconstruction review requirements." Whether an original request for a synthetic minor permit is a "sham" may be evaluated when a request to remove such limits is received by the permitting authority. If Shell submits an application for a major source permit after it commences operations, Region 10 will evaluate the application consistent with the 1989 PTE Guidance, as well as other authorities.

Comment II.1.d: Commenters state that the permit must include a requirement that if the synthetic minor limits are relaxed the source will be subject to the requirements of 40 CFR § 52.21(r)(4), and that if the permit limits are exceeded the source will trigger PSD requirements and should be required to obtain a PSD permit.

Response: It is not necessary to include 40 CFR § 52.21(r)(4) as a condition in the Kulluk Permit. This regulatory provision requires that if a source becomes a major source solely by virtue of a relaxation of any enforceable limitation on its capacity to emit a pollutant, the source will be subject to the PSD requirements at 40 CFR §§ 52.21(j) to (s) as though the source had not commenced construction. Region 10 has no information that Shell intends to request that any enforceable limitation be relaxed during the term of the Kulluk Permit. Shell is required to comply fully with the Kulluk Permit. If Shell requests a permit change or modification that relaxes an enforceable limit such that it becomes a PSD major source it will be subject to 40 CFR § 52.21(r)(4). In addition, Region 10 will evaluate any operation in excess of PSD-avoidance limits consistent with the 1989 PTE Guidance and the Memorandum from Eric V. Schaeffer, EPA, re: Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements, dated November 18, 1999.

Comment II.1.e: A commenter at the Barrow public hearing stated that all Region 10 permits for operations in the Arctic should require BACT.

Response: OCS sources are required to comply with the provisions of PSD program at 40 CFR § 52.21. 40 CFR § 55.13. The PSD program requires, among other things, that new or modified major stationary sources apply BACT. Shell will be a PSD minor source, not a PSD major source, and therefore is not required to apply BACT.

Comment II.1.f: Commenters at the Anchorage and Barrow public hearings stated that as a minor source Shell is not required to undergo a BACT analysis. One commenter noted that as a PSD minor source the Kulluk will have lower emissions than if it were permitted as a PSD major source, and that Shell has installed emission controls that are extensive. One commenter noted that Shell is currently replacing the main engines and other sources on the Kulluk with newer, more efficient and cleaner systems. The commenter contends that the intent of BACT is to ensure best currently available technology and that Shell has done this with the updates to the Kulluk emission units.

Response: Region 10 agrees with the commenters that as a minor source Shell is not required to conduct a BACT analysis or be subject to BACT, and may have lower emissions than if it were permitted as a PSD major source. As a BACT analysis for the Kulluk has not been conducted, the Region disagrees with the commenter's implication that the updated emission units constitute BACT.

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H.2 SUBCATEGORY – PSD APPLICABILITY THRESHOLD FOR GREENHOUSE GASES

Comment H.2.a: Commenters contend that Region 10 applied the wrong major source threshold (in CO_2e in the Draft Permit. The commenters note that the Tailoring Rule provides that if a source is not major for any other pollutant the major source threshold is 100,000 tpy, but if the source is major for another pollutant the threshold is 75,000 tpy. The commenters reason that because Shell's pre-permitted PTE for NO_x, CO, and SO_2 would make it a major source for these pollutants, the applicable major source threshold for CO_2e is 75,000 tpy.

Response: The Tailoring Rule referenced by the commenters establishes applicability criteria that determine when GHGs emitted from stationary sources and modification projects become subject to regulation under the PSD and Title V programs. 75 Fed. Reg. 31,514 (June 3, 2010). The rule provides that GHGs emitted from a stationary source will be subject to regulation if the source is a new major source for a regulated NSR pollutant that is not GHG, and emits or has the potential to emit 75,000 tpy CO_2e or more, or if the new source would otherwise emit or have the potential to emit 100,000 tpy CO_2e or more. See 40 CFR § 52.21(b)(49)(iv); 75 Fed. Reg. at 31,523-24. The Tailoring Rule also explained that in order for a source's GHG emissions to trigger PSD or Title V requirements, the GHG emissions "must equal or exceed both the applicability thresholds established in this rulemaking on a CO_2e basis and the statutory thresholds of 100 or 250 tpy on a mass basis." 75 Fed. Reg. at 31,518.

Under the PSD program, as applied to Shell's stationary source, a "major stationary source" is any source which emits or has the potential to emit any pollutant subject to regulation under the CAA in amounts equal to or greater than 250 tpy. 40 CFR § 52.21(b)(1). The PSD regulations define potential to emit as the maximum capacity of a source to emit under its physical and operational design, including any physical or operational limitation on the capacity of the source to emit if the limitation is federally enforceable. 40 CFR § 52.21(b)(4).

As noted by the commenter, Shell's pre-permitted PTE exceeds the 250 tpy threshold for non-GHG for three pollutants. However, Shell requested, and Region 10 has included, federally enforceable limitations in the Kulluk Permit that reduce the source's potential to emit to below 250 tpy for all non-GHG pollutants subject to regulation for purposes of NSR. Accordingly, Shell is not a new major source for a non-GHG regulated NSR pollutant and thus is not subject to the 75,000 tpy CO_2e applicability threshold for such sources. Instead, Shell would be considered a major source for PSD permitting purposes if it emits or has the PTE 100,000 tpy CO_2e and 250 tpy GHG on a mass basis. Its requested limits for CO_2e keep it below the applicable threshold, therefore the source's GHG emissions are not "subject to regulation" for PSD permitting purposes and PSD requirements do not apply.

I. CATEGORY – ENFORCEABILITY OF PTE LIMITS

I.1 SUBCATEGORY – GENERAL

Comment I.1.a: Commenters request that Region 10 add to the list of "Prohibited Activities" the operation of the vessels between December 1 and June 30 because the Draft Permit specifies that the "permittee shall only conduct exploration drilling operations in the Beaufort Sea between July 1 and November 30 each year (referred to hereafter as the "drilling season")."

Response: The Kulluk Permit clearly states that "The permittee shall only conduct exploration drilling operations in the Beaufort Sea between July 1 and November 30 each year (referred to hereafter as the "drilling season")." Permit Condition D.3.1. This condition adequately prohibits operation of the Kulluk as an OCS source in the Beaufort Sea between December 1 and June 30 of each year, and the additional condition suggested by the commenters is not necessary.

Comment I.1.b: Commenters state that Region 10 fails to explain why monthly limits could not be imposed in the Draft Permit and why Shell was provided 12-month rolling emission limits for certain pollutants. The commenters reference EPA guidance providing that production and operational limits must be stated as conditions that can be enforced independently of one another and that EPA recommends a one month limit as the maximum time EPA should generally accept for avoiding a PSD threshold. The commenters also point to EPA guidance and state that Region 10 should first consider the possibility of imposing month-by-month limits, and only if that is not feasible should the Region impose a 12-month rolling time period. The commenters reference the following statement that they cite as originating from the Statement of Basis: "because the annual NAAQS are set based on calendar years, the restriction can similarly apply on a calendar year basis (or, in the case of these permits, a drilling season which is limited by the permit to a specific 5-month period out of any calendar year)." The commenters contend that this statement is misleading because it implies that Shell is complying with the NAAQS and other standards during the limited drilling season instead of taking a rolling 12-month timeframe in which to document compliance.

Response: Agency guidance provides that production or operational limits expressed on a calendar year basis cannot be considered capable of legally restricting potential to emit, and that such limits should generally not exceed one month, but can include longer rolling limits (e.g., on a 12-month rolling basis). 1989 PTE Guidance at 10. This guidance applies to limiting a source's potential to emit and does not explicitly address limits established to protect the NAAQS. Region 10 believes that in this case limits imposed to ensure compliance with annual NAAQS standards can reasonably be expressed on a calendar year basis because compliance with the annual standard is determined based on calendar year or multi-year averages of calendar years.

The commenters' concern appears to relate to the fact that the Draft Permit includes PTE limits set on a rolling basis even though Shell is prohibited from operating under the permit between December 1 and June 30 of each year. The rolling PTE limits in Permit

Condition D.4 of the Draft Permit were established assuming zero emissions during the period when operations are prohibited (December through June of each year). In addition, each of the limits in the permit applies independently. In other words, even though the limits in Permit Condition D.4 could—on their own—allow the source to emit pollutants between December 1 and June 30 of each year, Permit Condition D.3.1 prohibits operation during that time period, and the permittee must comply with both requirements.

The commenters are correct that EPA guidance does express a general preference for shorter time periods rather than 12-month rolling limits. See 1989 PTE Guidance at 9. As the commenters acknowledge, however, EPA has also recognized that longer rolling limits are appropriate for sources with substantial and unpredictable annual variations in emissions, as well as for those sources that curtail operations during part of a year on a regular seasonal cycle. Id. at 9-10. Such is the case here. Shell's planned exploratory operations are atypical as compared to other sources because the emission units consist of multiple engines and generators with variable emissions on the Kulluk and a fleet of numerous support vessels. Operations will vary from hour-to-hour, day-to-day, month-to-month, and season-to-season based on factors such as the number of wells drilled, the activity being undertaken (drilling mud cellar lines, other drilling activity, or activity that does not involve drilling), the depth of the wells drilled, whether emergency engines are being run for testing, and ice conditions. Given the variability in operations, and thus emissions expected from this source, and after considering a full range of options for limiting the source's potential to emit, Region 10 determined that it was appropriate to establish longer-term rolling limits. In short, the Kulluk Permit does not set PTE limits on a calendar year basis, but instead establishes rolling 365-day limits for NO_x and CO, and 12-month rolling limits for SO_2 and GHG emissions. Region 10 determined that these limits are appropriate considering the nature of the source and are consistent with the 1989 PTE Guidance. See also response to comment I.1.c.

Similar to the 2011 Revised Permits for the Discoverer, the limit on the number of days in the drilling season in the Kulluk Permit is a limit set to ensure compliance with the annual NAAQS and therefore can reasonably be established, as was done here, on a calendar year (drilling season) basis. Region 10 also notes that the statement quoted by the commenters concerning setting annual NAAQS compliance limits on a calendar year basis is not contained in the Kulluk Statement of Basis. This statement is from the Supplemental Statement of Basis for the Discoverer Permits.

Comment I.1.c: Commenters contend that the owner-requested limits and other provisions designed to limit Shell's potential to emit are unenforceable as a practical matter and unlawful. Commenters note that absent enforceable permit limitations, Shell's yearly potential to emit exceeds the applicable major source threshold of 250 tpy for NO_x, CO, SO_2, and GHG emissions. The commenters reference that Shell's pre-permitted PTE for NOx is 2,339 tpy and that the Draft Permit limits NO_x emissions to 240 tpy determined on a rolling 365-day basis. Commenters further contend that although the Draft Permit describes how to calculate NO_x emissions it fails to specify how the emissions will be limited through an operational limit, a production limit, or the installation of controls or other mechanisms. As a result, the commenters state that the limit is not enforceable and fails to serve the intended purpose of restricting Shell's emissions of NO_x. The commenters assert that the same is true for potential to emit limits for CO and CO_2e.

Response: The commenters are correct that, absent enforceable permit limits, Shell's yearly potential to emit would exceed the applicable PSD major source thresholds for NO_x, CO, SO_2, and GHG emissions. See Statement of Basis, p. 24. Potential to emit is defined as the maximum capacity of a source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, is treated as part of its design if the limitation or the effect it would have on emissions is enforceable. See 40 CFR §§ 52.21(b)(4) and 55.2. Region 10 believes that the limits established in the Kulluk Permit to restrict the source's potential to emit are both federally enforceable and enforceable as a practical matter.

Title V of the CAA and Part 71 provide a mechanism to create limits in a Title V permit that restrict a source's potential to emit. The Environmental Appeals Board (EAB) has specifically acknowledged that "Title V permits (and other permits as well) may function as vehicles for establishing such PTE limits, potentially allowing a source to avoid more burdensome permitting requirements for 'major sources' by instead qualifying as a 'synthetic minor' source for purposes of some other regulatory programs." *In re Peabody Western Coal Company*, 12 EAD 22, 31 (EAB Feb. 18, 2000). Limits established in a Title V permit are federally enforceable. See 42 U.S.C. § 7661a, 40 CFR § 71.6(b), Permit Condition A.3.4. See also 18 AAC 50.225 (CAA authority to impose owner-requested limits on PTE).

Region 10 determined that, given the variable nature of Shell's proposed operations and the number, types, and location of emission sources spread across the Kulluk and Associated Fleet, the most effective means to limit Shell's potential to emit was through the application of enforceable source-wide emission limits for NO_x, CO, SO_2 and $CO2e$. The proposed exploratory drilling operations will involve variable operations from well-to-well and season-to-season due to factors such as weather, sea state, remoteness of the drilling site, and the exploratory nature of the operations (i.e. the speculative nature of exploratory drilling). Emissions from many units will also vary depending on the activity being conducted. For example, emissions from drilling equipment on the Kulluk will depend on the stage of drilling activity (*e.g.*, drilling mud cellar lines versus other drilling activities), and emissions from the propulsion engines on the icebreakers will depend on the frequency, thickness, and location of ice. Such considerations require a level of operational flexibility that makes it impractical to establish unit-specific limits or operating parameters for some pollutants that might typically be applied to limit a stationary source's potential to emit. For these reasons, Region 10 determined that, for this permit, the most effective and reliable way to limit potential to emit was through a combination of emission limits and specified emission factors, supported by stringent monitoring, frequent emission calculations, recordkeeping requirements, and operating

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limitations. This approach accounts for variability in operations and emissions, yet still provides assurance that limits on potential to emit can be enforced as a practical matter.

The Kulluk Permit establishes an emission limit for SO_2 (38 tpy) that is well below the applicable PSD major source threshold as determined on a 12-month rolling basis. This emission limit is supported by operational limits on both the type and amount of fuel combusted that ensure emissions remain below the applicable emission limit. The permit restricts the sulfur content of fuel combusted on the Kulluk and Associated Fleet to 500 ppm. Permit Condition D.4.5. Compliance with this operational limit is determined by Permit Condition D.4.9 which requires that all fuel purchased have a maximum sulfur content of 15 ppm. The permit also establishes an aggregate fuel limit for all emission sources that limits the total amount of fuel combusted during any 12-month rolling period to 7,004,428 gallons. Permit Condition D.4.6. Compliance with the fuel limit is determined through stringent fuel monitoring requirements. For the majority of emission units, fuel usage is monitored continuously using a fuel flow meter. For the units where a fuel flow meter is not required (Kulluk emergency generator, seldom used sources, and OSRV work boats) the permit requires that fuel usage be measured using a fuel sight glass, tank gauge, or graduated dip stick. Under Permit Condition F.2.2.2. Shell is required to record fuel usage for each emission unit on an hourly, daily, and monthly basis. Permit Condition F.2.2. Together, the limits on the type and amount of fuel combusted, along with the fuel monitoring requirements, assure compliance with the emission limit for SO_2.

The Kulluk Permit establishes an emission limit for CO_2e (80,000 tpy) below the threshold at which GHGs become "subject to regulation" for a new stationary source under the Tailoring Rule as determined on a 12-month rolling basis. This emission limit is supported by the operational limit on the amount of fuel combusted over a 12-month rolling period and an operational limit on the amount of waste combusted each day that, together, ensure emissions remain below the applicable emission limit, so the source's GHG emissions are not "subject to regulation" for PSD permitting purposes and PSD permitting requirements do not apply. Permit Conditions D.4.6 and D.4.7. The permit requires Shell to monitor total fuel usage, as described above, and to monitor and record the operation of the incinerators on the Kulluk and Associated Fleet. Emissions are calculated by applying emission factors specified in Tables D.2.1 and D.2.2 to the amount of fuel combusted and the assumed maximum operation of the incinerators. Each month, Shell is required to calculate and record the rolling 12-month emissions of GHGs to ensure that emissions of CO_2e remain below 80,000 tpy. For a discussion of methane emissions see response to comment 1.3.b.

The Kulluk Permit establishes emission limits for NO_x (240 tpy) and CO (200 tpy) below the applicable PSD major source threshold, as determined on a rolling 365-day basis.
Compliance with the emission limits for NO_x and CO is determined by calculating daily NO_x and CO emissions from each emission unit using emission factors derived from stack testing conducted pursuant to specified requirements (Permit Condition E) or specifically identified in the permit (Permit Condition D.1). The permit requires Shell to conduct stack tests for the majority of emission units to develop reliable emission factors for NO_x and CO. Stack testing is conducted across multiple load conditions for each emission unit or group of emission units. The highest emission factor determined through stack testing is used to calculate all emissions from the unit regardless of actual operating load conditions. For groups of the emission units, the highest emission factor observed for the group is used for all emission units in the group. For emission units that are not subject to stack testing for NO_x and CO (Kulluk emergency generator, seldom used sources, OSRV workboats, heaters and boilers), the permit specifies emission factors which are either the AP-42 emission factor or the 90th percentile value derived from source tests of corresponding emission units on Shell's Discoverer drillship and Associated Fleet. For more discussion of emission factors see response to comment 1.3.a.

Compliance with the emission limits for NO_x and CO is determined by applying the relevant emission factor to the amount of fuel combusted by each emission unit (or hours of operation for incinerators). The fuel monitoring requirements, described above, and the specified emission factors for individual emission units allow for source-wide emission calculations to be made. Shell is required to calculate and record on a weekly basis the daily emissions of NO_x and CO from each emission unit, and to calculate and record on a weekly basis the daily rolling 365-day emissions of NO_x and CO. In this way, Shell is required to provide a continuous assessment of daily NO_x and CO emissions to ensure that the source complies with its PTE limits. Determining NO_x and CO emissions from each unit on a daily basis provides a reliable and timely mechanism that will allow Shell to frequently assess compliance and to determine whether it is approaching the emission limits established to limit its potential to emit and to adjust its operations accordingly.

In addition to emission limits, the Kulluk Permit includes a combination of operational limits which effectively limit potential to emit as well. In addition to the limits on the type and amount of fuel combusted, the Kulluk Permit imposes hourly operational limits on MLC drilling and overall drilling activity. Permit Conditions D.3.3 and D.3.4. Shell is required to record the date and hour the Kulluk becomes an OCS Source and the date and hour of drilling and incineration activities. Permit Conditions D.3.6 to D.3.8. To limit emissions of NO, and CO from larger emission units, the Kulluk Permit requires the installation and operation of add-on controls. Exhaust from emission units with the highest PTE for NO_x – the Kulluk electricity generation engines and the propulsion and generation engines on both icebreakers – will be directed to an operating selective catalytic reduction (SCR) control device that is evaluated at all times the affected source is operating using a continuous monitoring system (CMS). In addition, exhaust from the Kulluk electricity generation engines, MLC HPU engines, MLC air compressor engines, Kulluk deck cranes, and the propulsion and generation engines on both icebreakers are directed to an oxidation catalyst control device that controls combustible substances such as CO and PM and is evaluated using a CMS. Permit Conditions F.3 and F.4.

The 1989 PTE Guidance recognizes exceptions to the statement that emission limits alone are not generally sufficiently enforceable as a practical matter so as to limit PTE. While the situation presented by the Kulluk and Associated Fleet was not contemplated at

the time the 1989 PTE Guidance was issued, Region 10 believes that this situation is sufficiently analogous to the rationale for recognizing the exception for the VOC surface coating. As in the case of VOC coating operations, the operational and production parameters for the emission units on the Kulluk and Associated Fleet are not readily limited due to the uniqueness of the source which includes a wide variety of emission units and varying emission factors for NO_X and CO for the various emission units, resulting from the unpredictable nature and variability of operations, and the need for operational flexibility on fuel usage. Therefore, Region 10 has required the use of emission limits and specific emission factors based on conservative assumptions, coupled with a requirement to calculate hourly and/or daily emissions, to restrict potential to emit. In this way, the combination of emission limits and specified emission factors has an effect similar to operational limits because the operational parameters that are linked to the emissions are continuously tracked and used for compliance.

Region 10 believes the permit appropriately limits Shell's potential to emit in a manner that is both legally enforceable and enforceable as a practical matter. Moreover, Shell is aware that operations must be suspended when necessary to avoid exceeding the limits. In the unlikely event that PTE limits are exceeded, not only may Shell need to apply for and obtain a PSD permit, but it may be considered to have been in violation of PSD requirements from the time it was initially constructed.

I.2 SUBCATEGORY – APPROPRIATENESS OF EMISSION LIMITS

Comment I.2.a: Commenters cite to a letter from EPA Region 9 to the Nevada Division of Environmental Protection as support for the proposition that EPA's position is that a 5-10% buffer is appropriate for synthetic minor source air permits. The commenters apply the 5-10% buffer to the potential to emit NO_X under the Draft Permit and note that the 240 tpy emission limit provides less than a 5% buffer. The commenters assert that, at the very least, the final permit needs to provide a 5% buffer, but that given the unknowns associated with the Draft Permit and the Arctic conditions, Region 10 should ensure a 10% buffer for all owner requested restrictions.

Response: The letter cited by the commenters involved a revision to a Title V permit to allow the source to install and operate additional emission units that would have increased the source's potential to emit CO above the applicable major source threshold of 250 tpy. In the draft permit, the state permitting authority established a facility-wide emission limit for CO of 249 tpy, just below the major source threshold. Region 9 did not object to the emission limit, but encouraged the permitting authority to provide a larger buffer of between 5-10% in that case.

Congress established specific thresholds to determine when a source would be considered major for purposes of PSD review. 42 U.S.C. § 7479(1). Although establishing a 5-10% buffer where an emission limit is just below the major source threshold may increase confidence that a source will not exceed the applicable threshold, the commenter does not cite anything to suggest that this is a legal requirement.

Moreover, the Kulluk Permit differs from the permit at issue in the Region 9 letter because it establishes a NO_X limit of 240 tpy, which provides a greater cushion and more confidence with respect to the PSD major source threshold than the 249 tpy limit at issue in the Region 9 letter. In addition, the permit includes requirements to ensure that emissions do not exceed this threshold, including but not limited to source testing of engines that are anticipated to generate approximately 91 percent of emissions, calculating emissions from these engines based upon worst-case emission factors (lb/gal) and continuously measuring and recording hourly the flow of diesel fuel to these engines (gal/hr). For those engines employing SCR to reduce emissions, the permit requires that a CMS measure and record operating parameters associated with the control device. On those occasions when the CMS detects operation of the control device in a manner different from that observed during stack testing, the permit requires that an uncontrolled emission factor be employed to calculate NO_X emissions. The application of a CMS and the use of uncontrolled emission factors increase confidence that the source's actual emissions will not be greater than reported.

Furthermore, the Kulluk Permit contains adequate and enforceable monitoring, recordkeeping, and reporting requirements to ensure that Shell complies with the NO_X and other emission limits. As noted in the Region 9 letter, if a major source threshold is exceeded a facility may trigger PSD requirements and may be treated as a source that should have obtained a PSD permit. Memorandum from Eric V. Schaeffer, EPA, re: Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements, dated November 18, 1999, at 5-6. For these reasons, Region 10 disagrees with the commenters that a buffer calculated as a percentage of the major source threshold is necessary in this case.

I.3 SUBCATEGORY – DETERMINING COMPLIANCE WITH PTE LIMITS

Comment I.3.a: Commenters state that limits on emissions of criteria pollutants are not practically enforceable because adequate monitoring is not in place to assure compliance. As an example, the commenters cite to the Statement of Basis (p. 38) which states: "[c]ompliance with the CO and NO_X emission limits is determined by multiplying measured fuel by periodically confirmed emissions factors." The commenters contend that the Draft Permit authorizes the use of default emission factors until unit-specific emission factors are determined through testing, and for some emission units there is no requirement to test for unit-specific factors. The commenters state that because the permittee has failed to identify the emission units it will use, this approach creates inherent uncertainty that necessitates thorough source testing. This inherent uncertainty remains unresolved, the commenters continue, because some emission units will not be tested. The commenters contend that because there will be no way to determine whether the default emission factors are wrong, the emission limits for CO and NO_X will be unenforceable as a practical matter. The commenters further state that the failure to obtain unit-specific data for all units is particularly problematic because the AP-42 emission factors that Region 10 relies on are notoriously inaccurate. The commenters cite to AP 42, Volume I, Fifth Edition for support that EPA does not recommend the use

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of AP-42 factors as source-specific permit limits and/or as emission regulation compliance determinations.

Response L3.a: The permit requires the use of emission factors to determine compliance with both NAAQS- and PTE-based NO_X and CO emission limits and requires source-specific verification of emission factors through source testing for the emission units that make up most of the allowed NO_X and CO emissions. Some smaller or infrequently used emission units, representing a small portion of the total NO_X and CO emissions, are not required to be tested. For those units that are not required to be tested, the NO_X and CO emission factors are based on either AP-42 emission factors or, when available, source test data from Shell's Discoverer drillship and Associated Fleet.

In consideration of the comments received, and to be sure there is a reasonable margin of safety that assures compliance, Region 10 is adding a requirement to test NO_X and CO emissions from each incinerator. Permit Condition E.3.2. Given the unique applications of the incinerators on these vessels, Region 10 believes this additional emission factor verification is appropriate and reasonable. After adding this additional incinerator testing, the permit will require emission testing of emission units that constitute 91% of the total NO_X emissions and 97% of the total CO emissions.

For emission units for which the permit does not require testing (emergency generators, seldom-used sources and OSRV work boats) and that rely on NO_X emission factors based on Discoverer test data, in response to comments received, Region 10 is adjusting the emission factors to reflect very conservative 90[th] percentile (or higher) values from the test data. See response to comment M.2.c. The only units that rely on AP-42 for NO_X emission factors are the heaters and boilers, which constitute only one percent of total NO_X emissions. Region 10 expects AP-42 emissions factors for heaters and boilers to be a conservative representation of actual emissions. EPA expects AP-42 emissions factors for heaters and boilers to be a conservative representation of actual emissions. While AP-42 predicts an emission factor of 0.02 lb/gal for heaters and boilers, Shell testing of its boilers reading on the Discoverer shows a range of values between 0.011 lb/gal and 0.015 lb/gal.[6]

The emission units that will not be tested to verify CO emissions factors (heaters and boilers, emergency generators, seldom-used sources and OSRV work boats) rely on AP-42 emission factors. While AP-42 emission factors are considered average values for the size-specific categories of emission units the emission factors represent, Region 10 believes that the emission factors are reasonable for use in this permit given that AP-42 emission factors will represent only 3% of the total CO emissions. Actual emissions from some emission units may be higher and some lower than the AP-42 emission factors predict.

[6] 0.11 lb/gal = (8.33 x 10[-5] lb MMBtu) x (MMBtu/1x10[6] Btu) x (131,180 Btu/gal)
0.15 lb/gal = (1.38 x10[-3] lb MMBtu) x (MMBtu/1x10[6] Btu) x (131,180 Btu/gal) See June 16, 2011 email from Rodger Steen to Dan Meyer.

limission testing conducted by Shell on two Discoverer boilers showed CO emissions very near what AP-42 predicts. The tests conducted by Shell resulted in CO emission factors of 0.004 and 0.007 lb/gal, while AP-42 predicts an emission factor of 0.005 lb/gal.[7] In response to the comments received, EPA has decided to use the higher of the two test values (0.007 lb/gal) in place of the AP-42 emission factor.

According to Shell, OSRV work boats will be deployed 5 days a week for 6 hours a day to conduct exercises. See "Anticipated Kulluk Operating Maximum" in Permit Application Supplement at 326. Emissions data supplied by Shell for one of the potential work boats to be deployed suggests the actual emission factor for the propulsion engines is one-tenth the value AP-42 predicts. The engine manufacturer's data provided by Shell suggests an emission factor of 0.066 lb/gal, while AP-42 suggests an emission factor of 0.112 or 0.125 lb/gal, depending on the engine rating.[8] Shell intends to install a brand new emergency generator on the Kulluk; it is predicted operations will be two hours each month to exercise the generator. Seldom-used sources consist of equipment such as life boats and are, as the name suggests, expected to operate infrequently. Region 10 believes the permit strikes an appropriate balance between the need for accurate emission factors to reliably calculate emissions for comparison to permit limits and the complexity of testing numerous emission units in a short period of time.

Comment L3.b: Commenters assert that the CO_2e emission limit of 80,000 tpy is not practically enforceable because Region 10 neglected to require monitoring or controls for emissions of methane. Commenters contend that methane is a powerful greenhouse gas with a warming potential 21 times greater than CO_2, and methane emission must be included in calculating whether a source is subject to the Clean Air Act's greenhouse gas controls. When a rig drills into porous, the commenters state, hydrocarbon bearing rock, methane mixes into the drilling muds and is brought to the surface. The commenters state that some of this methane will be emitted through a vent, and therefore must be counted toward Shell's potential to emit CO_2e. The commenters state that Region 10 assumes that the drilling mud system will vent no more than 399 pounds of methane per month (4 tons per month of CO_2e), and makes this assumption on assurances from Shell based on its past drilling experience. The commenters state that ConocoPhillips estimated methane emissions at 183 tons per month, which the commenters calculate as 46 times Shell's estimate. The commenters take issue with Region 10's determination not to require Shell to control, monitor, or report methane emissions, and assert that the lack of monitoring or reporting makes the owner-requested limit for CO_2e unenforceable as a practical matter.

Response: EPA has recognized that there are sources for which inherent physical limitations for the operation restrict the potential emissions of individual emission units.

[7] 0.004 lb/gal = (0.0311 lb MMBtu) x (MMBtu/1x10[6] Btu) x (131,180 Btu/gal)
0.007 lb gal = (0.05 lb MMBtu) x (MMBtu/1x10[6] btu) x (131,180 lb/gal) See June 16, 2011 email from Rodger Steen to Dan Meyer.

[8] Support Vessel Parameters, Permit Application Supplement at 154. 0.006 lb/gal = (0.155 g hp-hr) x (hp-7900 Btu) x (lb/453,592 g) x (131,180 Btu/gal)

Where these inherent physical limitations can be documented by the source and confirmed by the permit issuer, the permit issuer has the authority to make such judgments and factor them into estimates of stationary source potential emissions. See Memorandum from John S. Seitz, EPA, re: Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act (CAA), dated January 25, 1995 (Options for Limiting PTE) at 8.

Methane emissions from the drilling mud system are subject to operational restrictions that limit operations to 120 days between July and November, and limit drilling activity to 1,632 hours. These operational limits are accompanied by monitoring in the form of recordkeeping. See Permit Condition D.3.6. In this case, Shell calculated the potential methane emissions from the drilling mud system based upon the maximum expected capacity over the five-month period of operation taking into consideration inherent physical limitations and actual well data. See Permit Application, Appendix E. EPA has acknowledged that where inherent physical limitations exist, it may be appropriate to rely on a reasonable and realistic "upper-limit" projection in identifying the "maximum capacity" of a source for the purpose of estimating their PTE. See e.g., Memorandum from John Seitz, EPA, re: Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Terminals, dated November 14, 1995, at 4-5; Options for Limiting PTE at 8.

To add a measure of safety in issuing the Draft Permit, Region 10 assumed all of the emissions from the drilling mud system (which includes the cuttings/mud disposal barge) will be point source emissions whereas, in actuality, a significant amount of the emissions from the drilling mud system and all of the emissions from the cuttings/mud disposal barge meet the definition of fugitive emissions and do not have to be counted for this source category in determining a source's potential to emit under the PSD program. See 40 CFR § 52.21(b)(1)(iii).

In response to these comments, Region 10 contacted Shell on September 8, 2011, to discuss the methane estimation and request additional well information previously-claimed by Shell as confidential to confirm that the estimate of methane potential to emit it previously provided to Region 10 is a reasonable upper-bound estimation. Shell provided the additional documentation of actual well data. See email from Susan Childs, Shell, to Doug Hardesty, Region 10, re: Shell Mud and Cuttings Degassing Emissions, dated September 16, 2011. The information provided shows that Shell relied on actual well pressure, temperature, porosity, and depth of the hydrocarbon bearing zone from past Arctic exploration projects in its estimation.

In reviewing Shell's new information, Region 10 identified an error in the methane emission factor in the draft Kulluk permit. As in the Shell Discoverer permits, Region 10 conservatively assumed that Shell's estimation represented only one well and adjusted the monthly emission factor by a factor of four to represent four wells (a reasonable upper-bound estimate of the number of wells that could be drilled in a single season). The emission factor in the draft Kulluk permit was missing this adjustment. The final Kulluk permit will include the adjusted methane mission factor (1,596 pounds CH4 per month) to be consistent with the Discoverer permits. Region 10 has also amended the

synthetic minor12-month rolling diesel fuel combustion limitation (Condition D.4.6) to account for the revised estimate of CO_2e potential emissions attributed to mud degassing. Because mud degassing GHG emissions are relatively insignificant compared to fuel combustion GHG emissions, the 12-month rolling diesel fuel usage limit has only decreased 0.1% from 7,011,323 gallons to 7,004,428 gallons.[9]

As in the case of the reasonable, upper-bound projections that EPA believes are appropriate for determining the PTE of grain terminals, Region 10 believes that the emission estimate for methane emissions from Shell's mud drilling system (17 tons per month of CO_2e) assumed in the emission limit on total GHGs is a reasonable upper-bound projection for Shell's operations and is not expected to be exceeded under any reasonably anticipated operating scenario. This is especially true given the other conservative assumptions that Region 10 is applying to Shell's estimate to provide a wide margin of safety (considering both point source and fugitive emissions in the estimate and assuming the yearly estimate is emitted in each of the five months).[10]

For comparison purposes, EPA recommends grain terminals apply a safety factor of 1.2 to the highest of the previous five years of throughput to constitute a realistic upper-bound potential to emit. See Memorandum from John Seitz, EPA, re: Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Terminals, dated November 14, 1995, at 5. It is important to emphasize that, even with these conservative assumptions, the GHG emissions (85 tons per year CO_2e) from the drilling mud system represent only 0.11% of the total GHG emissions (80,000 tons per year CO_2e) allowed under the permit.

Region 10 believes that assuming such a conservatively high estimate of the methane emissions that would be emitted from the drilling mud system operating at its maximum design operation rate, coupled with the operational limit on the duration of the operations and other permit restrictions, are collectively sufficient to ensure methane emissions from the drilling mud system do not exceed 17 tons per month of CO_2e, and that overall CO_2e emissions do not exceed 80,000 tpy on a 12-month rolling basis. Because of the inherent limitations that exist, and considering the small contribution from the mud drilling system to overall GHG emissions from the Kulluk and Associated Fleet as a whole, Region 10 does not believe it is necessary or appropriate to monitor emissions from, or operations of the drilling mud system, aside from the monitoring already required in the permit

[9] 39,080 ton CO_2e − 80,000 ton CO_2e (ORL) − 835 ton CO_2e (waste incineration) − 85 ton CO_2e (mud degassing)
7,004,428 gallons = (39,080 tons CO_2e) x (2000 lb CO_2e ton CO_2e) x (gal diesel/22.58 lb CO_2e)

[10] Region 10 is aware that ConocoPhillips provided an estimate of emissions from its mud drilling system that is much higher than that provided by Shell to support this permit. Region 10 has closely examined the estimates provided by both companies along with a comparison of the methodologies offered by Shell in its September 26, 2011 comments to EPA regarding the permitting of ConocoPhillips jackup drill rig. Shell's estimate is based on well information from past arctic exploration projects. The fact that one company has chosen to rely on even more conservative assumptions in estimating its potential to emit from similar operations does not undermine the validity of another company using less conservative, but still reasonably conservative assumptions in estimating its emissions where it has a reasonable basis to do so.

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including monitoring the duration of operations. Moreover, Region 10 believes that the monitoring, recordkeeping, and reporting included in the permit for the limits on emissions, fuel, waste, and operations that collectively limit emissions to below the Tailoring Rule "subject to regulation" threshold for GHGs together constitute a "verifiable method to attain and maintain each limit" within the meaning of 18 AAC 50.225 of the CAA regulations.

J. CATEGORY – LIMITS TO PROTECT THE NAAQS

J.1 SUBCATEGORY – ENFORCEABILITY OF EMISSION LIMITS

Comment J.1.a: Commenters state that EPA guidance provides that emission limits are "sufficient to limit potential to emit" when they include "requirements to install, maintain, and operate a continuous emission monitoring (CEM) system and to retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit." The commenters contend that the present circumstances warrant CEM to ensure permit conditions are enforceable, and are concerned that the Region has not required CEM where permit provisions are based on a new model and new algorithms that have not been tested for the Arctic. The commenters believe that only monitoring the combustion of fuel or waste is not sufficient to protect air quality given the modeling uncertainties underlying the permit provisions.

Response: The commenters have provided no support for the assertion that fuel and waste combustion monitoring is not sufficient to protect air quality. In fact, the waste monitoring required in the permit is needed to confirm NSPS applicability rather than for monitoring compliance because waste combustion rates are conservatively assumed to be at the maximum any time an incinerator operates. For a discussion on why Region 10 believes the requirements established in the permit are both legally enforceable and enforceable as a practical matter and sufficient to limit potential to emit see responses to comments in Subcategory J.1. With respect to the concern that fuel and waste combustion monitoring is not sufficient to protect air quality, the commenters have provided no support for this assertion. Although there is some uncertainty inherent in all modeling analyses (because it is by nature predictive), Region 10 believes the modeling underlying the NAAQS requirements and the compliance assurance provisions in the permit are sufficient to ensure the NAAQS will be protected.

Continuous Emission Monitoring System (CEMS) are a means of ensuring compliance with emission limits and may be an appropriate alternative if setting enforceable operational parameters for control equipment is infeasible. See 1989 PTE Guidance at 7-8. CEMS may also be appropriate where sources are experiencing regular compliance problems. CEMS are not the only means, however, of assuring compliance with limits on potential to emit and NAAQS-based emission limits. Shell's proposed exploratory operations are unusual as compared to other sources because the emission units consist of numerous engines and generators with numerous release points (stacks) on the Kulluk and a fleet of many support vessels. SCR and OxyCat controls are required on multiple engines on three different vessels. CEMS are expensive to purchase, maintain, and

operate, but more importantly, there are practical considerations that Region 10 had to consider in this case, including the fact that emission units, control equipment, and monitoring equipment will be operating in a remote, harsh, Arctic environment, and deck space on board the vessels is limited. Furthermore, potential to emit is determined on a source-wide basis making it less critical to be precise on an individual emission unit basis. Similarly, NAAQS compliance is in jeopardy when the total emissions impacting a receptor point are higher than allowed. Higher than expected emissions at one stack, are offset by other stacks emitting less than expected. Region 10 believes that the permit assures compliance with the PTE and NAAQS limits through an appropriate level of monitoring that reflects the unique attributes of this source.

The permit requires a regimen of stack testing and emission calculations, in conjunction with a continuous monitoring system for parametric monitoring of control equipment to ensure compliance with emission limits. This is in addition to other operational restrictions that will have the effect of restricting the source's emissions and help ensure compliance with the NAAQS-based limits. Region 10 believes that the control equipment parametric monitoring required by the permit – temperature, urea feed, catalyst activity for SCR (Permit Condition F.3) and temperature and catalyst activity for the oxidation catalyst device (Permit Condition F.4) – are effective means for ensuring that the controls are working properly and achieving the projected emission reductions. For uncontrolled emission units, the permit requires monitoring and reporting operational rates including fuel and hours of operation. The commenters have provided no information to indicate that the required monitoring of fuel, hours of operation, and control equipment will not be accurate. Multiplying the tracked fuel rates by source-specific emission factors determined by source testing for most of the emission units will provide a reasonable assurance of compliance with emission limits in the permits. The commenters have provided no information to the contrary, nor have the commenters identified any specific requirement to use CEMS in this circumstance. Contrary to the commenters' assertion, monitoring emissions using CEMS has no bearing on the accuracy of the new algorithms used by Shell for modeling. Region 10 continues to believe that CEMS are not necessary to provide a reasonable assurance of compliance with the emission limits in this permit. See also response to comment M.3.c.

Comment J.1.b: Commenters assert that limits established to ensure compliance with the NAAQS are not enforceable. The commenters take issue with the establishment of limits on pounds per hour or day, and state that it is inappropriate to assess NAAQS compliance with pound per hour calculations without any underlying, enforceable measure (e.g., operational or production limits) to assure that those emissions limits are met.

Response: The commenters have not specified why they believe it is necessary to create operational and production limits in addition to mass emission limits for NAAQS compliance, and cite no legal authority requiring such limits. The permit contains enforceable conditions to address NAAQS compliance.

The NAAQS-based emission limits are based on predicted emission rates used in modeling to demonstrate compliance with NAAQS. Compliance with the emission rates

is determined by multiplying the measured operational rates (fuel or waste feed rates) by emission factors that are specified and developed through testing under the permit. Because the emission limits are specified in the permit and the emission factors are set through procedures in the permit, the maximum amount of operation (fuel or waste feed) is effectively restricted as well.

For instance, Permit Condition 6.1.1.1 limits NO_x during drilling from emission units K-1A through K-1D to 19.0 pounds per hour. The emission factor for NO_x emissions from these same emission units, found in Table D.2.1 of the permit, is 0.049 pounds per gallon of fuel combusted. If Shell operates these units such that they combust more than 388 gallons of fuel in any hour during drilling, they will be out of compliance with the 19.0 pound per hour emission limit (388 x 0.049 = 19.0).

The emission factor for these same emission units is determined through specific testing performed before each drilling season. If the same emission unit is tested the following year and the new emission factor is determined to be 0.059 pounds per gallon, then the same group of emission units will be effectively restricted to 322 gallons per hour. This type of operational limit exists for each pollutant, and the most stringent operational limit sets the overall operational limit for Shell. As long as Shell maintains their operations below the back-calculated operational rate, they will be in compliance with the emission limit.

This group of emission units will be controlled by selective catalytic reduction controls to reduce NO_x emissions. The permit requires control device monitoring including catalyst inlet temperature, urea feed rate and catalyst activity. If any of the parameters are outside the specifications set in the permit, the emission factor for NO_x from the group of emission units increases by a factor a 10 or from 0.049 to 0.49 pounds per gallon because the SCR unit is assumed to be 90% effective in reducing NO_x. The effective operational limit then becomes 39 gallons per hour to assure NAAQS are protected while the control device is not operating correctly.

Overall, Region 10 believes the permit contains terms and conditions sufficient to protect the NAAQS and that additional operational or production limits to protect the NAAQS in this permit are not necessary. The commenters have not shown why short term operating limits are a necessary addition to assure compliance with the NAAQS.

J.2 SUBCATEGORY – ADEQUACY OF $PM_{2.5}$ LIMIT

Comment J.2.a: Commenters state that the compliance demonstration for $PM_{2.5}$ leaves no room for uncertainty because modeled impacts are predicted to be at 97 percent of the 24-hour average $PM_{2.5}$ NAAQS. Region 10 must be able to demonstrate compliance with the NAAQS considering a margin of error based on the accuracies of the input data. Specifically, the commenters state that compliance demonstration must account for uncertainty in stack test data used to determine the emission factors. Since the emissions inputs for the modeling analysis are based, in general, on multiplying the applicable emission factor by the associated operating factor (e.g., fuel usage rate) then the accuracy

of this input is determined by the sum, in quadrature, of the fractional uncertainties associated with each factor. The commenters state that if, as has been indicated by Shell previously, the uncertainty in the stack test data is upwards of 15%, then Shell must be able to demonstrate compliance with the NAAQS considering a margin of error no less than 15 percent. The commenters calculate that this requires the predicted 24-hour $PM_{2.5}$ concentration to be less than 29.8 $\mu g/m^3$, when considering the background concentration, and the predicted 1-hour NO_2 concentration must be less than 160 $\mu g/m^3$. The commenters note that the modeling prediction of the highest 24-hour $PM_{2.5}$ was 34 $\mu g/m^3$, well above 29.8 $\mu g/m^3$ (114 % of the 29.8 $\mu g/m3$ level). The commenters request that Region 10 establish permit limits that demonstrate compliance with the NAAQS with a margin of error no less than the accuracy of the input data.

Response: While the commenter has indicated there will be an inherent uncertainty in the value of stack-derived emission factors, the commenter has not shown that the uncertainty will be biased low. Shell is required to operate in compliance with the permit and accepts the risk of the uncertainties involved. However, there are some additional considerations that offset the inherent uncertainty.

Given that most of the NAAQS-based emissions limits in the permit apply to groups of emission units, the relative uncertainty in any one test will be reduced. Similarly, the eventual ambient impacts are dependent on the emissions from all of the operating emission units, which again means the uncertainty of any one test or for any one emission unit will have less effect when translated to ambient impacts. Source testing is required to follow a source test protocol which will help to ensure procedural consistency from test-to-test and year-to-year.

The permit also has several conservative elements which work to protect ambient air. Testing of individual engines will be performed at multiple load levels and the emission factors from the worst-case load will be used in compliance determinations regardless of the load at which the engines actually operate. This conservatism is increased for groups of emission units because the highest emission factor of any unit in the group must be used for all units in the group. For emission units where hours of operation are tracked in place of fuel monitoring, the emission unit is assumed to be operating at its maximum operating rate. As discussed in response to comments V.1.e and V.2.a, there is additional conservatism built into the modeling analyses that will help to ensure protection of ambient air quality. All of these factors result in over-prediction of calculated emissions or over-prediction of modeled results which should result in actual emissions being lower than calculated and actual impacts lower than predicted.

K. CATEGORY – OPERATIONAL LIMITS TO MAKE PSD UNNECESSARY AND THE PROTECT THE NAAQS

Comment K.1: Commenters assert that key operating parameters relied on to calculate potential to emit and demonstrate compliance with the NAAQS must be included as permit conditions because the Region relies on these parameters to demonstrate compliance with the synthetic minor permit limits and the NAAQS. The commenters

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identify the following as enforceable operating restrictions that should be included in the permit:

Table 5: Additional Required Permit Limits: Operating Parameters

Permitted Source	Permit Limit	Compliance Demonstration
Cementing and Logging Activity	1,248 hours/activity 52 days/activity	Add provisions to condition D.3 to limit hours of operation and require sufficient recordkeeping
Deck Cranes (all 3 units combined)	Shall not operate more than 30% of the time in any given day during MLC and Well Drilling Activities	Add provisions to condition D.3 to limit hours of operation and require sufficient recordkeeping
Deck Cranes (all 3 units combined)	Shall not operate more than 50% of the time in any given day during Cementing and Logging Activities	Add provisions to condition D to limit fuel usage and require sufficient monitoring and recordkeeping
Resupply Ship – in transport	Limit to 1,200 gallons of fuel 1-way	Add provisions to condition D to limit fuel usage and require sufficient monitoring and recordkeeping
Resupply Ship – in DP mode	Limited to 4,800 gallons per event	Add provisions to condition D to limit fuel usage and require sufficient monitoring and recordkeeping
OSR Vessel	Limited to 2,880 gal/day	Add provisions to condition D to limit fuel usage and require sufficient monitoring and recordkeeping
OSR Work Boats	Limited to 3,789 gal/day	Add provisions to condition D to limit fuel usage and require sufficient monitoring and recordkeeping

Response K.1: The commenters are requesting that Region 10 create operating restrictions in the permit that reflect the assumptions that were used in Shell's emission inventory because the Region relies on the operating parameters to demonstrate compliance with the synthetic minor permit limits and the NAAQS. Contrary to commenters' views, Region 10 is not relying on the assumed values of the operating parameters, but on the actual values of the operating parameters. The permit creates emission limits and stipulates the emission factors that must be used to demonstrate compliance. The permit also requires that specific operating parameters be monitored, recorded, and used with the specified emissions factors to confirm compliance with the emission limits.

Shell's application described anticipated exploratory operations such that they could accurately predict emissions that were in turn used in modeling and ultimately were turned into emission limits in the permit. Shell's modeling addressed worst-case operational scenarios involving various combinations of operations to ensure that actual operations comply with the NAAQS. Where assumptions were necessary to assure compliance under all scenarios, Region 10 created operational limits in the permit. The commenters do not explain why these additional assumptions used to predict emissions should become restrictions in the permit.

Comment K.2: Commenters state that Shell assumed certain control device efficiencies in the emissions inventory, and request that Region 10 include these efficiencies as enforceable permit limits to demonstrate compliance with the NAAQS and synthetic minor permit limits. Specifically, the commenters identify Draft Permit Condition D.11 which requires that Shell operate SCR and/or Oxy-Cat control devices at all times for the Kulluk generators, MLC engines (including HPU and air compressor engines), Kulluk deck crane engines, and the generator and propulsion engines on the icebreakers. The commenters request that the permit conditions be expanded to include the following control efficiencies that are assumed in the inventory for the modeling and PTE calculations:

Table 6: Additional Required Permit Limits: Control Efficiencies

Control Device	Restriction	Compliance Demonstration
SCR for NO_X control	1.6 g/kW-hr	Continuous monitoring
Oxy-Cat for PM control	30%	Periodic monitoring
Oxy-Cat for CO control	80%	Periodic monitoring
Oxy-Cat for VOC/HAP (except metals) / HCHO control	70%	Periodic monitoring

Response K.2: Similar to the response to comment K.1, the control efficiencies noted by the commenter in the above table were employed to calculate emission rates that were used in modeling. Region 10 then turned the emission rates into emission limits and required testing, monitoring, and recordkeeping to assure compliance with the permit terms and conditions. Engines with control devices will be tested to establish emission factors that reflect the control efficiencies of the control devices. Specific control device monitoring is required in the permit to ensure that the control devices are operated as they were during testing which in turn assures that the emission factors developed from the tests remain representative. Unlike a PSD permit, which requires emission limits that reflect best available control technology, this permit is not required to contain control technology-based restrictions. The commenters have not explained why it is necessary to include the control device efficiencies as permit limits. The permit, as written, assures compliance with the PTE limits.

Comment K.3: Commenters state that capacity limits for source operations identified by Shell as system limitations must be included as enforceable permit conditions to ensure operations do not exceed the capacity limits. The commenters note that stack testing for many sources require testing at 100 percent capacity (with a 10 percent buffer) which indicates that these units can operate at, or very near, 100 percent capacity. The commenters are unclear what system limitations will keep the company from operating above the assumed levels, and assert that Region 10 must include provisions limiting operation to modeled capacities. The commenters believe this is critical because future modeling analyses are required to be conducted using the same assumptions as used in

the initial modeling analysis. The commenters request that the following capacity limits be included in the permit.

Table 7: Additional Required Permit Limits: Capacity Limits

Permitted Source	Capacity Limit	Compliance Demonstration
Kulluk Generators	85%	Continuous load monitoring
Deck Cranes (all 3 units combined)	40%	Continuous load monitoring
Cementing/Logging Units	60%	Continuous load monitoring

Response K.3: There are no cementing and logging engines on the Kulluk. The capacity limits noted in the above table, with the exception of the capacity limit for cementing and logging units, were employed to calculate emission rates. The commenters have not shown why it is necessary to require Shell to limit capacity as noted in the table above. The permit requires emission testing at multiple loads to identify the worst-case operating load and the emission factor that represents that worst-case operating load. That emission factor is then used to calculate emissions for all operating loads during actual operation. This approach results in a conservative recording of emissions and obviates the need for tracking actual engine load or percentage of capacity. If Region 10 had determined that the use of load-specific emission factors to calculate and record emissions was necessary, the permit would have required load tracking. Furthermore, if Region 10 determined that it was necessary to avoid a particular operating capacity, the permit would have included limits on capacity and load tracking to confirm compliance. The permit assures compliance with emission limits without the need to limit or track load or engine capacity.

L. CATEGORY – SOURCE TESTING

Comment L.1: The commenters note that the Draft Permit does not require source testing for some emission units. Specifically, source testing is not required for the boilers and heaters, the emergency generators or the seldom-used engines on the Kulluk and its Associated Fleet, or the OSRV workboats. The commenters assert that because the Draft Permit does not specify equipment make, model, and capacity, it is critical that Region 10 require source testing for all emission sources.

Response: The source testing required under the permit covers the sources responsible for the majority of emissions. See response to comments I.3.a. The Region disagrees with the commenters that source testing is necessary or required for all permitted emission units, which include seldom used sources such as life boats and emergency equipment. In addition, in most cases, knowing the make or model of an emission unit would not influence EPA's decision to require testing because the emission factors normally represent ranges of units for any particular category of source types. Shell provided adequate information for Region 10 to apply appropriate emission factors to emission units and create enforceable emission limits. However, as discussed in response to comment I.3.a, Region 10 has imposed additional source testing requirements for incinerators and required the application of more conservative emission factors for sources not subject to source testing. For more discussion on source testing see responses to comments in I.3.a and M.2.a-e.

M. CATEGORY – MONITORING AND RECORDKEEING REQUIREMENTS

M.1 SUBCATEGORY – GENERAL

Comment M.1.a: Commenters express concern about monitoring provisions with respect to pollutants for which Shell is a synthetic minor source and request that Region 10 require monitoring of actual emissions and not just fuel usage.

Response M.1.a: The commenters have provided no information to indicate that the required monitoring of operations (e.g. fuel usage) will not be adequate. Region 10 believes that the fuel monitoring requirements and use of permit-derived and specified emission factors provide a reliable basis for determining emissions and thus compliance with emission limits. For those emission units employing air pollution control equipment, Permit Conditions F.3 and F.4 require continuous parametric monitoring – temperature, urea feed, and catalyst activity for SCR and temperature and catalyst activity for the oxidation catalyst. See responses to comments J.1.a and M.3.b. Region 10 believes the monitoring prescribed is an effective means for ensuring that the controls are working properly and achieving the required emissions reductions.

Comment M.1.b: Commenters state that, in the event actual emissions are not monitored, Region 10 should require monitoring of fuel consumption using a fuel flow analyzer device.

Response M.1.b: The Draft Permit required that a fuel flow meter be employed to continuously measure fuel combusted by each combustion source or common group of combustion sources except for the Kulluk emergency generator, heaters and boilers (all vessels), seldom used sources (all vessels), and OSRV work boats. In response to comments, Region 10 has revised the fuel monitoring requirements so that Shell is now required to use a fuel flow meter to measure fuel combusted by heaters and boilers. The remaining excepted sources are expected to generate less than 10% of NO_X emissions. For the combustion sources not equipped with fuel flow meters, the permit requires Shell to quantify fuel combusted by other means as specified in Permit Condition F.2.3.2. Specifically, Shell must measure the fuel combusted using the fuel tank sight glass, by manually measuring the amount of fuel in the tank using a graduated dip stick, or by measuring the fuel combusted using a fuel tank gauge. Shell is also required to make note of the start and end times of the activity during which the fuel is consumed (Permit Condition F.2.2.3) so that a fuel consumption rate (gal/hr) can be calculated (Permit Condition F.2.2.4). The alternative methods for measuring fuel use by the small and seldom used emission units in this case are reliable and the commenters have provided no information to indicate that the required techniques for monitoring fuel usage will not be sufficiently accurate to ensure compliance with permit requirements

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Comment M.1.c: Commenters note that the Draft Permit establishes hourly emission limits for NO_X and daily emission limits for PM in order to ensure compliance with the NAAQS. The commenters assert that the corresponding monitoring and reporting requirements are not adequate to demonstrate compliance with these hourly and daily limits. Specifically, the commenters take issue with the requirement that Shell report hourly and daily calculations once each week. The commenters contend that this is not sufficient to demonstrate compliance with hourly and daily limits on a weekly basis, and request that, at a minimum, compliance with PM emission limits be demonstrated on a daily basis.

Response M.1.c: Although Shell is required to calculate and record the quantity of emissions generated for a given week by the Friday following the conclusion of the week, the calculations Shell performs each week are to determine the NO_X emissions for each hour and the PM emissions for each day for the previous week. In other words, although Shell is required to perform the calculations on a weekly basis, the data generated will be in the same terms as the emission limits—hourly or daily, as applicable. Moreover, the relevant data used in the calculations is generated more frequently than weekly. For example, Shell is generally required to continuously measure and record, on an hourly basis, the fuel consumed by each emission unit or group of emission units. Data for the SCR and oxidation catalyst systems are collected once every 15 minutes to assess whether the control device is operating as intended. This means that Shell is collecting data each hour to determine emissions for that hour. Sometime each week, Shell is required to check the CO and NO_X concentration in the exhaust stack downstream of the control equipment to assure that emission reductions are being achieved that are representative of the emission factor being employed. The permit requires Shell to perform the calculations to quantify hourly NO_X emissions and daily $PM_{10/2.5}$ emissions between Sunday morning (beginning of the following week) and Friday night. Shell is required to process data from numerous emission units across multiple vessels for 168 individual hours (24 hrs. x 7 days). Region 10 imposed the weekly requirement to allow Shell adequate time to perform all calculations, record the results, and organize the results in a central location. As soon as emission rates are recorded each Friday, Shell is required to report any exceedances as a deviation consistent with Permit Conditions A.17 and A.18. The commenters have not provided any information to show how conducting and recording calculations on a weekly basis, where the resulting calculations are in terms of the relevant emission limits, does not assure compliance with the emission limits.

Comment M.1.d: Commenters state that because the NO_X emission rates presumably vary hour by hour, using emission factors based on a one-time stack test conducted at the beginning of (in some cases only the first) the drilling season does not ensure continuous compliance with an hourly limit. The commenters assert there is no guarantee that these hourly limits can be complied with for each hour of operation and that the hourly emissions will stay at the emission rates modeled without more precise monitoring requirements.

Response M.1.d: Of the emission units required to be tested, only the dock cranes engines are to be tested only prior to the first season. All other engines that are to be tested will be tested prior to each of first two drilling seasons.

For those emission units that together constitute 91 percent of the NO_X emissions, the Region is requiring Shell to employ a stack test-derived emission factor to determine NO_X emissions. The emission factor is based upon worst-case emissions observed across three load conditions. For those engines for which Shell is not required to develop and employ a stack test-derived emission factor, Region 10 is revising the final the permit (Tables D.2.1 and D.2.2) in response to comments to require Shell to employ a more conservative emission factor. This emission factor is the 90th percentile value of stack test results for similar engines on the Discoverer and its Associated Fleet.

In response to comments, Region 10 has also reconsidered the 3 lb/ton NO_X emission factor for incinerators. The origin of this emission factor is AP-42. After further consideration, the Region is requiring Shell to stack test the incinerators to be installed at maximum capacity to determine PM, CO, and NO_X emission factors. This approach will better assure that the emission factor used to calculate emissions captures short-term fluctuations in emissions that could influence 1-hour ambient impacts.

M.2 SUBCATEGORY – EMISSION FACTORS

Comment M.2.a: Commenters notes that for emission units that are not subject to source testing, the Draft Permit relies on emission factors set forth in Tables D.2.1 and D.2.2. Because this Draft Permit does not specify equipment make, model, and capacity, the commenters believe that it is critical to require source testing for all permitted emission sources at the beginning of the drill season. In the absence of source testing for all emission sources, the commenters state that Region 10 must ensure that the emission factors are the overall worst-case emission factors in order to ensure adequate protection of the NAAQS, and to ensure a reasonable margin of safety in demonstrating compliance with the NAAQS and synthetic minor permit limits. Commenters add that if CEMS are not feasible, Region 10 must require more frequent stack testing (e.g., at the beginning of *each* season from every source).

Response: The commenters are correct that the permit does not authorize construction and operation of specific emission units down to the make, model and capacity. However, Shell has provided Region 10 with information that identifies the general purpose of each unit or group of emission units and the expected capacities of each emission unit or group of units. As described in response to comments L.3.a and M.2.c, Region 10 is using reasonably conservative emission factors for calculating emissions from these units that are not required to be tested. Regarding the frequency of testing, if stack test results show 20% or more variability in the emission factor results from the most recent two tests, Shell is required to conduct stack tests every 2 years. If variability is less than 20 percent, testing shall be conducted every 5 years. In the absence of information suggesting otherwise, Region 10 believes that the testing schedule

established in the Kulluk Permit will result in updated emission factors that, when used as required to calculate emissions, will provide a reasonable assurance of compliance.

Comment M.2.b: Commenters question whether the emission factors for the boilers and heaters in Tables D.2.1 and D.2.2 of the Draft Permit will ensure adequate protection of the NAAQS. The commenters cite to the BACT limit for boilers in the Discoverer permit as higher than the NO_X and PM emission factors used in the Draft Permit. Specifically, the NO_X and PM BACT limits in the Discoverer permit are equivalent to 26.6 lb/10^3 gal of NO_X and 3.1 lb/10^3 gal of PM, and are based on stack test data from the actual units. In comparison, the emission factors in the proposed permit for the Kulluk are 20 lb/10^3 gal of NO_X and 3 lb/10^3 gal of PM, and are based on AP-42. The commenters state that it is not reasonable to assume a lower emission rate for boilers on the Kulluk and Associated Fleet when the Discoverer permit represents what the Region determined to be the best available controls for these units. The commenters assert that Region 10 must require source-specific emission factors for these units, or revise the emission factors upward to reflect the worst-case boilers that could potentially be used onboard the Kulluk and Associated Fleet.

Response: Regarding the PM emission factors, the commenters incorrectly reference the Draft Permit's PM emission factor for boilers and heaters as 3 lb/10^3 gal; the emission factor in Tables D.2.1 and D.2.2 is 3.3 lb/10^3 gallons which is slightly higher than the boiler and heater emission factor in the Discoverer permit. The 3.3 lb/10^3 gal PM emission factor in the Kulluk Permit is also much greater than the 0.5 lb/10^3 gal emission factor Shell observed while testing the boilers on the Discoverer.[11] The emission factor is used to quantify emissions from each specific unit. Therefore, the use of a higher emission factor will result in reporting a greater amount of emissions than may in fact be emitted. The commenters have not shown how overestimating emissions jeopardizes protection of the NAAQS.

Regarding the boiler and heater NO_X emission factor, the commenter is correct that the emission factor used in the Kulluk permit is lower than the emission factor in the Discoverer permit. Stack testing of boilers made available by Shell subsequent to the setting of the Discoverer BACT limit shows an average emission factor of 13.1 lb/10^3 gal which is less than the 20 lb/10^3 gal AP-42 emission factor used in the Kulluk Permit which reflects some conservatism.[12] The Kulluk emission factor is lower than the Discoverer BACT limit for similar equipment, but is higher than available test data for a similar source. This data suggests that Shell will actually be emitting less PM than reported by employing a higher emission factor. Therefore, the commenters have not shown how the Kulluk emission factor jeopardizes protection of the NAAQS.

Comment M.2.c: Commenters question whether the emission factors for the emergency generators, seldom-used engines, and oil spill response vessel (OSRV) workboats are

[11] 0.5 x10^3 lb/gal = (3.55 x10^{-2} lb MMBtu) x (MMBtu/1x10^6 Btu) x (131130 Btu/gal) x (1000). See June 16, 2011 email from Rodger Steen to Dan Meyer.
[12] 13.9 x10^3 lb/gal = (1.06 x10^{-1} lb MMBtu) x (MMBtu/1x10^6 Btu) x (131130 Btu/gal) x (1000). See June 16, 2011 email from Rodger Steen to Dan Meyer.

sufficiently conservative. Because the NO_X and PM emission factors for these units are based on stack testing for Discoverer sources, the commenters doubt that the data truly reflect the worst-case emissions sources for these source types. The commenters believe that this is particularly important considering that these units are not subject to source testing requirements. The commenters note that the sources contribute between 5-10 percent of NO_X and PM emissions, with the OSRV workboats representing a significant share of these emissions. The commenters state that considering that the maximum modeled concentration for $PM_{2.5}$ is near the NAAQS (within 3% of the 24-hour average NAAQS) there is little room for uncertainty.

Response: In response to comments received, Region 10 reevaluated the NO_X and PM stack test results for the Discoverer and Associated Fleet, which Region 10 relied on to establish emission factors for similar units on the Kulluk and the Associated Fleet. To add a measure of conservatism to Shell's emission calculations for those engines which are not required to be tested, Region 10 has revised the emission factors for engines greater than 600 hp to reflect a value at least equal to the 90th percentile value for the tests conducted by Shell on the Discoverer and Associated Fleet. Kulluk Permit Tables D.2.1 and D.2.2. This change results in a 78 and 113 percent increase to the NO_X and PM emission factors, respectively, for engines greater than 600 hp. For engines less than 600 hp, Region 10 determined that the NO_X and PM emission factors in the permit already exceed 90th percentile values, which provides an adequate margin of safety.

M.3 SUBCATEGORY – CONTINUOUS EMISSION MONITORING

Comment M.3.a: Commenters contend that the only way to adequately ensure compliance with hourly limits is through the use of continuous emissions monitoring systems (CEMS), and assert that the Region must require the use of CEMS, or equivalent, for NO_2 compliance.

Response: As discussed in response to comment J.1.a, CEMS are an effective means of ensuring compliance with short-term emission limits, but CEMS are not the only means. Shell's planned exploratory operations are unusual as compared to other sources because the emission units consist of more than 50 engines and generators on the Kulluk and a fleet of numerous support vessels. There are practical considerations to requiring CEMS including that the emission units, control equipment, and monitoring equipment will be operating in a remote, harsh, Arctic environment, deck space on board the vessels is limited, and CEMS are expensive to purchase, maintain, and operate.

Region 10 is confident that the monitoring and recordkeeping prescribed in the permit assures compliance with emission limits.

Comment M.3.b: Commenters express support for the use of SCR controls, but are concerned about how the controls will function in Arctic conditions. The commenters note that Region 10 believes the SCR and OxyCat systems will be effective if inlet temperatures are high enough, the urea feed is operating, and the catalysts are active. Commenters explain that the proper functioning of these controls is essential to

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compliance with the NO_2 and PM NAAQS, and request that CEMS be used for these systems instead of weekly measurements with a portable monitoring device.

Response: Region 10's determination that the monitoring required in the permit will verify that the control devices are operating properly takes into account that the Kulluk will be operating in arctic conditions. Region 10 believes that the continuous monitoring system required by the permit will ensure the control equipment is operating properly. Temperature and urea feed will be monitored. Temperature measurements will be compared against temperatures measured during emission factor verification source testing. The weekly concentration checks using a portable monitor are not considered alternatives to CEMS, but instead serve as a verification that the control equipment is operating properly. As discussed in the Statement of Basis (at 45), weekly concentration checks should be an effective frequency for confirming whether the catalysts are still active. Temperature or concentration deviations from those measured during testing must be corrected and reported. The overall monitoring strategy is a reasonable and appropriate alternative to CEMS in this specific application. See response to comments in subcategories M.1 and M.2 and response to comment O.1.

Comment M.3.c: A commenter at the public hearing requested that Region 10 require the use of CEMS. The commenter expressed concern about self-monitoring of pollution in the OCS, and cited to limits on fuel use and the amount of waste combusted. Another commenter stated that because of uncertainties in the model, Region 10 should require installation and operation of CEMS for at least nitrogen dioxide, particulate matter and carbon dioxide.

Response: Region 10 would first like to clarify that the permit does not allow Shell to consider the amount of waste combusted in calculating emissions generated by waste incineration. The permit requires Shell to calculate emissions assuming the incinerators are operating at maximum capacity for all time periods that operation is allowed. Permit Condition D.4. Contrary to the commenter's assertion, monitoring emissions using CEMS will have no bearing on the accuracy of the new model or algorithms used by Shell. See comment I.1.a regarding the need for CEMS given model uncertainty. See comment O.1 regarding Shell self-monitoring. See comment I.1.c with respect to how fuel monitoring is an integral part of a monitoring and recordkeeping system that provides for a reasonable assurance of compliance with emission limitations.

N. CATEGORY – REPORTING REQUIREMENTS

Comment N.1: Commenters request that Region 10 add a condition to the permit requiring Shell to submit all of its monitoring results to Region 10, citing to Section 504(a) of the Clean Air Act. The commenters further request that, in light of the 120 day operating window for this permit, these submissions be made every 60 days (or twice) while the operations are occurring so that Region 10 has time to take enforcement action if a problem arises during the course of the operations.

Response: The permit requires the permittee to submit to Region 10 a semi-annual operating report by August 31 and February 28 of each year. Permit Condition A.19.1. That report must include reports of any required monitoring, including all emission calculations required by the permit. Permit Condition A.19.1.3. This is consistent with the statutory and regulatory requirements for Title V permits. *See* CAA § 504(c); 40 CFR § 71.6(a)(3)(iii)(A). With respect to the request that Region 10 require reporting twice during the period of operations so that Region 10 has timely information if problems arise during the course of operations, Region 10 notes that the permit also requires the reporting of all excess emissions and deviations from permit requirements no later than 30 days after the end of the month in which the deviation occurs, and in many cases sooner than that. *See* Permit Conditions A.17 and A.18. Region 10 believes these conditions ensure that Region 10 will have timely information in the event problems arise during the drilling season and that the requirement to submit monitoring reports more frequently than currently provided for in the permit is therefore unnecessary.

O. CATEGORY – COMPLIANCE MONITORING AND ENFORCEMENT

Comment O.1: Commenters request that Region 10 exercise its authority to inspect Shell's exploration fleet to ensure compliance with permit requirements both well in advance of and during the operating season. The commenters state that when North Slope Borough staff toured the Kulluk in March 2011, the rig was not in a drill ready condition and that upgrades and improvements that had been announced were not complete. An inspection prior to the first drilling season, the commenters continue, would provide adequate time to undertake appropriate repairs or upgrades if the inspection identify problems with any source or equipment and would be easy to conduct because the Kulluk is currently in Seattle. The commenters contend that a robust inspection program is necessary to ensure that the air emission controls are actually implemented and effective and that there is independent verification of compliance with permit provisions.

Response: Region 10 has authority to conduct inspections of the Kulluk. See CAA § 114; 40 CFR § 55.6(a). Because Shell is not required to meet the emission limits and control requirements in the permit until the Kulluk becomes an OCS source in the Beaufort Sea, however, Region 10 does not necessarily agree with the commenters that inspecting the Kulluk before the first drilling season is the most effective use of agency resources. Such an inspection would only indicate how far along Shell is in installing identified emission units and required control equipment and would not necessarily indicate whether that equipment will meet permit requirements while the Kulluk is an OCS source.

In addition, inspections are not the only way to determine whether Shell is operating in compliance with permit requirements. The permit contains testing, monitoring, recordkeeping, and reporting requirements to provide information regarding whether Shell is operating in compliance with permit conditions. For example, the permit requires stack testing of most emission units prior to initial operation. Permit Condition E. Shell is required to report all permit deviations to Region 10 and to submit a semi-

annual operating report that includes reports of all required monitoring. Permit Conditions A.17, A.18, and A.19.

In addition, the Kulluk Permit includes mechanisms that enhance the reliability of Shell's self-monitoring. The permit requires Shell to install, maintain, and operate devices to measure and record fuel usage, operating loads, and other emissions-related data. Permit Condition F. Under Section 113(c)(2)(C) of the CAA, it is a criminal offense to falsify, tamper with, render inaccurate, or fail to install any monitoring device or method required under the Clean Air Act. All reports and records required to be submitted to Region 10 under the permits must be certified by a responsible official for Shell as to their truth, accuracy, and completeness. Permit Condition A.12. Again, Shell could be subject to criminal liability for falsifying these records or reports.

Although self-monitoring by Shell is a component of ensuring Shell is operating in compliance with the permit, as indeed it is for other sources subject to Clean Air Act requirements, Region 10 will have an active oversight role. In the event Shell violates its permit, Region 10 has broad authority under Section 113 of the CAA to issue compliance orders, assess administrative penalties, and request the Attorney General to bring a civil or criminal action, as appropriate. Region 10 intends to conduct comprehensive compliance evaluations, including on-site inspections, as appropriate and consistent with EPA policies. See Clean Air Act Stationary Source Compliance Monitoring Strategy, April 2001. http://www.epa.gov/compliance/resources/policies/monitoring/caa/mss.pdf

In addition, Region 10 has authority to observe the conduct of source tests of any emission unit and will review all source test reports to verify that the proper procedures and equipment were used to measure emissions from the emission units and to evaluate compliance with the permit terms and conditions. Region 10 will also be reviewing periodic reports and episodic (e.g. deviation) reports submitted under the permit. Key compliance information will be available via EPA's Enforcement and Compliance History Online (ECHO) website. http://www.epa-echo.gov/echo/ The public also has a right to request this information under the Freedom of Information Act (FOIA), 5 U.S.C. § 552. In some instances, Region 10 may withhold all or a portion of inspection reports and other information in accordance with FOIA, 5 U.S.C. § 552(b).

Comment O.2: Commenters state that if Region 10 does not have the requisite resources to dedicate to the arctic OCS, Region 10 should coordinate with BOEMRE or other federal agencies to ensure compliance with air permit conditions.

Response: Region 10 will coordinate with other federal agencies as necessary and appropriate to ensure appropriate oversight of Shell's operations under the permit.

Comment O.2.a: Commenters request that Region 10 promptly share the records, reports, and information gained from physical inspections of the Kulluk and Associated Fleet with the public as authorized by regulation.

Response: As discussed above in response to comment O.1, key compliance information will be available via EPA's ECHO website. http://www.epa-echo.gov/echo/ The public also has a right to request this information under FOIA.

Comment O.4: One commenter asked who was going to be monitoring Shell's operations and whether it is going to be self-monitoring. The commenter also asked whether there are going to be marine mammal or other observers.

Response: As discussed in response to comment O.1 above, monitoring of Shell's operations under the permit will be conducted through a combination of self-monitoring by Shell, inspections by Region 10, and the review of reports, source test data, and other information by Region 10. Marine mammal observers or other observers may be required by other regulatory programs or agreements but are not a component of compliance assurance under this Clean Air Act permit.

P. CATEGORY – AMBIENT AIR BOUNDARY

Comment P.1: Commenters contend that Region 10's decision to set the ambient air boundary at 540 meters from the center of the Kulluk is arbitrary and unlawful and conceals the true maximum impacts of Shell's emissions. The commenters state that, to comply with EPA's longstanding policy on ambient air, Region 10 must set the ambient air boundary at the hull of the Kulluk, noting that EPA has defined "ambient air" as "that portion of the atmosphere, external to buildings, to which the general public has access." The commenters state that, under EPA policy, an exemption from ambient air is available only for the atmosphere over land owned or controlled by the source and to which public access is precluded by a fence or other physical barriers, and that Shell does not own or control the area within the 540 meter radius (500 feet from the hull of the Kulluk) and it cannot effectively prevent public access. The commenters continue that Shell's proposal to implement a public access control program to "locate, identify and intercept the general public" does not constitute the fence or other physical barrier excluding the public that EPA's policy requires.

Response: Ambient air is defined as "…that portion of the atmosphere, external to buildings, to which the general public has access." 40 CFR § 50.1(e). Region 10 agrees with the commenters that EPA's longstanding interpretation is that "exemption from ambient air is available only for the atmosphere over land owned or controlled by the source and to which the public access is precluded by a fence or physical barrier." See Letter from Administrator Douglas M. Costle, EPA, to Senator Jennings Randolf, Chairman, Environment and Public Works Committee, re: Ambient Air, dated December 19, 1980. EPA has observed that "control" under this criterion means that "the source has certain rights to use of the land/property, including the power to control public access to it." Memorandum from Steven D. Page, Office of Air Quality Planning and Standards (OAQPS), re: Interpretation of "Ambient Air" in Situations Involving Leased Land under the Regulations for Prevention of Significant Deterioration, Attachment at 3, dated June 22, 2007 (Leased Land Guidance). Region 10 believes that excluding the area within a

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safety zone established by the United States Coast Guard from ambient air is consistent with this interpretation.

As discussed in the Statement of Basis (at p. 40), Shell modeled emissions from the Kulluk beginning 500 meters from the hull of the Kulluk and assumes that the Coast Guard will impose a safety zone of this distance around the Kulluk to exclude the public from the area in which Shell will be conducting its main operations. Shell therefore agreed that Region 10 would require as a condition of operation under the permit that Shell have in place at all times of operation as an OCS source a safety zone of at least 500 meters from the hull of the Kulluk within which the Coast Guard prohibits public access. See Permit Condition D.5 and D.6.

The conditions of the permit provide sufficient assurance that the general public will not have access to the area inside the safety zone, consistent with the two primary criteria EPA has used to determine when such an exclusion may apply. Given that the permitted activities occur over open water in the Arctic, these criteria must be adapted to some extent when applied to this environment, but they are still satisfied in this instance in a manner sufficient to effectively preclude public access from the safety zone.

Region 10 recognizes that Shell does not "own" the areas of the Beaufort Sea on which the Kulluk will be operating as might be the case for a stationary source on land. Shell has a lease authorizing the company to use these areas for the activities covered by the permit. A Coast Guard safety zone establishes legal authority for excluding the general public from the area inside the zone. EPA has previously recognized a safety zone established by the Coast Guard as evidence of sufficient ownership or control by a source over areas over water so as to qualify as a boundary for defining ambient air where that safety zone is monitored to pose a barrier to public access. Letter from Steven C. Riva, EPA Region 2, to Leon Sedefian, New York State Department of Conservation, re: Ambient Air for the Offshore LNG Broadwater Project, dated October 9, 2007 (Broadwater Letter).

To meet the second of the criteria applied by EPA and ensure the source actually takes steps to preclude public access, Shell proposed and Region 10 required as a condition of operation under the permit that Shell develop in writing and implement a public access control program to locate, identify, and intercept the general public by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by Coast Guard regulations from entering the area within 500 meters of the hull of the Kulluk. Region 10 believes that, for the overwater locations in the arctic environment at issue in this permitting action, such a program of monitoring and notification is sufficiently similar to a fence or physical barrier on land such that the area within the Coast Guard safety zone qualifies for exclusion from ambient air. See Broadwater Letter at 2.

Shell therefore appropriately excluded the area within 500 meters of the hull of Kulluk from the source impact analysis it conducted to meet the requirements of the applicable CAA regulations.

Comment P.2: Some commenters contend that Region 10's approach to setting the ambient air boundary for the Kulluk is inconsistent with the approach Region 10 took in setting the ambient air boundary for Shell's Discoverer drillship in previous determinations. The commenters state that, when Shell initially applied for air permits for the Discoverer drillship, the company's application materials included an ambient air boundary of 900 meters and that Shell assumed that the ambient air would begin at this distance because it had "submitted a request to the US Coast Guard, for issuance of a safety exclusion and equipment protection zone surrounding the Discoverer . . . ." Nevertheless, the commenters state, in issuing permits to Shell for the Discoverer drillship in 2010, Region 10 required Shell to model impacts from the hull of the Discoverer, outward, yet Region 10 is now indicating that it will allow Shell to model impacts for the Kulluk starting 340 meters from the center of the Kulluk. The commenters allege that if Region 10 were to recognize that the edge of the hull is the appropriate boundary, Shell has not demonstrated that its operations will not cause a violation of air quality standards in the "ambient air" and that Shell has in fact stated that maximum modeled impacts occur on or near the 340 meter boundary, indicating likely greater impacts inside of that boundary.

Response: The commenters are correct that Shell's February 2009 application for an OCS/PSD permit for operations for the Discoverer in the Chukchi Sea did request an ambient air boundary based on a Coast Guard safety zone. Shell later withdrew that request and the 2010 Permits for the Discoverer drillship issued by Region 10 therefore did not base the ambient air boundary on a Coast Guard safety zone, but instead assumed that ambient air began at the hull of the Discoverer. In response to the remand from the Environmental Appeals Board, Shell subsequently submitted modeling for the Discoverer demonstrating compliance with the NAAQS based on a Coast Guard safety zone and the final permits issued by Region 10 for the Discoverer in response to the remand require Shell to obtain a Coast Guard safety zone as a condition of operation under the permits. See Supplemental Response to Comments for the Discoverer Drillship permits, dated September 19, 2011, at 41.

Similarly, in its application for a permit for the Kulluk, as discussed in the Statement of Basis (at p. 40), the application materials submitted by Shell modeled emissions from the Kulluk beginning 500 meters from the hull of the Kulluk and assumes that the Coast Guard will impose a safety zone of this distance around the Discoverer to exclude the public from the area in which Shell will be conducting its main operations. The permit therefore authorizes operation only if the Kulluk is subject to a currently effective safety zone established by the Coast Guard. Because the area within the safety zone is not considered ambient air, demonstrating compliance with the NAAQS within that zone is not required. Thus, Region 10 acted consistently with Shell's application materials for the Discoverer permits, Shell's application materials for this permit, legal requirements, and EPA guidance in determining the ambient air boundary based on a Coast Guard safety zone. See also response to comment P.1.

Comment P.3: Several commenters express concern that Shell had not provided and Region 10 has not required an analysis showing what air quality would be within the safety zone and state that the size of the zone is arbitrary. Commenters assert that

workers within that zone will not be protected and that the federal agencies are not working together to ensure healthy air. Commenters state that residents of the North Slope serve as marine mammal observers and members of the communications team on the drillship and will be subjected to below standard air quality. These commenters contend that emission levels throughout the OCS, including within the safety zone, should meet lawful levels and express concern that winds would take air pollution farther than 500 meters from the ship. Commenters state their concern for what this decision means for air quality on the OCS where local communities hunt and fish.

Response: Region 10's understanding is that Marine Mammal Observers will be employees of Shell or Shell contractors. 2012 Revised Camden Bay Exploration Plan at 11-4 (Marine Mammal Observers provide an opportunity for local hire). Under established EPA policy, contractors, subcontractors, and employees that are expressly granted access to a site by the entity with control over the site are not considered the general public vis-à-vis that entity, but instead are considered "business invitees." See Memorandum from Stephen D. Page, Director OAQPS, re: Interpretation of "Ambient Air" in Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD), dated June 27, 2007, Attachment at p. 5. Their presence within the Coast Guard safety zone thus does not deprive that area from qualifying for exclusion from ambient air. See also response to comments P.1 and P.4.

Comment P.4: Commenters contend that allowing OCS sources to establish ambient air boundaries in the Arctic based on safety zones raises concerns regarding the cumulative impacts to offshore air quality that several such operations with ambient air quality boundaries would have on air quality. The commenters cite to a Government Accounting Office Report, GAO, EPA's Ambient Air Policy Results in Additional Pollution, July 1989 (available at: http://archive.gao.gov/d26t7/139349.pdf) and assert that that EPA has been subject to scrutiny for creating ambient air boundaries in the first instance because they allow for greater air quality deterioration. The commenters ask Region 10 to explain why this boundary works in the Arctic and how Region 10 arrived at the decision to allow more pollution instead of less, particularly in light of the heavy use of offshore areas by subsistence communities. Commenters expressed concern about what Region 10's decision means for air quality on the OCS where people hunt and fish.

Response: Safety zones are established by the Coast Guard based on safety considerations, not air quality considerations. See, e.g., 75 Fed. Reg. 803 (January 6, 2010) ("The purpose of the temporary safety zone is to protect the DRILLSHIP from vessels operating outside normal shipping channels and fairways. Placing a temporary safety zone around the DRILLSHIP will significantly reduce the threat of allisions, oil spills, and releases of natural gas, and thereby protect the safety of life, property, and the environment")(capitalization in original). However, because such a safety zone combined with Shell's public access control program has the effect of restricting the general public's access to the relevant area, as discussed in response to comment P.1, Region 10 believes the presence of a safety zone supports excluding the area inside the zone from ambient air for air quality purposes consistent with prior EPA interpretations of its regulations.

The GAO report cited by the commenters focused primarily on concerns with land acquisition to increase the size of the ambient air boundary and thus as a pollution control technique, which is not implicated in the application for and the establishment of a Coast Guard safety zone based on safety considerations. As discussed above in response to comment P.1, EPA has previously determined that a Coast Guard safety zone is an appropriate basis for establishing an ambient air boundary within which demonstration of compliance with the NAAQS is not required. As discussed in Sections 4 and 5.4 of the Statement of Basis and the Technical Support Document, emissions under this permit are not expected to cause or contribute to violations of the NAAQS in any area that constitutes ambient air, including in areas where local communities regularly conduct subsistence activities. With respect to cumulative impacts, please see the responses to comments in Category Y.

Comment P.5: Commenters request that, if the ambient air boundary remains in place, Region 10 examine options for requiring monitoring at 500 meters from the Kulluk for the first two weeks of the drilling season. The commenters state they are not aware of any reasons why it would not be technologically feasible to operate monitoring equipment from a moored vessel.

Response: Region 10 believes that the background monitoring data that have been collected in conjunction with the air quality modeling conducted to support this permit action adequately demonstrates that emissions under the permit will not cause or contribute to a violation of the NAAQS. The emission limits and associated monitoring, recordkeeping, and reporting requirements in the permit are adequate to verify that the NAAQS will not be exceeded and Region 10 therefore does not believe the additional monitoring requested by the commenters is warranted. Given the challenges of conducting ambient air monitoring in harsh, remote arctic conditions, Region 10 does not believe it is appropriate to require monitoring to be conducted on a vessel at the ambient air boundary. Region 10 believes collection of background air quality data within a closer proximity to a community provides more beneficial information on potential health-based exposure than a monitor located well offshore.

Q. CATEGORY – GENERAL COMMENTS ON AMBIENT AIR QUALITY ANALYSIS AND SUPPORTING DATA

Comment Q.1: Commenters state that the statute and applicable regulations dictate that Region 10 may not issue Shell a Title V operating permit unless it "includes conditions that will assure compliance with all the requirements of [the Clean Air Act] at all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements . . . ." citing to 42 U.S.C § 7661c(c) and § 7661c(a); 40 CFR §§ 71.2, 71.6(a)(1), 71.6(c)(1). These commenters contend that Shell has not demonstrated its ability to comply with all applicable requirements and that Region 10—which premised the draft permit conditions on Shell's modeling assumptions—has not established adequate permit conditions sufficient to guarantee compliance.

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Response: As discussed in the responses to comments in Categories Z and GG, in the Statement of Basis, and in the Technical Support Document, the permit includes conditions that assure compliance with all applicable requirements of the Clean Air Act at all authorized locations. Contrary to the commenters' assertion, there is no requirement that permit conditions be sufficient to "guarantee" compliance. Rather, the permit must contain terms and conditions that provide a reasonable assurance of compliance with all applicable requirements.

Comment Q.2: A commenter states that the modeling used to support the permits is unproven and asks that Region 10 ensure that the model is statistically sufficient to justify the permitting decision.

Response: The basic model used to support the permits, AERMOD, is an EPA guideline model that has been approved for use after notice and comment rulemaking. See 40 CFR Part 51, Appendix W, Section 4.2.2(b). Region 10 approved two permit-specific algorithms for use with the guideline model: COARE for the pre-processing of meteorological data and the Plume Volume Molar Ratio Method (PVRM) that is considered on a case-by-case basis as a non-regulatory default option under Section 5.2.4.d of Appendix W. Approval of these alternatives was subject to rigorous review. See also the responses to comments in Category R.

Comment Q.3: Commenters state, although the amount of pollution that will be released under the permit has been greatly reduced, it is still very close to exceeding the air quality standards and there are still significant concerns about whether the permits comply with EPA's legal obligations. The commenters are concerned about the modeling that was done for this permit and that the pollution that will be emitted could potentially impact not just the 500 meters around the Kulluk itself but the communities throughout the Arctic, including the offshore areas where local communities spend much of their time throughout the year.

Response: As discussed in the Technical Support Document, the modeling that has been conducted demonstrates that the NAAQS will be protected in all areas that are considered ambient air, including areas where local communities regularly conduct subsistence activities. Although it is true that the highest modeled concentrations are close to the NAAQS for some pollutants, it is also true that these results reflect many conservative assumptions, such as the Kulluk remaining in the same location for three years, a situation that is unlikely to occur, and the use of onshore background data to reflect offshore air quality. See responses to comments V.1.e and V.2.a

Comment Q.4: A commenter states that the models show that the concentration of air pollutants in the local communities resulting from Shell's operations would be well below the national ambient air quality standards. The commenter asserts that this is true even when taking into account background concentrations of air pollutants that are not related to Shell's operations and the use of conservative assumptions such as all four proposed exploratory wells being drilled at the same location, which would not actually occur.

Response: Region 10 agrees that, considering the emissions from Shell's operations in conjunction with background air quality, concentrations will be well below the NAAQS in the onshore communities and will be below the NAAQS in all areas that are considered ambient air.

Comment Q.5: A commenter from Point Hope expressed a general concern with the air quality analysis and whether the analysis supporting the permits had considered ship traffic in the baseline. The commenter states that there was no background air monitoring being conducted in Point Hope and asks that such monitoring be conducted so the community could better understand concerns. The commenter also asserts that the results of previous nuclear tests that shows that emissions stay up in the Arctic within the jet stream and accumulate, and is referred to as Arctic Haze. The commenter also expressed concern about the impact of emissions on subsistence users and notes that other oil companies with leases have expressed interest in getting permits. The commenter also asks where the data used is from.

Response: As discussed in Section 4 of the Statement of Basis, the Technical Support Document, and throughout this Response to Comments, the permit is supported by a demonstration that the authorized emissions will not cause or contribute to a violation of the NAAQS in all locations that constitute ambient air, including where subsistence activities are regularly conducted. The data relied on to support these permits comes from a variety of sources, and includes background monitoring data collected by Shell and other sources, emission data from stack tests and other available sources, and meteorological data collected by Shell and other sources, including the National Weather Service. Issuance of the permit does include consideration of existing emissions in the area through the use of background air quality data in the general vicinity of the proposed operations. Region 10 notes that Point Hope is located on the southern edge of the Chukchi Sea, hundreds of miles from the locations where operations will be conducted under the permit in the Chukchi Sea. Region 10 therefore does not believe it is appropriate to rely on background air quality monitoring in Point Hope in support of this permit action. Emissions from operations of other leaseholders will be considered if and when such leaseholders apply for Clean Air Act permits, and the public will have an opportunity to review and comment on any such permits. For discussion on subsistence activities, see response to comments in Category DD.

Comment Q.6: A commenter stated at a public hearing that he had tried looking into information in regards to the inventory and had inquired about other modeling information and had not received a response.

Response: The Region received a request from the commenter for modeling information and replied by contacting the commenter to discuss the request. The Region informed the commenter that the modeling files were stored electronically on multiple hard drives comprising more than 150 gigabytes of electronic storage space. The Region provided the commenter a summary list of all the modeling files to assist the commenter in identifying specific files for review, and also informed the commenter of the large size of

the modeling files and inquired as to the best way to deliver the files to the commenter. The Region did not receive a follow-up response from the commenter, but contacted the commenter again after receiving the comment.

R. CATEGORY – CHOICE OF MODEL

Comment R.1: A commenter states that EPA's use of the Coupled Ocean Atmosphere Response Experiment Meteorological Modeling Algorithm and the Plume Volume Molar Ration Method Nitrogen Dioxide Algorithm to predict the concentration of air pollutants emitting from Shell's operations and in the local communities is appropriate and that EPA has approved use of these models, albeit on a case-by-case basis.

Response: As described in more detail in response to Comment R.2, Region 10 agrees with the commenter that the use of AERMOD-COARE and PVMRM is appropriate.

Comment R.2: Noting that Region 10 is soliciting comments on the use of the non-guideline AERMOD-COARE model in these proposed revised permits, commenters state that given the limited comment period and the overlap with the Discoverer permits comment period, it is not feasible to provide comprehensive and appropriately technical comments on the model. The commenters contend that new COARE model is highly involved and explain that to review the details of the model and be able to provide technical comments and broader peer review would take more time than is being provided. The commenters assert that public input on this new model would be a valuable opportunity for broad peer review of the models used but that this opportunity is lost because Region 10 did not provide adequate time for review.

Response: Consistent with the requirements of 40 CFR § 52.21(l)(2).[13] Region 10 approved the use of the non-guideline COARE meteorological algorithm to predict air pollutant concentrations in the open-water arctic environment. Memorandum from Herman Wong, Region 10, to Tyler Fox, OAQPS, re: COARE Bulk Flux Algorithm to Generate Hourly Meteorological Data for Use with the AERMOD Dispersion Program; Section 3.2.2.e Alternative Refined Model Demonstration Approval Memorandum, dated April 1, 2011 (Region 10 AERMOD-COARE Approval Memorandum). The use of this algorithm was approved under the case-by-case alternative modeling provisions specified in EPA's modeling guidelines, 40 CFR Part 51, Appendix W, Section 3.2. Region 10 then sought and obtained concurrence from the EPA Model Clearing House on the Region's approval. See Memorandum from George Bridgers, OAQPS, to Herman Wong, Region 10 re: Model Clearinghouse Review of AERMOD-COARE as an Alternative Model Application in an Arctic Marine Ice Free Environment, dated May 6, 2011 (Model Clearinghouse Concurrence Memo). As provided in 40 CFR §§ 52.21(l)(2) and 52.21(q), Region 10 then provided notice and an opportunity for public comment on its approval of COARE in the context of this specific permit action. This included a 46-day period for public comment, longer than the 30-day comment period provided for in 40 CFR § 71.11(d) and 124.10. As explained in the response to comments for Category C, the 46-day period complies with all legal requirements. As demonstrated by the thoughtful comments received, Region 10 believes it provided sufficient time for commenters to address the issues in the Draft Permit, including the COARE algorithm.

Moreover, this model was used in support of both the draft Discoverer permits and the Kulluk Draft Permit, and both public notices refer to the same supporting documentation. Therefore, for those who chose to comment on both the Kulluk and Discoverer permits, including these commenters, the overlap provided a total of 60 days to review AERMOD-COARE prior to submitting comments on the Kulluk Draft Permit.

Comment R.3: Commenters question whether the performance evaluations used to assess the model are representative. After looking at the results from the three tracer sites, the commenters state that there is significant variation in model performance and contend that, if there is that much difference between the California and Louisiana sites, it stands to reason that conditions in the Arctic may be a lot different. Commenters state that differences in sea surface temperature, depth of the marine layer, sea surface roughness, among other things, could give substantially different results in an arctic environment, particularly with respect to the 1-hour NO_2 NAAQS. Based on the results of the performance evaluation presented in the Model Clearinghouse review and because this is the first time using this nonguideline modeling approach in the Arctic, the commenters ask Region 10 to require Shell to conduct additional tracer experiments off the North Slope before the final permit is issued and to include a permit condition that requires Shell to collect data for use in evaluating the performance of the AERMOD-COARE model. The commenters cite to language in EPA's approval memo stating that the EPA Model Clearinghouse recommended further investigation to "determine if other tracer gas experiments are available to evaluate AREMOD-COARE, especially for Arctic conditions."

Response: As discussed in the response to comment R.4 below, evaluation of AFROMD-COARE using the three tracer gas experiments indicate that the meteorological variables such as those mentioned by the commenters do not bias the model towards underestimates. Section 3.2.2.e in Appendix W states that an alternative refined model may be used provided that five criteria are met, including (a) that the necessary data bases (*e.g.*, tracer gas experiments) be available (Element 3); and (b) that appropriate performance evaluations have shown that the alternative refined model (e.g., AERMOD-COARE in this case) is not biased toward underestimation (Element 4). 40 CFR Part 51, Appendix W, § 3.2.2(e)(iii)-(iv). Region 10 determined that the tracer gas experiments conducted at Cameron, Louisiana, and Carpinteria and Pismo Beach, California, are representative of arctic conditions. The basis for this finding is that the experiments simulate over water dispersion, tracer gas concentrations were measured at the shoreline, and there was a range of positive air-sea temperature differences (i.e.,

[13] As discussed in the Technical Support Document (pages 5-7), the COA rules require the use of 40 CFR Part 51, Appendix W for a modeling analysis under the COA minor permit program. In addition, Region 10 believes it is appropriate to use the regulations and guidance for conducting an air quality analysis under the PSD program as a guide for an analysis submitted in connection with a Title V permit for a Title V temporary source. See Id. and Statement of Basis at 26-27. Subsequent references to the PSD regulations and guidance are cited for this same purpose.

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stable conditions) like what would be expected in the Arctic. Consequently, Region 10 concluded that these three tracer gas experiments were adequate for the AERMOD-COARE performance evaluation. Region 10 AERMOD-COARE Approval Memorandum, Section B.3; see also Model Clearinghouse Concurrence Memo.

Regarding the commenters' concern that the tracer gas experiments were not conducted in the Arctic, Region 10 recognizes that there are not tracer gas experiments for every geographic region, climatic region, or synoptic region for use in a performance evaluation. Region 10 AERMOD-COARE Approval Memorandum, Section B.3. This is particularly true for the Arctic given the harsh environmental and meteorological conditions in which such an experiment would have to be conducted. Nevertheless, Region 10 concluded that the tracer gas experiments relied on to support approval of the model are acceptable based on the similarity of the tracer gas experiments and the marine arctic air-sea temperatures. Id.

After evaluating Shell's demonstrations with respect to the five elements under Section 3.2.2.e in 40 CFR Part 51, Appendix W, Region 10 approved the AERMOD-COARE model as an alternative refined model to estimate emission impacts from marine heated combustion sources. AERMOD-COARE was subsequently used by Shell to make the required modeling analysis.

When approving Shell's use of this model, Region 10 determined that "Approval to use this alternative model is made on a case-by-case basis. Should a project proponent desire to use AERMOD-COARE in an Arctic marine ice free environment air permit project, a request must be made to R10 prior to the submission of an ambient air quality impact analysis...." Region 10 AERMOD-COARE Approval Memorandum, Section C.1. Hence, should other OCS projects be proposed in the Beaufort or Chukchi Seas, Region 10 will require each project proponent to justify the use of AERMOD-COARE and, if necessary, update the elements under 40 CFR Part 51, Appendix W, Section 3.2.2.e.

The commenter is correct that Region 10 recommended additional investigations to determine if other tracer gas experiments are available to evaluate AERMOD-COARE, particularly for arctic conditions, but none to date have been identified that have occurred in an arctic environment. Region 10 has accepted the Section 3.2.2.e demonstration and determined that the existing experiments provide an adequate basis for accepting the alternative model. Region 10 therefore does not believe it is reasonable to require Shell to conduct a tracer gas experiment in the Arctic followed by another performance evaluation.

Response to comment R.4 discusses the performance criteria and goals for an acceptable performance evaluation

Comment R.4: Commenters state that it is unclear from the permit record whether Shell tuned the COARE model with the available data sets and then used the same tuned model in the performance evaluation and that Region 10 must ensure, and make it known to the public, that Shell tested the model with an independent data set. The commenters assert that there is very little discussion of performance goals in the modeling evaluation so it is difficult to assess the model performance presented by Region 10. The commenters assert that, from a scientific perspective, the use of AERMOD-COARE is far superior to the OCD model, but state that does not necessarily mean it is accurate in this particular application. The commenters state that Region 10 must make it clear, from the outset, what the acceptable performance results must be, based on the available data (e.g., is it good enough to get within a factor of two or are the data good enough to demand results within 30 %) and be able to clearly demonstrate that the model is accurately predicting impacts to a reasonable degree and that the model is not under-predicting impacts.

Response: The commenters do not provide specific cases or examples of what they mean by tuning. The meteorology associated with Pismo Beach, California, and Cameron, Louisiana tracer gas experiments are shown in Table 2 and Table 4, respectively, of the Region 10 AERMOD-COARE Approval Memorandum. For example, in the Revised Air-Sea Temp (K) column, there are several hours of values highlighted in red because of inconsistencies between the air-sea temperature difference and the virtual temperature potential lapse rate. The virtual potential temperature lapse rate sometimes indicates a stable boundary layer (positive) when the air-sea temperature difference is unstable (negative). Either there was a low mixed layer not reflected by the mixing height measurements in the tables, or one of the measurements is not representative of the boundary layer profile. The previous Ocean Coastal Dispersion (OCD) model evaluation relied on a measured vertical temperature lapse rate and, so to be consistent with the earlier studies, this performance evaluation adjusted the air-sea temperature difference to be at least as stable as indicated by the virtual temperature lapse rate. Region 10 agreed that this adjustment by Shell was appropriate. This adjustment to the two data sets was carried over to all of the performance evaluations. Region 10 is not aware of other adjustments and the commenter has not identified any others.

As in previous model evaluations and analyses, Region 10 followed certain design criteria to determine model acceptability. In this particular case, the predicted AERMOD-COARE model concentrations, and the Cameron, Louisiana, and the Carpinteria and Pismo Beach, California, tracer gas experiment measurements were sorted and plotted as well as statistically analyzed. These plots and statistical analyses were used by Region 10 to conclude that AERMOD-COARE is not biased towards underestimates as provided in Element 4 in Section 3.2.2.e under Appendix W of 40 CFR Part 51. The procedures are used to evaluate how well the modeling method explains the frequency distribution of the observed concentration and measures the model's ability to explain the temporal variability of the observations. Generally, the approach with the least scatter would be preferred. See Region 10 AERMOD-COARE Approval Memorandum, Section B.4.b for additional description of the statistical evaluation procedures.

The texts, tables and graphics of the performance evaluation for five cases conducted by Shell using the three experiments are included with the Region 10 AERMOD-COARE Approval Memorandum in Section B.4. Table 1 lists the five cases. The graphics or figures reflect the scatter of the prediction-to-observation ratio results, including over

predictions and under predictions, when comparing the model results to actual predictions. Quantile-quantile (Q-Q) plots are shown in Figures 6 to 19 and details a 1:1 line and a factor of 2 line (i.e., 0.5 < ratio < 0.5) about the 1:1 line for prediction-to-observation ratios. A ratio on the 1:1 line reflects a perfect match. Ratios between the factor of 2 lines are preferred by EPA. The four plots in Figures 20 to 23 display the bias of the geometric mean (MG) and against scatter (VG). In each plot, there is MG = 1 line and a factor of 2 lines (i.e., 0.5 < MG < 2.0). On the horizontal axis, the MG = 1 separates model ratios (in terms of over prediction and under prediction). Table 8 provides a statistical summary of each data set (including all three data sets combined) for the five cases. The statistics analyzed and presented included geometric mean, standard deviation of geometric mean, bias about the geometric mean, scatter, geometric correlation coefficient, fraction within a factor of 2, and robust highest concentration (RHC). The RHC is frequently used by EPA to assess the model's ability to characterize the upper end of the frequency distribution. Section D.4.e in the Region 10 AERMOD-COARE Approval Memorandum summarizes the results in text format. Based on the plots and statistical analyses for the five cases, Region 10 believes AERMOD-COARE is not biased towards underestimates and better represents over water transport such as in the Beaufort Sea as compared to the OCD model. Region 10 agrees with the commenter that AERMOD-COARE is a "far superior" model from a scientific perspective.

With respect to concerns with the adequacy of time to review the model, please see response to comment R.2.

Comment R.5: Commenters state that the AERMOD-COARE model does not account for platform building downwash. Because the Kulluk is described as a conical drilling platform, the commenters assert, Region 10 must ensure that the model sufficiently stimulates cavity effects next to the Kulluk.

Response: The permit authorizes air emissions only from the equipment identified in the permit and the underlying applications, and no platform is included in these documents. Therefore, AERMOD-COARE does not need to account for platform building downwash in this application. In regards to potential cavity effects, AERMOD-COARE uses the same Plume Rise Model Enhancement (PRIME) algorithm as used in AERMOD for calculating impacts within a cavity zone. However, the issue is not relevant in this permitting action because the 500-meter safety zone precludes the need for modeling ambient impacts next to the Kulluk.

Comment R.6: Commenters state that the AERMOD-COARE model does not account for shoreline fumigation. The commenters also assert that it is not clear whether those conditions were included in any of the tracer data sets. The commenters contend that shoreline fumigation can cause higher short-term concentrations and that, given the proximity of the Kulluk's operations to on-shore communities along the Beaufort Sea coast (14 kilometers from the closest lease block to Kaktovick), Region 10 must include an assessment of potential shoreline fumigation impacts on pollutant concentrations.

Response: Shoreline fumigation occurs when a plume from a tall stack travels in an over-water stable layer and reaches the land-sea interface, resulting in the plume being mixed down to the ground in an unstable layer. The commenters are correct that AERMOD-COARE does not account for shoreline fumigation and that shoreline fumigation can cause higher short term concentrations. In Shell's case, its stacks are not near the shoreline (greater than 3 miles or 4.8 kilometers) and the highest concentrations are predicted to occur closer to the Kulluk. In response to a Region 10 Second Information and Data Request dated March 7, 2011 asking Shell to address this issue, Shell responded as follows in a submittal dated March 11, 2011:

> Shell has presently made no provisions for this analysis within the COARE-AERMOD approach. However, it should be noted that the distance between the drilling locations and the shore where potential fumigation could occur is over 50 kilometers for all locations in the Chukchi Sea and for the Beaufort Sea, the locations are still on the order of many kilometers from any of the villages. The AERMOD model has no provision for fumigation calculations. Further AERMOD has no provision for the internal boundary and subsequent changes in mixing that might occur due to changes in land use for terrestrial applications. Given the long distances to the villages, it seems appropriate that the CALPUFF model should be used in the event EPA requests that this issue be addressed. The CALPUFF model does contain an algorithm for addressing fumigation or spatial changes in terrain, land use or meteorology in general. Another factor to be considered is that the real purpose of fumigation analyses is to treat cases where very elevated plumes are mixed rapidly to the ground when passing over a change in surface regime (i.e.: from stable to unstable boundary layers). The classic fumigation case is a power plant located on a coastline. For exploratory drilling sources, however, not only are the sources located far from the shoreline, but also, the plumes from Shell's sources are relatively low and would be expected to have reached the surface by the time they reach the shore.

Region 10 agrees that there was no need to address shoreline fumigation in connection with Shell's air quality analysis given the vessels and their locations at issue in this permit.

It is true that, in approving the model, Region 10 recognized that, "While AERMOD-COARE is acceptable to R10 for the current application in the Arctic marine ice free environment, it lacks two features found in OCD: platform building downwash and a shoreline fumigation algorithm. These two features should be coded into the AERMOD dispersion program for wider application in lieu of using OCD." Region 10 AERMOD-COARE Approval Memorandum, Section 3.2.2.e. That the AERMOD-COARE model currently does not account for shoreline fumigation is irrelevant for purposes of this permitting action, however, because the conditions giving rise to shoreline fumigation are not present in the project to be authorized in this permitting action.[14]

[14] Fumigation studies were conducted during the Carpinteria, California, tracer gas experiment on October 1, 3, 4 and 5, 1985. Bureau of Ocean Energy Management, Regulation and Enforcement, Development of the Next Generation Air Quality Models for Outer Continental Shelf (OCS) Application, Final Report.

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S. CATEGORY – PRORATING IMPACTS

Comment S.1: Commenters note Region 10's statement that:

> Shell prorated the period averages in order to estimate the annual average impacts. For example, to estimate the annual average NO_2, $PM_{2.5}$ or SO_2 impacts, Shell multiplied the 120-day average impact by 0.329 (120 drilling days out of 365 days in a year). Shell's approach for estimating the annual average impact is reasonable since the impact during non-drilling periods will be zero.

The commenters disagree that period averages can be prorated, particularly for pollutants such as NO_2 that have rolling 12-month emissions limits. The commenters contend that the permit cannot rely upon a 12-month period in which to demonstrate compliance with air quality standards and at the same time prorate those very same emissions. By allowing the prorating, commenters continue, Region 10 is allowing Shell to average out the impacts of its air emissions twice. The commenters request that Region 10 update the permit analysis so that the impacts for NO_2, $PM_{2.5}$, and SO_2 are not prorated and then update any relevant permit conditions as necessary to ensure compliance with relevant standards.

Response: The use of the term "prorated" in the Technical Support Document has introduced some confusion about what Shell actually did. Shell modeled each of the 120 drilling days using the estimated emissions for each day. Shell did not model the remaining 245 days since there are no emissions from the Kulluk or the Associated Fleet during these days (*i.e.*, the modeled concentration would be zero). Therefore, multiplying Shell's period average by 0.329 (120 period days divided by 365 calendar days) provides the same annual average value as what would occur if one added 245-days worth of zeros to the 120-days worth of modeled concentrations, and then divided the total by 365 days. The equivalency is illustrated below, where the term "Sum" means the total modeled concentration over the 120 days that Shell modeled. As illustrated by these equations, the period average times 0.329 *is* the annual average concentration.

[illegible]

[illegible]

Shell then added the resulting annual average value to the annual average background concentration to determine the total annual average impact. Because the modeling approach reflects concentrations based on permitted emissions and provides estimates of the annual average impacts, Region 10 does not believe any additional modeling analysis is needed. The permit requirements ensure compliance with the relevant annual standards and use the appropriate averaging period for the modeling analyses. The fact that the annual emission limits are 12-month rolling limits does not in any way authorize Shell to operate outside of the five month drilling season. See response to comment I.4.b.

Volume I dated March, 2006. Hence, while Region 10 continues to believe that a shoreline fumigation algorithm is not needed in the modeling supporting this permit, a tracer gas experiment is available for a project proponent to evaluate shoreline fumigation when the situation arises.

T. CATEGORY – METEOROLOGICAL DATA

Comment T.1: Commenters contend that Region 10's statement that Shell's Reindeer Island data are site specific data is not consistent with EPA's own guidance and past practice. According to the commenters, EPA guidelines state that site specific data are data collected on-site (citing to EPA, Ambient Monitoring Guidelines for Prevention of Significant Deterioration at 48 (May 1987)) and the data collected at Reindeer Island do not satisfy this condition because they are not within any of Shell's leases and do not represent open water conditions. The commenters contend that Region 10's own past statement confirms this understanding because many of these data Shell and Region 10 are relying on here were available in 2010 when Region 10 was considering Shell's Discoverer permit for the Beaufort Sea, yet Region 10 maintained that they were not site-specific or characteristic of the open Beaufort Sea. *See* 2010 Discoverer Beaufort Sea Statement of Basis at 102 ("Because meteorological data representative of the open Beaufort Sea was not available, Shell used screening meteorology").

Response: The meteorological measurements relied on in the modeling analyses include numerous site specific components that were supplemented as appropriate by representative National Weather Service (NWS) data, consistent with Section 8.3.3.2(c) of Appendix W to 40 CFR Part 51. The analysis included surface measurements of wind, temperature, delta-T, solar radiation, and pressure from Reindeer Island, buoy data from Reindeer Island and Sivulliq, profiler data from Endeavor Island, and NWS upper air data from Barrow.

At the outset, it is important to emphasize the unique challenges of collecting any data in this environment. Temperatures are extremely cold, winds can be strong, and the drilling operations are occurring miles offshore. This harsh, remote environment presents obvious challenges to the siting and installation of data collection instruments, the operation of these instruments, and the collection of complete, quality-assured data. The scale of the area in which activities are to be authorized under these permits is also unique. Shell's lease blocks in the Beaufort Sea cover an area of more than 1145 square miles. The sets of meteorological data used in these analyses were also designed to account for an issue of representativeness that is somewhat unique to this area, *i.e.*, the influence of ice vs. ice-free conditions on "over-water" dispersion.

The issue of representativeness of meteorological data is complex and its determination will depend on several factors, including the four factors listed in Appendix W: 1) the proximity of the monitoring site to the area under consideration; 2) the complexity of the terrain; 3) the exposure of the monitoring site; and 4) the period of time during which the data are collected. See 40 CFR Part 51, Appendix W, § 8.3(a). Representativeness may

also vary greatly across different meteorological parameters. For example, upper air soundings used in calculating mixing heights are generally considered to be representative over a much larger geographical area than measurements taken near the surface. Among the surface meteorological parameters, representativeness can also vary significantly. For example, surface ambient temperatures (nominally measured between about 2 and 10 meters above ground) are generally representative over a larger area than surface wind speed and direction (nominally measured about 10 meters above ground).

Section 8.3(b) of Appendix W to 40 CFR Part 51 indicates that "[m]odel input data are normally obtained from the National Weather Service or as part of a site specific measurement program." Section 8.3.1.2 of Appendix W also recommends that "[t]he meteorological data should be *adequately representative*, and may be site specific or from a nearby NWS station" (emphasis in original). While Section 8.3.3.1(a) of Appendix W states that "[s]patial or geographical representativeness is best achieved by collection of all of the needed model input data in close proximity to the actual site of the source(s)," it further clarifies that "while site specific measurements are frequently made 'on-property' (*i.e.*, on the source's premises), acquisition of adequately representative site specific data does not preclude collection of data from a location off property. Conversely, collection of meteorological data on a source's property does not of itself guarantee adequate representativeness." Since Appendix W recommends in section 8.3.1.2(a) that meteorological data should be adequately representative, regardless of whether NWS or site specific data are being used, the main distinction between the two types of data is the length of record provided for in section 8.3.1.2(b), which states that "[t]he use of 5 years of NWS meteorological data or at least 1 year of site specific data is required. If one year or more (including partial years), up to five years, of site specific data is available, these data are preferred for use in air quality analyses."

The commenter's statement that site specific meteorological data must be collected "on site" because of EPA's PSD Ambient Monitoring Guidelines is simply incorrect. The guidance document cited by the commenters dates from 1987 and does refer to one year of "on site data". That guidance document has been revised on this issue, however, by revisions to Appendix W in 2003. Prior to promulgating those revisions, EPA solicited comment on the terminology and meaning of "site-specific" meteorological data, and based on public comments subsection 9.3.3.1 (renumbered to section 8.3.3.1 in 2005) was revised "to clarify that, while site-specific measurements are frequently made 'on-property' (*i.e.*, on the source's premises), acquisition of adequately representative site-specific data does not preclude collecting data from a location off property. Conversely, collection of meteorological data on property does not of itself guarantee adequate representativeness." 68 Fed. Reg. 18,444, 18,446 (April 15, 2003). Specifically, the term "on-site" in reference to meteorological data has been removed from Appendix W. Because Appendix W modified the recommendations of the 1987 guidance after notice and comment and is the later statement from EPA on this issue, it is not true that site specific data must be collected on site.

The Reindeer Island station was specifically established to collect representative meteorological data for this permitting action and other Shell permitting actions in the Beaufort Sea. Reindeer Island is located about 10 kilometers (roughly 6 miles) offshore and approximately 15 kilometers (roughly 10 miles) southeast of the nearest lease block where Shell is authorized to drill under this permit. The offshore distance is greater than the nearest offshore distance of some lease blocks. The Reindeer Island site is the most distant offshore meteorological station to date that has operated year-round in the extremely harsh Beaufort Sea environment. Given the lack of topographical influence, the minimal meteorological influence of the gravel bar itself, and wide homogeneous nature of offshore surface conditions, the station is representative of the meteorological conditions expected over an extremely large offshore area.

Region 10 recognizes that the distance between the Reindeer Island station and portions of Shell's proposed operations in the Beaufort Sea are far greater than in most other cases where monitoring sites have been considered to be site specific or representative. Region 10 believes that the scale of the area in general as well as the scale of the area over which operations are to be authorized under this permit are relevant and unique factors such that, in conjunction with the other factors discussed above, the data from Reindeer Island are appropriately considered both adequately representative and site specific within the meaning of Appendix W. One final point worth noting when considering the proximity and representativeness of the collected meteorological data in this permitting application is that there is less directional dependency in the modeling analysis in these applications as compared with most other cases since the modeled ambient air boundary distance is uniform (a circle of 500 meters from the hull of the Kulluk) and there are no directionally dependent terrain features near the source, thus limiting the importance of some of the key aspects of representativeness of wind direction in the modeling analysis.

Regarding the 2010 Statements of Basis for the Discoverer Permits referenced in the comment, although the data collection began in 2009, the complete measured meteorological data used in the Kulluk modeling analysis were not available to Shell for use at the time Shell submitted its Beaufort Sea application for the Discoverer on January 18, 2010. Consequently, for the Discoverer Permits, Shell used the ISC-PRIME model with screening meteorology and upper end scaling factors to derive averaging period concentration estimates for periods greater than one hour for compliance with the NAAQS. Region 10 has determined that a sufficient and adequately representative set of meteorological data are now available to support a refined dispersion modeling analysis using AERMOD, and therefore use of a screening technique is not necessary or appropriate for modeling the Kulluk and Associated Fleet.

Comment T.2: Commenters assert that Shell has not met minimum regulatory requirements for the amount of site specific meteorological data that Shell must obtain to demonstrate that Shell's operations will not violate air standards. The commenters point to 40 CFR Part 51, Appendix W, § 8.3.1.2, which Region 10 also cited in the Technical Support Document. That section states, under the heading "Recommendations," that "The use of 5 years of NWS data or 1 year of site-specific data is required."

Response: Shell's meteorological monitoring effort at Reindeer Island has been on-going since April 25, 2009, and Shell therefore had more than one year of site specific

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data to support its permit application and air quality analysis. See also response to comment T.1.

Shell only used the July through November portions of the meteorological data since they are only authorized to operate within this period. See Appendix W, Table 8.2, fn. 2 (discussing that if a source is subject to an enforceable limitation on hours of operation, only the hours of authorized operation are to be modeled with emissions from the source). Because the meteorological data is only used in connection with modeling emissions from the permitted source, meteorological data collected from times other than during the periods of authorized operation are not used in the modeling analysis. Region 10 believes that even if Shell did not have meteorological data for the periods they did not model (i.e., December through June), Shell would still have data of sufficient duration for purposes of Section 8.3.1.2(b) of Appendix W because the data collection period covers one year's worth of the period of authorized operation. In this case, five months worth of data covering July 1 through November 30 is one year of data within the meaning of that section. Since the permit only authorizes operations from July 1 to November 30, emissions and hence contributions to ambient air quality, will both be zero during the remainder of the year.

Comment T.3: Commenters state that the meteorological data Shell has collected do not meet the standard set by EPA's guidelines for the required time period because the buoy data only cover the period from mid-August to mid-October, meaning that Shell has no over-water data for July or November.

Response: Shell deployed the instrumented buoys during the open-water periods. Shell could not collect "over-water" data during those periods when there was no over-water data to be collected (i.e., during those periods where there is no open water due to the presence of ice). It is important to note that while AERMOD-COARE requires the air-sea temperature difference and relative humidity data collected by the buoys, the Guideline version of AERMOD – which Shell used to estimate ambient impacts when sea ice is present – does not. Therefore, Shell collected the meteorological parameters needed by each model for those periods that the given model was used. Because Region 10 considers the data to be site specific, one year's worth of data is sufficient to support Shell's analysis. See the response to comments T.1 and T.3.

U. CATEGORY – BACKGROUND AIR MONITORING DATA

Comment U.1: Commenters question Region 10's initial assumption that the use of onshore data is "conservative" because "onshore monitoring stations will be influenced by local sources that are not present in the vicinity of Shell's offshore operations." The commenters explain that emissions from Shell's operations will be influenced by local sources which include the associated vessels that are stationed more than 25 miles from the drillship, barge and shipping traffic in the Arctic OCS, as well as scientific research vessels and accompanying ice breakers and other vessels. The commenters conclude that the presence of these local sources of offshore emissions undermines expectations that onshore data is automatically conservative. The commenters assert that this is an important consideration because the most conservative background data was not necessarily used for the modeling.

Response: Region 10 agrees that emissions from vessels operating in the vicinity of Shell's exploratory operations will contribute to the air pollution levels in the area. However, Region 10 disagrees that this would mean that the concentrations measured onshore would not be conservative for offshore locations where Shell will be operating under the permit. First, the Kulluk is a portable source and will be at different locations during any drilling season and during subsequent drilling seasons. It is not possible to determine where and for how long the Kulluk will be operating near other vessels in the area so trying to determine the background contribution of vessels operating near the Kulluk would be difficult. Second, other vessels will also be moving in relation to the Kulluk so their contribution to the ambient levels in the immediate vicinity of the Kulluk when it is at a drillsite will be transitory. The effect of these two overlapping scenarios, along with the statistical form of the relevant short-term NAAQS, is that the contribution to background concentrations from vessel activity at the location of the Kulluk's maximum impacts is expected to be minimal, if anything. The concentrations measured by the onshore background monitoring locations, however, are regularly impacted by nearby sources, including mobile sources and other fuel combustion sources, such as the villages' diesel generators. The concentrations at on onshore monitoring locations that are regularly impacted by nearby sources are expected to be significantly higher than the concentrations at a drillsite that would be occasionally impacted by passing vessels. Region 10 has therefore determined that the concentrations measured onshore at monitoring sites are conservatively representative of concentrations offshore at the project locations.

Comment U.2: Commenters assert that there is significant confusion in the permit record regarding the datasets used for different background concentrations, most notably the datasets for background concentrations of NO_2. The commenters refer to the air quality impact analysis for the draft permit in which Region 10 proposes using NO_2 data from the Prudhoe Bay A-Pad monitoring site as representative of background concentrations for both the 1-hour and annual NAAQS. The commenters also refer to Region 10's June 23, 2011 determination of background concentrations for the Beaufort Sea which states: "Since some of the lease blocks for the Kulluk permit are very near to the Prudhoe Bay area it was deemed appropriate to utilize the Deadhorse $PM_{2.5}$ data set for determining a background value and CCP for NO_2 and SO_2." The commenters contend that there is no further discussion about the NO_2 dataset from the Prudhoe Bay CCP monitoring site, and that the Region must use the CCP data if they represent a more conservative background dataset. The commenters state that annual average NO_2 concentrations from the CCP site are one and a half times higher than those monitored at the A-Pad location, and conclude that it is like that the hourly average concentrations are also higher. The commenters conclude that Region 10 must use the dataset with the highest monitored 1-hour average and annual average NO_2 concentrations, particularly for the 1-hour average NAAQS if the modeling will be based on an analysis of data paired in time.

Response: As Region 10 explained on page 29 (footnote 7) of the Technical Support Document, the monitoring site ultimately used for the NO_2 analysis (A-Pad) is different than the site recommended in the June 23, 2011 memo (CCP). The requirements for the background data used in an air quality modeling analysis are described in Section 8.2 of the Guideline on Air Quality Models (40 CFR Part 51, Appendix W). There is no requirement that the data be conservative and there is certainly no requirement that it must be the most conservative of available data. In this case, there is no offshore ambient air data, so an onshore site was used to represent the background concentrations expected within the vicinity of the Kulluk lease blocks. However, as discussed below and in the response to comment Y.2, the onshore monitoring site used in this analysis is expected to be impacted by similar natural and distant man-made sources, but more heavily impacted by the local sources than what would likely occur at the project locations. As such, Region 10 believes that it is conservatively representative of the background concentrations at the project location.

The requirements for the background data used in an air quality modeling analysis are described in Section 8.2 of the Guideline on Air Quality Models (40 CFR Part 51, Appendix W). Section 8.2.2.b and c provide:

> b. Use air quality data collected in the vicinity of the source to determine the background concentration for the averaging times of concern….
> c. If there are no monitors located in the vicinity of the source, a "regional site" may be used to determine background. A "regional site" is one that is located away from the area of interest but is impacted by similar natural and distant man-made sources.

The A-Pad and CCP monitoring sites are located in close proximity to the onshore sources in the Prudhoe Bay area so both are conservatively representative of offshore concentrations at the Kulluk lease blocks. Background concentrations from both locations reflect contributions from the onshore sources in varying amounts depending upon their location with respect to those onshore sources. The CCP monitor is located within 100-meters of the CCP facility, which has just over 14,000 tpy of potential NO_x emissions. The adjacent CGF facility (which is part of the CCP/CGF stationary source) has almost 11,000 tpy of potential NO_x emissions. The air quality impacts of these facilities are also strongly dominated by downwash of the plumes, which leads to the maximum impacts occurring in the immediate area. This conclusion can be deferred from existing documentation regarding this monitoring effort and source. For example, the Quality Assurance Project Plan (QAPP) for the CCP and A Pad monitoring stations states:

> The CCP monitoring site is located between the Central Compressor Plant and the Central Gas Facility; approximately 100 meters west and southwest of the CCP [reference to figures]. This site is located at or near the point identified by dispersion modeling as the maximum NO_2 impact receptor…"

Quality Assurance Project Plan for the Prudhoe Bay Unit Facilities Ambient Air and Meteorological Monitoring Project, February 2011, at 27.

As another example, in the Technical Analysis Report (TAR) issued for Construction Permit AQ0270CPT04 (CGF) and AQ0166CTP04 (CCP), ADEC stated, "The maximum cumulative impacts (for the given H_2S and fuel-sulfur assumptions) occur in the CGF/CCP near-field" (Exhibit B, pg 14). While the statement related to H_2S related impacts, the same finding would be true for NO_x impacts since combustion-related plumes do not vary by pollutant.

The CCP monitoring station was therefore sited close to the CCP/CGF facilities in order to capture the maximum impact of these facilities. As such, CCP data would be overly conservative for representing the background concentrations at offshore locations. Even the A-Pad monitoring site, which Region 10 relied on, is expected to be a conservative representation of the background air quality concentration at the offshore locations where Shell will be operating.

Comment U.3: Commenters express concern about the use of different background concentrations for the Shell Beaufort Discoverer and Shell Kulluk permits, and express support for use of the Kulluk permit datasets which the commenters state are more conservative. The commenters provided the following table to show the difference in background values between multiple permits:

Table 8: Information from "EPA Region 10 Determination of Appropriate Background Values for the Chukchi and Beaufort Sea OCS Permits" (June 23, 2011)

	Shell Kulluk	Shell Discoverer Beaufort	ConocoPhillips Jackup Rig	Shell Discoverer Chukchi
PM2.5 24hr	Deadhorse	Badami	Wainwright permanent	Wainwright permanent
PM2.5 annual	Deadhorse	Badami	Wainwright permanent	Wainwright permanent
PM10 24 hr	Prudhoe Bay CCP	Prudhoe Bay CCP (Same as Kulluk)	Wainwright permanent	Wainwright permanent
NO2 1 hr	Prudhoe Bay A Pad	Badami	Wainwright temporary	Wainwright temporary
NO2 annual	Prudhoe Bay CCP (text) Badami (chart)	Badami	Wainwright temporary	Wainwright temporary
SO2	Prudhoe Bay CCP	SDI	Wainwright temporary	Wainwright temporary
CO	SDI	SDI (same as Kulluk)	Wainwright temporary	Wainwright temporary
O3	No information	No information	No information	No information

The commenters provided the following table to show the different background concentrations used for the Kulluk and Discoverer:

Table 9: Comparison of Background Concentrations from Maximum Modeled Impact Charts from the Kulluk and Discoverer Statement of Bases

Air Pollutant	Shell Kulluk	Shell Discoverer Beaufort
NO2 1hour	41	9
NO2 annual	11	1
PM2.5 24-hour	17	6
PM2.5 annual	4	3
PM10 24-hour	53	53
SO2 1-hour	29	13
SO2 3-hour	29	11
SO2 24-hour	22	4
SO2 annual	4	3
CO 1-hour	1,742	1,742
CO 8-hour	1,094	1,094

The commenters contend that Region 10's justification for the use of different data is unconvincing. Commenters reference a Region 10 statement that "some of the lease blocks for the Kulluk permit are very near to the Prudhoe Bay area" making it "appropriate to utilize the Deadhorse PM2.5 data set." However, the commenters contend, the lease blocks that were "removed from [the Kulluk] application" are those that are closest to Prudhoe Bay, while some of those same lease blocks (lease blocks 6562, 6512, 6510) are still included the draft Discoverer Beaufort permit. Therefore, the commenters conclude that Region 10 should have used the Prudhoe Bay data for both the Kulluk and the Discoverer Beaufort permits.

Response: The comments regarding the data used for the Discoverer permits are not relevant to this permit action and Region 10 is therefore not responding to them in this action. The Discoverer permits and this action are separate permitting actions, covering different lease areas, and supported by separate analyses.

Region 10 did rely on the Prudhoe Bay data for the Draft Permit and therefore there is no need to respond to these comments in this permit proceeding. Region 10 does want to note that lease blocks 6562, 6512, and 6510 are included in both the Discoverer and Kulluk permits (they were not removed from the Kulluk permit). These three lease blocks are the closest lease blocks to the Prudhoe Bay area included in the Discoverer permit and they are over 80 kilometers from Deadhorse. The Kulluk Permit, however, authorizes Shell to drill on lease blocks which are as close as 44 kilometers from Deadhorse, and 42 kilometers and 35 kilometers, respectively, from the A-Pad and CCP monitoring sites (which sites are almost 100 km from the leases included in the Discoverer permit).

Comment U.4: Commenters express support for the use of the highest dataset to represent background concentrations because modeling must be based on a worst-case scenario in order to allow for the flexibility in the sources used by Shell, and because the background concentrations must represent secondary pollutant formation and other offshore background sources that are not modeled. The commenters state that these background offshore sources include significant shipping traffic in the area, the associated fleet when it is beyond 25 miles from the drillship, and emissions associated with the Kulluk and Associated Fleet before the Kulluk is determined to be an OCS source. The commenters believe that Region 10 must use the highest values as representative of background concentrations and must not exclude certain days in a monitoring record that may be due to onshore sources (e.g., emissions events due to wind-blown dust, fire, etc.). The commenters state that Region 10 is using $PM_{2.5}$ data from Deadhorse "to better account for the potential impacts from existing onshore sources," but discounts days with high recorded concentrations due to these events such as wind-blown dust and fire. The commenters conclude that if high value concentrations are discounted, Region 10 must include impacts from the additional offshore sources that are not included in the background concentrations monitored onshore.

Response: Region 10 disagrees with the commenter that an ambient air quality impact analysis must use the highest background concentrations from any monitoring site across a broad area or that it must be based on a worst-case scenario. Such conservative assumptions may be appropriate for a screening analysis, but they are not necessary for a refined impact analysis where more representative background concentrations and more reasonable operating scenarios are appropriate. As stated in the Technical Support Document (pages 28-29), Region 10 believes that any of the onshore monitoring sites are conservatively representative with respect to the concentrations we expect to see at the offshore locations where the maximum impacts from Shell's operations would occur. The choices as to which onshore sites were used as background in the Kulluk modeling analysis were not based on the relative concentrations at each site but rather on which sites would best represent the contributions of existing (onshore) sources which were not explicitly included in the modeling analysis. Finally, although Shell excluded days in calculating the background concentrations for its analysis, the Deadhorse $PM_{2.5}$ background values that Region 10 ultimately used in its impact analysis did not exclude any days with events such as wind-blown dust or forest fires. All valid data was included in the calculation of the $PM_{2.5}$ design values reflected in the Technical Support Document and Section 4 of the Statement of Basis. Memorandum from Christopher Hall, Region 10, to Herman Wong, Region 10, re: EPA Region 10 Determination of Appropriate Background Values for the Chukchi Sea and Beaufort Sea OCS Permits, dated June 23, 2011 (Background Data Memo).

Comment U.5: Commenters note that a Quality Assurance Project Plan (QAPP) was approved for the monitoring station in Kaktovik in May-June of 2011. The commenters request a comparison between the datasets from the Badami and Endicott monitors, and the data from the Kaktovik monitor to determine whether the Badami and Endicott data sets accurately represent background concentrations of air pollutants in Kaktovik. The

commenters also request a similar comparison of the recent air quality monitoring data collected from Nuiqsut.

Response: Even though a QAPP was approved for the Kaktovik monitoring station in May-June 2011, the site did not begin collecting data until July 1, 2011. The site does not have data yet for a complete drill season or a calendar year, so there is not enough data to use in a NAAQS analysis. Only a few weeks of data would have been available at the time Region 10 proposed the Draft Permit even if it had been submitted to Region 10 for review. With respect to monitoring data from a site operated by ConocoPhillips at Nuiqsut, this data has not be submitted to Region 10 for review or use in a regulatory analysis.

Comment U.6: Commenters express concern that the most conservative data from the North Slope is not being used. The commenters cite as an example data from Point Lay which the commenters characterize as showing much higher background levels of certain pollutants.

Response: Both Wainwright and Point Lay are on the Chukchi Sea, not the Beaufort Sea. The data that was used in the Chukchi Sea (presumably for the Discoverer PSD permits) is not relevant to the air quality impact analysis for the Draft Permit, which only authorizes operations in the Beaufort Sea. This comment appears to relate to the recently issued permit for the Discoverer and, as such, Region 10 is not responding to it here.

V. CATEGORY – AIR QUALITY ANALYSIS FOR 1-HOUR NO_2 NAAQS

V.1 SUBCATEGORY – IN GENERAL

Comment V.1.a: Commenters state that the new 1-hour NO_2 NAAQS was set at a level recognizing the substantial body of scientific evidence demonstrating that the previous annual NO_2 NAAQS was alone sufficient to protect human health. The commenters also state that short term spikes in NO_2 concentrations are associated with a range of negative human health effects. The commenters note that the new 1-hour NO_2 NAAQS includes a new "form" for the standard that is based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations. The commenters conclude that Shell has not demonstrated that it will comply with the 1-hour NO_2 NAAQS and that Region 10 therefore cannot issue the permits.

Response: As discussed in Section 4 of the Statement of Basis and in the Technical Support Document, when operating in compliance with the terms and conditions of this permit, emissions authorized under the permit will not cause or contribute to a violation of the NAAQS, including the NO_2 NAAQS. The NAAQS are health-based standards, set at a level to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics.

Comment V.1.b: Commenters acknowledge EPA's new "data handling conventions for NO_2" whereby NAAQS compliance is "based on the 3-year average of the 98th percentile of the yearly distribution of 1-hour daily maximum concentrations," but assert that the new data handling convention is specific to determining "area-wide" compliance with the revised NAAQS. The commenters contend that there is no basis in the Clean Air Act or the new standard itself for the permitting approach that Region 10 has adopted here which allows a proposed new source to discount its highest projected impacts. The commenters conclude that such an approach ignores both the importance of the absolute value of the NAAQS standard – which they assert must be set at the requisite level to protect human health – as well as the Title V requirement that a proposed permit include sufficient conditions to prevent a NAAQS exceedance, citing to CAA § 165(c) and (e), 40 CFR §§ 71.2, 71.6(c)(a)(1) and 71.6(e)(1).

Response: The commenters appear to be arguing that a source must demonstrate that the impact of its emissions does not exceed the level of the NAAQS. Region 10 disagrees with this position.

Shell's modeling analysis for the 1-hour NO_2 standard is consistent with the form of the NAAQS and EPA guidance on demonstrating compliance with the 1-hour NO_2 NAAQS. See Memorandum from Stephen Page, OAQPS, re: Guidance Concerning the Implementation of the 1-Hour NO_2 NAAQS for the Prevention of Significant Deterioration Program, dated June 29, 2010 (June 2010 1-hour NO_2 Modeling Guidance); Memorandum from Tyler Fox, OAQPS, re: Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-Hour NO_2 NAAQS, dated March 1, 2011 (March 2011 1-Hour NO_2 Modeling Guidance). The commenters have provided no specific information showing how Shell's approach "discount[ed] its highest projected impacts" in a manner that is inconsistent with the form of the NAAQS.

Although it is true that the modeling showed individual 1-hour impacts higher than the 100 ppb (188 µg/m^3) level of the 1-hour NO_2 NAAQS, the 98th percentile point of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb (188 µg/m^3) at any location that constitutes ambient air. The commenters cite to CAA § 165 and 40 CFR §§ 71.2, 71.6(c)(a)(1) and 71.6(e)(1) in support of their argument that the permittee must demonstrate that the level of the NAAQS is not exceeded. The cited statute, however, applies to issuance of PSD permits, not to Title V permits such as this, and the regulation promulgated by EPA to implement that statutory provision plainly states that a source must demonstrate that it will not cause or contribute to "a violation of" any NAAQS, and does not refer to "an exceedance." See 40 CFR § 52.21(k)(1). The Title V regulations cited by the commenters do not support the commenters position, and the commenters have provided no other information to support their contention that, for an air quality analysis submitted in connection with a Title V permit application or an Alaska minor source permit application, the applicant must establish that they will not cause or contribute to ambient concentrations that exceed the level of a NAAQS.

Comment V.1.c: Commenters state that Shell has understated maximum 1-hour NO_2 impacts by failing to accurately calculate the multiyear average of the 98th percentile of the annual distribution of daily maximum 1-hour values. The commenters continue that EPA estimated that, when evaluating the measured concentrations for a year's worth of

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monitoring data, the 98th percentile would be equivalent to the 7th or 8th highest daily maximum for the 365-day period. In calculating its compliance with the 1-hour NO_2 standard, the commenters assert, Shell selected the 8th highest daily maximum but that this is an underestimate of the true 98th percentile associated with its operations because Shell's drilling season is only 120 days long, and it modeled only that many days. The commenters conclude that selecting the 8th highest daily maximum from 120 days corresponds roughly to the 93rd percentile, not the 98th percentile, and that Shell has therefore failed to demonstrate that its proposed operations will not cause a violation of the NAAQS.

Response: Region 10 continues to believe that the air quality analysis performed by Shell in connection with the 1-hour NO_2 NAAQS is consistent with 40 CFR Part 51, Appendix W (Guideline on Air Quality Models) and EPA guidance for implementing the 1-hour NO_2 NAAQS. In practice, a modeling analysis performed for the 1-hour NO_2 NAAQS can generally be summarized as a three step process involving the collection and preparation of appropriate background data, pairing background data with modeled impacts, and finally comparing the resulting total concentration to the NAAQS. Because the form of the 1-hour NO_2 NAAQS is the 3-year average of the 98th percentile of the daily maximum 1-hour averages, there can be a certain number of hourly values each year that exceed the NAAQS threshold. In Shell's analysis, two years of monitoring data are available and one year of modeled results are available and were used in the modeling analysis.

For the first step, Shell calculated diurnal hourly background values (that is, a background value for each hour of day) for the drilling season (a 5 month period) using background monitoring data collected in 2009 and 2010 for the Beaufort Sea. Shell took all available hourly NO_2 data during the drilling season period for a particular hour and calculated, for that hour, the 98th percentile NO_2 concentration recorded for that hour in each of the two years of available monitoring data. 40 CFR Part 50, Appendix S, Table 1 prescribes the rank associated with the 98th percentile value based on the number of available valid samples within a period.[1] Following this procedure for determining a 98th percentile of the monitoring data for each hour, Shell used a 2nd, 3rd or 4th high, depending on the number of available data points, to determine the hourly 98th percentile value (*i.e.*, if 153 hourly values were available, the 4th high represented the 98th percentile for this hour, while a data set with only 100 hourly values would use the 2nd high to represent the 98th percentile for that hour). For each hour, the 98th percentile result for each year is averaged and this average hourly value is then used to pair with the respective modeled result for that hour. The result of this approach is a generic day's worth of NO_2 background data that represents the 98th percentile value for each hour in a drilling season. Results of this procedure are found in a spreadsheet entitled "Shell_Diurnal_NO2_Background_Kulluk_04182011-stats.xls" submitted by Shell's consultant on May 4, 2011. The spreadsheet was part of a larger submittal transmitted under a technical memorandum entitled "UPDATES TO AIR QUALITY IMPACT ANALYSIS – KULLUK DRILLSHIP." Region 10 determined that this approach followed EPA guidance and provides a representative monitored hour by season diurnal profile for the drilling season.

For the second and third steps, Shell paired, for each modeled hour and receptor location (again, over a 5 month period), the result of the modeled impact with the hourly monitored background value for that hour calculated in step 1 above. The highest hourly total concentration (paired modeled and monitored impact) in a calendar day was then calculated, and the 8th highest paired modeled/monitored impact for each receptor was used to compare with the NAAQS. Using the 8th highest value that occurred over the 5 month drilling season is appropriate because emissions from Shell's operations during periods other than the drilling season are zero (so the total concentration consists only of the background value, yet the form of the standard is a 3-year average of the 98th percentile daily 1-hour maximums). The time period during which no drilling will be occurring is therefore considered in determining the annual 98th percentile value for each year and the 3-year average of annual 98th percentile values, but, because there will be no emissions from Shell's operations in the total concentration during the periods of no drilling, the 8 highest total concentrations for a given year are not predicted to occur during this period, but instead are predicted to occur during the drilling season for that year. In other words, although there are 365 days used in the 98th percentile calculation, the majority of these days (7 months worth) will have no Shell impacts because Shell is not permitted to operate outside of the 5 month drilling season. Because of this, the 8 highest values, and thus the 98th percentile value, are all days that fall within the drilling season. The commenters have not identified any day outside of the drilling season that would have had a higher total concentration than the 8th highest total concentration during the drilling season.

In summary, Region 10 disagrees with the commenters that selecting the 8th highest daily maximum from 120 days corresponds to the 93rd percentile, not the 98th percentile. For the monitored background data, Shell was required to use a 2nd, 3rd, or 4th high value depending on the available data because the monitored data relied on in the modeling analysis consisted of less than a year (approximately 5 months). For the modeled impacts, which are paired with the monitored data, however, Shell appropriately used the 8th high modeled-plus-background value, which is the 98th percentile among the 365 days of the year (the timeframe averaged as part of the standard) and evaluated this value against the NAAQS. This approach is consistent with EPA guidance for the 1-hour NO_2 standard. March 2011 1-Hour NO_2 Modeling Guidance at 2 (discussing the procedure for demonstrating compliance with the NAAQS) and 17-21 (describing the appropriate methodology for incorporating background concentrations into a 1-hour impact analysis).

It is important to note that there are several conservative assumptions that will likely result in substantially lower total concentrations than those predicted by the model. One such assumption is that the modeling assumed the Kulluk will be located at the same drill site for the entire three year period considered in the modeling analysis for the 1-hour NO_2 standard. In the more likely event that Shell will be operating at a different drill site in each of the three years (and possibly more than one drill site in each year), the expected 3-year average of the 98th percentile concentrations at each drill site would be

[1] The 1-hour NO_2 standard is based on the 98th percentile (8th highest) of the annual distribution of maximum daily 1-hour values. March 2011 1-Hour NO_2 Modeling Guidance at 1, fn. 1.

much lower. Another conservative assumption underlying the modeling analysis is the fact that the background data used to represent offshore conditions was collected onshore, where it is influenced by local sources. See response to comments in Category U.

Comment V.1.d: Commenters contend that Region 10 has failed to ensure that Shell's modeling assumptions reflect actual operating conditions because Shell does not establish that its modeling captures all realistic combinations of allowable operations, background levels, and meteorological conditions that may result in maximum impacts. In modeling its effect on 1-hour NO_2 standards, the commenters assert, Shell assumes a perfect choreography of closely-timed events and favorable conditions and lines up events and conditions in an unrealistically precise manner by varying—for every hour of its proposed 2,880 hours of operation— meteorological conditions, background concentrations, and fleet operations. This method of modeling operations, the commenters continue, is therefore likely not representative of actual operating conditions, does not capture a full, realistic range of potential operations and conditions, and is vulnerable to missing maximum impacts. Thus, the commenters conclude, Shell has not demonstrated compliance with applicable standards, including the 1-hour NO_2 NAAQS. For example, the commenters state that Shell has used day to day meteorological conditions from 2009 and 2010 to determine the future positions of its ships hour by hour, rotating its vessels in accordance with the wind direction from those prior years, but that it is unlikely the wind will behave in the same manner on a daily basis in future years and that by shifting the position of its vessels, Shell could be diluting concentrations in a way that masks even greater impacts. For example, the commenters continue, Shell will miss maximum 24-hour $PM_{2.5}$ impacts if Shell assumes the ships will be shifting position every hour when in fact the wind is steady and the vessels operate in one position. The commenters assert that Shell's modeling should be based instead on scenarios in which meteorological conditions, background concentrations, and vessel operations combine to maximize impacts and reproduces the full range of operating scenarios and impacts.

Response: Region 10 believes the combinations of operating conditions modeled by Shell accurately reflect the expected emissions that will occur with the permitted operations. It is not possible to model all potential combinations of emissions scenarios, thus the need to select conservatively representative emissions scenarios that conform to the permitted emission rates.

Region 10 carefully reviewed the emissions scenarios and required several model iterations using two different drilling start times such that all hours during the drilling season are accounted for. While Region 10 acknowledges the actual operations will not exactly mirror what was modeled, the approach taken is expected to conservatively represent permitted emissions during a drilling season. The comment does not identify any realistic range of potential operations and conditions that have not been captured in the conservatively representative emissions scenarios used in the modeling supporting these permits.

Region 10 also disagrees that there is a "perfect choreography of closely-timed events and favorable conditions" and that Shell's modeling "lines up events and conditions in an unrealistically precise manner." The emissions sequences used in the modeling reflect the general sequence of drilling operations as they would be expected to occur. Obviously, the sequence will not exactly mirror that modeled but the general order is correct and reflective of what is allowed in the permit. The other conditions the commenters discuss, such as lining up meteorological and background values, are reflective of actual collected data which, when coupled with conservative assumptions, such as orienting the Associated Fleet with hourly modeled wind direction and using emission release characteristics based on actual meteorological conditions, result in a conservative analysis which has demonstrated compliance with the NAAQS. The meteorological data relied on by Shell adequately reflects representative meteorological conditions. Applicants are not required to demonstrate compliance under non-representative conditions. The commenters present a hypothetical concern regarding persistent wind directions, but they do not provide information showing that this concern is realistic and, if so, whether it is a condition that was not represented in the modeled data set. Moreover, the wind roses provided in Shell's application shows the frequency of winds from any given direction. See Permit Application Supplement, Figure 3-5, at 61. As shown by these figures, the meteorological data used by Shell contains frequent easterly winds. Therefore, the concern expressed by the commenters was in fact, addressed in Shell's modeling analysis.

Moreover, as discussed in response to comment V.1.c and V.2.b, there are several other conservative assumptions underlying the modeling that are not related to the operating scenarios. These assumptions, in conjunction with the reasonable operating scenarios modeled by Shell, make it very unlikely that actual impacts will in fact cause or contribute to a violation of the NAAQS.

Comment V.1.e: Commenters state that Shell has not demonstrated that it will comply with the health based standards for NO_2 and that Shell's own modeling shows that its operations could cause pollution levels to reach 81% of allowable concentrations of NO_2. The commenters also note that high levels can cause breathing problems, particularly asthma, and impacts the elderly and small children.

Response: See response to comment V.1.a. By stating that Shell's modeled emissions (which in this case include background concentrations) could cause pollution levels to reach 81% of allowable 1-hour concentrations of NO_2, the commenters appear to concede that emissions from Shell's proposed operations will not cause or contribute to a violation of the 1-hour NO_2 NAAQS.

Region 10 also notes that in its permit application Shell requested an aggregate limit for the three Kulluk deck cranes. However, the modeling initially provided by Shell did not support aggregate limits. During the public comment period, Shell again requested an aggregate limit for the Kulluk deck crane engines and provided modeling to support this request. This modeling, which was reviewed by Region 10, showed a minimal increase in the maximum modeled concentration to 86% of the 1-hour NO_2 NAAQS. This change does not increase the source's potential to emit. For additional discussion of the modeling and revised limit see response to comment III.4.

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V.2 SUBCATEGORY – BACKGROUND DATA FOR 1-HOUR NO_2/ USE OF PAIRED DATA

Comment V.2.a: Commenters note that Shell used day-to-day meteorological conditions from 2009 and 2010 to determine the future positions of its ships, rotating its vessels in accordance with wind direction from those prior years. The commenters state that the wind will not behave in the same manner on a daily basis in future years, and that by shifting the position of the vessels, Shell could be diluting concentrations in a way that masks even greater impacts. As an example, commenters state that Shell would miss maximum 24-hour PM_2 impacts if it assumes the ships will be shifting position every hour, when in fact the wind is steady and the vessels operate in one position.

Response: While Region 10 acknowledges the actual operations will not exactly mirror what was modeled, the approach taken is expected to conservatively represent permitted emissions during a drilling season. The commenters present a hypothetical concern regarding persistent wind directions, but they do not present information showing that this concern is realistic and, if so, whether it is a condition that was not represented in the modeled data set. See response to comment V.1.d.

Comment V.2.b: Commenters state that Shell has understated 1-hour NO_2 impacts by using background data in a manner that understates health and environmental risks and does not demonstrate compliance with the 1-hour NO_2 NAAQS because Shell has used background ambient air data in a manner that systematically understates the impact of its operations. The commenters contend that Shell has neglected to use the highest background pollution levels measured in the vicinity of its proposed operations and has instead adjusted background ambient air data by using multiyear averages of the 98th percentile background concentrations for each hour of the day. The commenters argue that Shell has made two downward adjustments: in addition to discounting the highest concentrations caused by its operations, Shell has assumed that such concentrations will not occur at a time when background concentrations are at their highest observed levels. The commenters contend that this has the effect of "compounding" the 98th percentile adjustment, thereby understating the true maximum impacts that may occur as a consequence of Shell's operations. Although acknowledging that EPA has indicated that this technique may be appropriate in some circumstances, the commenters contend that this guidance is not consistent with the 1-hour NO_2 standard itself, which they claim is evaluated with a single adjustment for the 98th percentile, and that even that adjustment may not be applicable to this permitting action. According to the commenters, Shell's manner of selecting 1-hour NO_2 background data for use in its model disregards the highest possible background levels, underestimates the true maximum impact of Shell's operations, and fails to demonstrate that it will not cause a violation of air quality standards.

Response: The 98th percentile of the monitored background concentrations based on the Deadhorse monitors along the Beaufort Sea is a conservative estimate of the background levels at the location of the 98th percentile of the modeled concentrations, and therefore provides a conservative estimate of cumulative NO_2 impacts from Shell's operation. Using background concentrations from onshore monitors is a conservative estimate of offshore NO_2 concentrations, where Shell's operations will be located because the onshore monitors are influenced by local sources. See responses to comments in Category U.

The modeled to monitored pairing approach is also appropriate as there may be changes in NO_2 values throughout the season or time of day. Take, for example, space heating using propane or diesel, which will occur more during the colder months than in the 5 month season of July through November when operations are authorized under the permits. Combustion of propane or diesel for space heating may cause higher monitored NO_2 values in onshore locations (and thus higher background values reflected in the background monitoring data incorporated into Shell's analysis), and this may occur during the 7 month period Shell is not authorized to operate under the permit. Conversely, there may be more activity of other types during the summer months associated with NO_2 emissions. If this is the case, this should be reflected in the background monitoring data incorporated into the modeling analysis. These simple examples help illustrate why, consistent with EPA guidance on modeling for the 1-hour NO_2 NAAQS, using a seasonal monitored value is appropriate for this NAAQS standard. A similar argument will hold for hourly readings during the day. At any one time, a monitor may be impacted by a single source. For that impact to occur and be captured by the monitor the wind has to move or transport the emissions from the source to the monitor. At this point in time the monitor may read a high value, but another location in the vicinity may be experiencing no impacts. By using an average 98th percentile by hour of the day, Region 10 is attempting to account for systematic variations in activities and transport that may be occurring and that would lead to a higher or lower monitoring concentration in any one hour. Region 10 is also attempting to use an appropriate background monitoring value for the entire offshore modeled area. The averaging approach by hour and season used by Shell provides a more realistic but still conservative background value to use for such a large area.

It is also important to consider the form of the standard, which is based on probability. The modeling/monitoring pairing approach used by Shell uses a background concentration for all receptors, again, that is based on a two-year average of the annual 98th percentile value by hour and season. In reality, the actual NO_2 monitoring data indicates there are many hours with zero monitored concentrations. So the pairing approach Shell has used is already increasing the probability of a high modeled value corresponding to a relatively high background value, when in reality the actual monitoring values show many hours of zeros. When this pairing approach is coupled with other assumptions, such as the Kulluk remaining at a single drill location for 3 years, which also increases the probability of high modeled results at a receptor, the end result is a conservative analysis. Even with these conservative assumptions, the analysis has demonstrated that the NAAQS is protected.

Finally, there is no requirement that even a PSD modeling analysis for compliance with the NAAQS be based on "the true maximum impacts that may occur," and using the overall highest 1-hour monitored 1-hour NO_2 concentration as a background value would be overly conservative in this case. Region 10 strongly disagrees with the commenter

that compounding adjustments have occurred which will understate the potential maximum impacts. Region 10 believes instead that it is more likely that compounding assumptions actually increase the probability that the analysis Shell submitted would overstate actual impacts at any single receptor. These assumptions include such things as a single well location for three years, having the Associated Fleet always aligned with the prevailing wind directions, not averaging across three years of meteorological data, and using onshore monitoring data to represent overwater locations while using a diurnal pattern of background monitoring values for all hours when monitoring shows many hours of lower concentrations. All of these assumptions compound to form an analysis weighted towards conservatism. See also responses to comments V.1.e, V.2.b, and U.2.

Comment V.2.e: Some commenters support Region 10's decision not to allow a $PM_{2.5}$ modeling analysis that pairs modeled data with monitored data (in time) to determine compliance with the NAAQS, and contend that EPA has in the past said, that pairing data does not ensure protection of the air quality standards, citing to a letter from EPA Region 8. The commenters assert that this approach is needed to ensure that a violation will not occur in the future, not simply to determine that a violation occurred over the period of time modeled. The commenters state that even in recently allowing limited, case-by-case situations where paired data can be modeled to demonstrate compliance with the 1-hour NO_2 NAAQS, EPA is admitting that this type of analysis results in "a less conservative" estimate of impacts, citing to EPA's March 1, 2011 NO_2 Modeling memo. Although these commenters support Region 10's decision not to allow pairing of NO_2 data as Shell originally proposed (*i.e.*, hour-by-hour pairing of modeled concentrations with background concentrations), the commenters do not agree that the diurnal pairing of the 2-year average of the 98th percentile NO_2 concentrations by hour (based on the number of samples) between July 1 and November 30 with corresponding modeled concentrations for that hour is protective enough of the NAAQS. The commenters state that a more protective approach would be to use the 98th percentile of the annual distribution of daily maximum 1-hour average values averaged across the 2-year meteorological data period used in the dispersion modeling and that a more conservative approach is warranted in this case given the fact that the modeling is not based on source specific data and Shell may be under-predicting impacts. The commenters conclude that the use of diurnal pairing results in a less conservative analysis and, given that modeling is based on generic source parameters, this approach does not seem warranted.

Response: The pairing approach used in the 24-hour $PM_{2.5}$ modeling analysis uses the maximum modeled 24-hour $PM_{2.5}$ concentrations averaged over modeled drilling seasons 2009 and 2010, and this value is paired with a representative 98th percentile monitored background concentration for evaluation against the NAAQS. This approach follows EPA guidance and is conservative.

Concerning pairing for the 1-hour NO_2 standard, Region 10 acknowledges the approach taken is potentially "a less conservative" approach than using the 98th percentile annual distribution. The Region believes the approach taken, however, is still protective of the NAAQS and is consistent with EPA guidance. The commenters also fail to address the difference between the two standards, mainly the averaging period of 1-hour versus 24-hours, and offer no explanation why the pairing approach used for the 1-hour NO_2 standard is not valid and conservative. In addition, it is appropriate to account for diurnal (daily) and seasonal patterns in pairing modeled concentrations with monitored background concentrations. Pairing the 98th percentile of the annual background with the 98th percentile modeled contribution, irrespective of these diurnal or seasonal patterns, may impose additional conservatism that is not warranted. The seasonal pattern is especially relevant in this case because the permits limit operations to a defined period (or season.) Please also see response to comments V.3.a and V.3.b.

V.3 SUBCATEGORY – NO_2/NO_X RATIO

Comment V.3.a: Noting that that the Plume Volume Molar Ratio Method (PVMRM) algorithm used in the ambient analysis to determine the atmospheric conversion of NO_X to NO_2 requires estimates of in-stack ratios of NO_2/NO_X, some commenters assert that these in-stack ratios appear to be important parameters in the modeling. The commenters go on to state that Region 10 must therefore ensure the ratios used are protective of the NAAQS since small changes to the ratios used could have a significant impact on modeled concentrations. The commenters contend that this is especially important in this case given the fact that Shell is requesting approval for the least-conservative options for modeling 1-hour NO_2 impacts (*i.e.*, using the non-regulatory-default PRVRM option – a Tier 3 application under Section 5.2.4, App W that requires Regional approval – and pairing NO_2 data in time.

Response: While EPA has placed greater emphasis on the in-stack NO_2/NO_X ratios required for the PVMRM and OLM Tier 3 options in relation to the 1-hour NO_2 NAAQS as compared to the annual NO_2 NAAQS, due to both the increased stringency and 1-hour daily maximum form of the new standard, the relative importance of this parameter will vary from one application to another. Region 10 cautions against overstating the importance of this input parameter. The relative importance of the in-stack ratios will depend on several factors, including source characteristics, meteorological conditions and background ozone concentrations, but the commenters have provided no support for their broad statement that "small changes to the ratios used could have a significant impact on modeled concentrations." In the extreme case, in terms of the relative importance of the in-stack ratio, with significant ozone-limiting conditions, stable worst-case meteorological conditions and very close ambient air boundary, a small change in the in-stack ratio would only result in a correspondingly small change in the modeled concentrations.

The commenters are correct that Region 10 required Shell to do several iterations of modeling with varying in-stack ratios based on engine testing (*See* 4/29/11 Shell modeling submittal Alternate_NO2_Modeling_Disco_04_29_2011.pdf). This additional analysis did not indicate significant changes in the modeled 1-hour NO_2 concentrations. Region 10 believes Shell has demonstrated the ratios used are protective of the NAAQS.

See also response to comment V.3.b.

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Comment V.3.b: Commenters state that Region 10 must reject Shell's use of Plume Volume Molar Ratio Method (PVMRM) to demonstrate compliance with the 1-hour NO_2 standard because, the commenters assert, in predicting ambient air impacts, the PVMRM significantly understates the extent to which nitric oxide (NO) will convert to NO_2 in the presence of ozone. The commenters note that Region 10 has specifically requested public comment on Shell's use of the PVMRM as a component of its ambient air modeling. The commenters contend that PVMRM fixates on the short-term rates of conversion, even though nearly all NO is eventually converted to NO_2. In reaching this conclusion, the commenters state that the NO_X emissions created during combustion (as occurs in Shell's ship engines and other equipment) are emitted partly as NO and partly as NO_2. Once in the atmosphere, the commenters continue, NO interacts with ozone and is ultimately converted to NO_2, but compliance with the final 1-hour NO_2 NAAQS is calculated by measuring NO_2 alone. The commenters assert that the use of PVMRM also contradicts and undermines the underlying assumptions of the NO_2 standard itself. Although NO_2 was chosen as the indicator, the commenters state that EPA intended for the 1-hour standard to not only reduce NO_2 levels, but to provide a corresponding reduction in other harmful nitrogen oxides as well. The commenters contend that PVMRM is necessarily unacceptable because it allows modelers to hide other harmful nitrogen oxides in low NO_2/NO_X ratios, resulting in a substantial understatement of total concentrations. Thus, in order to maintain consistency with EPA's declared purpose of using NO_2 as an indicator to reduce total NO_X, the commenters conclude, Region 10 must reject Shell's use of PVMRM.

Response: The modeling conducted by Shell is consistent with EPA's June 2010 1-hour NO_2 Modeling Guidance recognizing PVMRM as a Tier 3 modeling approach. The commenters have provided no information to show that Shell's use of PVMRM is inconsistent with that guidance. Moreover, the commenters have provided no information to support the assertion that "PVMRM significantly understates the extent to which NO will convert to NO_2 in the presence of ozone." The statement that "PVMRM fixates on the short-term rates of conversion" is incorrect. PVMRM determines the amount of available ozone on a receptor-by-receptor basis, which means the resulting NO_2 to NO_X ratio can vary on a receptor-by-receptor basis and on an hourly basis. PVMRM also includes an assumed upper limit of 0.9 for the resulting ambient NO_2 to NO_X ratio, which means "nearly all" of the NO could be converted to NO_2 under certain circumstances.

Concerning the commenters' concern with NO in connection with the NO_2 standard itself, this issue is beyond the scope of this permitting action. NO is not included directly in the regulatory NAAQS analysis because the NAAQS is written in terms of NO_2 and not NO. This analysis has considered conversion of NO to NO_2, which meets the regulatory permitting requirements at issue in this permitting action.

Comment V.3.c: Commenters assert that Region 10's reliance on the NO_2/NO_X ratios obtained from the Discoverer tests is not reasonable. A comparison of the emission units on the Discoverer and the Kulluk demonstrates that even if Shell potentially could use data from other vessels as source specific data—which it cannot—it would nevertheless be barred from doing so by an absence of similarity. The commenter notes that some of the Discoverer's and Kulluk's emission units are not only of different size and make, but also have varying emission controls installed – something that Shell found affects NO_2/NO_X ratios. For instance, the Discoverer's deck cranes have catalyst diesel particulate filters installed, while the Kulluk's cranes have oxidation catalyst installed.

Response: Region 10 disagrees that there is an absence of similarity between the Discoverer emission units and the Kulluk emission units. Emission units have similarity at a much higher level than the very specific make/model level. Emission units are routinely classified and grouped by scholars, industry, and EPA according to what the units are or how they operate. Examples of these various groupings can be found throughout technical literature, including engineering textbooks or even EPA's *Compilation of Air Pollutant Emission Factors* (AP-42). Units can be grouped in this manner because of known similarities in one or more factors.

Shell used commonly used groupings in developing their NO_2-to-NO_X ratio approach. They classified their emission units as: reciprocating engines with post-combustion controls; reciprocating engines without post-combustion controls, boilers (without post-combustion controls); and incinerators (without post-combustion controls). While not highlighted in their application, it is important to note that all units within each classification also burn the same fuel (diesel).

Shell's level of classification would not be adequately refined for all aspects of a permit application. However, it is suitable for purposes of developing an NO_2-to-NOx ratio for purposes of submitting a modeling analysis for the probabilistic 1-hour NO_2 standard. The probabilistic form of the standard creates a challenge when modeling emission units with numerous and variable exhaust parameters (including the NO_2-to-NOx ratio). The March 2011 1-Hour NO_2 Modeling Guidance provides that the in-stack NO_2-to-NO_X ratio could be accepted "provided some reasonable demonstration can be made ..." Shell has made this demonstration by using the in-stack ratios obtained from 90 sources tests of similar emission units. This is a much larger data set than what Region 10 has seen from any other applicant. Region 10 therefore considers it adequate for purposes of modeling 1-hour NO_2 impacts.

A sensitivity analysis conducted by Shell in support of the Discoverer permit adds further credence for using the Discoverer data for the Kulluk. Region 10 asked Shell to compare the 1-hour NO_2 impacts from an analysis using Shell's generic ratios, derived in a similar manner as what was done for the Kulluk, with the 1-hour NO_2 impacts from an analysis using the actual tested ratios for individual permitted equipment. The modeled results were not only similar between the two runs, but it was actually the generic ratios that provided the higher modeled concentrations in the worst case (the Chukchi Sea). With all the testing Shell has performed for similar engine types, it is reasonable to conclude, using professional judgment and experience, that Shell's in-stack ratios are representative of the proposed emission units, especially in light of the conservative nature of their other modeling assumptions.

Given the probabilistic form of the standard and the large number of engines involved, even though the testing shows varying ratios it is very unlikely that all the engines that are permitted to operate concurrently would operate at their individual worst case ratio, while at the highest permitted emission rate, during worst case meteorological conditions, over three consecutive years. The conservatism of these assumptions becomes even greater considering that the Kulluk is unlikely to be operating at the exact same location for three consecutive drilling seasons.

Comment V.3.d: Commenters state that Shell failed to demonstrate that its stack tests generated reliable data for the Discoverer operations, and therefore Shell cannot claim the data are reliable for use with the Kulluk operations. The commenters contend that Shell's Kulluk and Discoverer operations both would be highly complex, involving a large number of emission units and many operating scenarios, and that the NO_2/NO_x ratio for each emission unit could vary widely depending on the load at which Shell operates it. Yet, the commenters continue, Shell conducted only 90 stack tests to determine the various NO_2/NO_x ratios associated with the Discoverer operations. The commenters note that Region 10 required Shell to perform additional modeling for the Discoverer, but that these tests were insufficient to reveal the full range of emission ratios that might actually occur during Shell's operations. The commenters state that even Shell admits that its results are not trustworthy, stating that its results contained unexplained high ratios. The commenters state that Shell compounded this problem by averaging the high ratios with the lower ratios, rather than performing more tests to either explain the results or actually gather real source-specific data. Thus, the commenters believe that Shell's ratios are not dependable for use with its Kulluk operations because they are not even dependable for use with its Discoverer operations.

Response: Region 10 disagrees with the comment. As noted in our response to comment V.3.c, 90 is an unusually large number of source tests to support a permit application. While more data is always desirable, this data pool is adequate for purposes of deriving in-stack NO_2-to-NOx ratios for the Discoverer and the Kulluk emission units. Region 10 further notes that while some of the results may be unexplained, that does not make those data points wrong. In addition, the probabilistic form of the 1-hour NO_2 standard is explicitly intended to mitigate the impact from possible outliers, and on that basis alone it would be inappropriate to combine a worst-case in-stack ratio with a worst-case emission rate as the basis for demonstrating compliance with the NAAQS in the absence of a clear linkage between the in-stack ratio and emission rate for a particular source that would justify such an approach.

Region 10 asked Shell to perform additional modeling for the Discoverer in order to determine how sensitive the 1-hour NO_2 modeling results are to small variations in the in-stack ratios. Shell's analysis showed that generic ratios and actual ratios provide similar results. This analysis further confirms that Shell's reliance on the generic conclusions obtained from the Discoverer sources tests is reasonable and does not compromise the adequacy of the 1-hour NO_2 modeling analysis conducted for the Kulluk.

Comment V.3.e: Commenters contend that Region 10 and Shell have not provided any basis for concluding that the NO_2/NO_x ratios used in Shell's modeling are representative of the ratios that actually may result from Shell's operations. Due to the importance of these ratios to assessing 1-hour NO_2 impacts, the commenters state, Shell cannot say that it has demonstrated compliance with the standard. The commenters request that, if Shell refuses to gather source-specific data, Region 10 direct Shell to use the default in-stack ratio of 0.5.

Response: As stated in EPA's March 2011 1-Hour NO_2 Modeling Guidance , EPA recommends 0.5 as a default in-stack ratio *in the absence of more appropriate source-specific information on in-stack ratios* (emphasis added). EPA did not state, or intend, that only unit-specific source test data may be used to justify a non-default value. The guidance clearly indicates a preference for the use of "more appropriate source-specific information (emphasis added)" when available, and also acknowledges that "well-documented data on in-stack NO_2/NO_x ratios is still limited for many source categories (emphasis added)." As discussed in Region 10's response to comments V.3.c and V.3.d, the Kulluk emission units are not only similar to the Discoverer emission units, but the large number of Discoverer source test data provides a very adequate basis for justifying the Kulluk in-stack ratios as being "more appropriate source-specific information" than the default ratio used in those modeling analyses.

Comment V.3.f: Commenters note that Region 10 relied on the source-specific test data from the Discoverer for the Kulluk as a reasonable approach given the similarity in emission units. The commenters disagree that source-specific test data from a source applying BACT is sufficiently representative of the range of possible units used as part of the Kulluk operations. The commenters contend that because the Kulluk permit does not specify equipment make and model, Region 10 must use the most conservative generic ratio to represent the worst-case operating scenario. Commenters note that when source-specific data is not available, EPA recommends the use of 0.50 as a default in-stack ratio for purposes of modeling 1-hour NO2 impacts. In the Technical Support Document Region 10 claims that Shell is using the preferred approach of obtaining source-specific data, rather than the 0.5 default. The commenters further state that Region 10 contradicts this statement by relying on data from source tests of the Discoverer's drillship and associated fleet.

Response: The commenters have not shown why the in-stack ratio must be make/model-specific, or why source-test data from similar emission units would be inadequate when demonstrating compliance with the 1-hour NO_2 NAAQS. As previously noted in response to comment V.3.e, EPA said that the 0.5 in-stack ratio should be used "in the absence of more appropriate source-specific information." EPA did not rule out the use of class- or category-specific data as an allowed source of more appropriate information. See also the other responses to comments in this Subcategory V.3.

Comment V.3.g: Commenters state that it is unclear how the generic ratio compares to the ratios used in Shell's modeling for the Kulluk that is based on source testing from the

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Discoverer drilling operations. The commenters contend that there are no supporting data presented in the air quality impact analysis for the Kulluk or included in the administrative record files that specify the ratios used in the Kulluk modeling. The commenters note that the source test data provided as part of the revised Discoverer permits (and included in the administrative record files for the Kulluk) shows that the equipment-specific ratios are consistently significantly lower than the generic value of 0.5. Given the significance of this parameter in the modeling, the commenters believe that Region 10 should use the most protective values and request that the Region use the generic ratio value of 0.5 for the PVMRM modeling algorithm.

Response: The 0.5 value is characterized in EPA's guidance as "a reasonable upper bound based on the available in-stack data" from *a wide variety* of source categories that can be used without additional justification. EPA never stated that 0.5 is "representative" of *all* source categories. Therefore, it is not surprising that actual source test data from any given sub-set (e.g., diesel-fired reciprocating engines without post-combustion controls) leads to a smaller value, as is the case here. The March 2011 1-Hour NO_2 Modeling Guidance also clearly indicates a preference for the use of "more appropriate source-specific information" when it is available.

With respect to the comment regarding the lack of supporting data, Shell provided the Discoverer source test data as part of the Kulluk application (as acknowledged by the commenter). They summarized the data and source group averages at pages 125-128 of the Permit Application Supplement, and provided a discussion regarding those data and how they were applied to their NO_2 modeling analysis in Section 3.9.2 on pages 67-68 of the Permit Application Supplement.

V.4 SUBCATEGORY – AREA POLYGONS

Comment V.4.a: Commenters assert that Shell's use of area polygons to model the emissions of associated vessels underestimates impacts and that Shell has therefore not demonstrated compliance with applicable NAAQS and increments, as required by the Title V program. The commenters state that Shell's modeling dilutes Shell's associated vessel emissions over a large area, artificially reducing projected maximum impacts and that Region 10 should direct Shell to remodel impacts using a method that does not bias modeled impacts in this manner. Commenters assert that Shell's use of area polygons rather than volume sources to represent the emissions of associated vessels results in the distribution of associated vessel emissions over large areas and that the ice breaker emissions appear to be distributed over an area of roughly eight square kilometers, while the emissions of other support vessels distributed over four square kilometers. By treating the associated vessel emissions in this manner, the commenters continue, Shell likely overestimates how much its ships will be moving and, further, underestimates short-term impacts to air quality. The commenters contend that the potential for underestimating impacts is particularly significant with short term standards like the 1-hour NO_2 standard.

Response: Region 10 carefully considered the assumptions and model settings used in Shell's air quality analysis. In any modeling analysis, the applicant has choices in configuring the model inputs to best reflect its operations. In AERMOD, there are various ways to characterize emissions, such as a point, volume, area circle, area polygon, open pit, or flare. The applicant must choose how to best characterize all their permitted emissions, and the permitting authority conducts a review to ensure the applicant's approach appropriately characterizes emission sources.

An area source is generally used to model low-level or ground level releases with no plume rise (such as storage piles, lagoons, etc), while a volume source is used to characterize releases from building roof vents, conveyer belts, etc. In this case, Shell chose to characterize its moving Associated Fleet as an area source, or more specifically, as an area polygon. The only difference between an area source and an area polygon is the ability to specify an arbitrary shape in the case of the area polygon.

Conceptually, the effect of using an area polygon is that the source's emissions during a given hour are treated as if emitted equally across the area of the polygon, rather than at a single point in the polygon. When applied to the Associated Fleet, this treats the vessels in the fleet as moving during an hour such that each vessel spends an equal portion of the hour in each possible position in the polygon. It appears that the commenters believe that each vessel should have been assumed to hold a single position during the hour, and that those positions be ones that would maximize the Associated Fleet's aggregate impact on 1-hour concentrations by aligning the vessels in the Fleet with each other and with the Kulluk's emissions along the same wind path. Alternatively, the commenters suggest that if an area polygon is used the size of the polygon should have been smaller so that the emissions from the Associated Fleet would have been more concentrated spatially, causing higher ambient concentrations.

Because the Associated Fleet emissions are associated with engines that have plume rise, which as stated above is not addressed in an area source configuration, Shell also had to characterize area source release parameters for every hour for their area polygons. Shell did this by running AERMOD in diagnostic mode using the lowest ice management vessel stack height with a line of receptors extending out to 5 km from the Kulluk. Shell then took the resulting plume height and sigma Z values for the maximum modeled receptor and used these parameters as the initial inputs for the area polygon sources. While this approach is novel and would not generally be performed due to the complexity of its implementation, Region 10 believes it does provide an accurate characterization of the Associated Fleet, which is an unusual source. The area polygon configuration was one of the areas carefully reviewed and considered. Region 10 believes the area polygon configuration along with the hourly emissions release characterizations provide an accurate representation of the moving Associated Fleet and will result in a conservative impact analysis that is protective of the NAAQS.

It would be inappropriate to require Shell to use fixed positions for vessels in the Associated Fleet or to use an area polygon configuration that is so small as to not reflect the reality of a moving support fleet. In fact, Shell states in its application that OSR vessels would generally operate within 1 to 5 km from the Kulluk, but were modeled as if they only operated within a 2 km by 2 km area. Shell stated, "This source

characterization is conservative since the OSR sources are continuously located much closer to the *Kulluk* than what would occur in reality." Permit Application Supplement at 50. In addition, for each hour the polygons—both for the ice management vessels and OSR—are aligned with the modeled wind direction using the maximum permitted emissions with worst case release characteristics as described above, which results in a conservative analysis. Given that the vessels in the Associated Fleet have particular tasks to perform whenever they are within 25 miles of the Kulluk, it is unreasonable to assume that they all would hold fixed positions for a full hour. In addition, as discussed above in response to comments V.1.e and V.2.b several conservative assumptions, such as a single drilling location over a period of three years, underlie Shell's modeling analysis.

Comment V.4.b: Commenters contend that due to the size of the area sources, associated vessels will never be modeled directly upwind or downwind of major Kulluk emission units. The commenters believe that the configuration of the area source prevents an accurate assessment of the maximum impacts that would be expected during alignment of the Kulluk and associated icebreakers.

Response: The size of the area sources reflects the expected range of operation for the Associated Fleet. It is unreasonable to assume that the vessels will only be located in a line immediately upwind or downwind of the Kulluk for the entire period of operation.

W. CATEGORY – AIR QUALITY ANALYSIS FOR $PM_{2.5}$ NAAQS

W.1 SUBCATEGORY – IN GENERAL

Comment W.1.a: Commenters state that the 24-hour $PM_{2.5}$ NAAQS was set at a level due to the large body of evidence that fine particulate is harmful to human health. The commenters also state that EPA found that $PM_{2.5}$ exposure causes cardiovascular problems and can even cause death. The commenters note that the 24-hour $PM_{2.5}$ NAAQS is based on the 3-year average of the 98th percentile of the 24-hour concentrations. The commenters conclude that Shell has not demonstrated that it will comply with the 24-hour $PM_{2.5}$ NAAQS and that Region 10 therefore cannot issue the permits.

Response: As discussed in the Statement of Basis and the Technical Support Document, the permit includes terms and conditions to ensure that emissions authorized under this permit will not cause or contribute to a violation of the NAAQS, including the $PM_{2.5}$ NAAQS. The NAAQS are health-based standards, set at a level to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics.

Comment W.1.b: Commenters state that Shell has not demonstrated compliance with NAAQS because it unlawfully underestimated its maximum impacts. In issuing the 24-hour $PM_{2.5}$ NAAQS, the commenters contend, EPA determined that NAAQS compliance would be based on "the 98th percentile of the annual 24-hour concentrations at each population-oriented monitor within an area, averaged over three years . . . ." citing to 71 Fed. Reg. 61,144, 61,164 (Oct. 17, 2006). The commenters assert that EPA repeatedly indicated that this form was specific to determining area compliance by reviewing data from population-oriented monitors, and that there is no basis in the Clean Air Act nor the 24-hour $PM_{2.5}$ standard itself for the permitting approach Region 10 has adopted here, namely, allowing a proposed new source to discount its highest projected impacts. The commenters continue that such an approach ignores both the importance of the absolute value of the NAAQS standard—which they state must be set at the requisite level to protect human health, as well as the Title V program requirement that a proposed permit include sufficient conditions to prevent a NAAQS exceedance. Commenters state that this issue is important because Shell's modeling indicates it could cause pollution concentrations to exceed the NAAQS limit of 35 $\mu g/m^3$ because adding Shell's maximum modeled impact of 20.5 $\mu g/m^3$ to Shell's background value of 17.0 yields a value of 37.5 $\mu g/m^3$.

Response: The commenters appear to be arguing that a source must demonstrate that the impact of its emissions does not exceed the level of the NAAQS. Region 10 disagrees with this position for the reasons discussed in response to comment V.1.b.

Comment W.1.c: Commenters state that Shell's emissions of particulate matter could exceed health based limits and increments, and also contribute to climate change. The commenters state that Shell's modeling indicates that the particulate matter emissions could cause pollution levels to reach 97 % of health based standards and almost double the fine particulate matter increment.

Response: The modeling does indicate that Shell's emissions, when added to background concentrations of $PM_{2.5}$ may come close to the NAAQS at the point of maximum modeled impacts, but the modeling also demonstrates that Shell is not expected to cause or contribute to a violation of the NAAQS at any location that constitutes ambient air. As discussed in the response to comments in Category Z, the permit does not need to assure compliance with the $PM_{2.5}$ increment as a condition of obtaining this permit. With respect to climate change, please see the responses to comments in Subcategory BB.4.

Comment: A commenter states that they are not sure how the ocean air is going to distribute the particulates and expressed concern about the modeling.

Response: The modeling conducted in this case took into account the impact of Shell's emissions in over water conditions. Technical Support Document at 27-28.

W.2 SUBCATEGORY – BACKGROUND DATA FOR 24-HOUR $PM_{2.5}$ NAAQS

Comment W.2.a: Commenters state that, in its 24-hour $PM_{2.5}$ analysis, Shell has understated its 98th percentile impact. Even if Shell could calculate its 24-hour $PM_{2.5}$ impact by finding the 3-year average of its 98th percentile impacts, the commenters continue, Shell has not calculated that value correctly because, in selecting the background value for its 24-hour $PM_{2.5}$ modeling, Shell eliminated days that had "high

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windblown dust values." The commenters state that Shell has not offered persuasive reasons for excluding these values which only may be excluded by EPA itself and only pursuant to the requirements of EPA's "exceptional events rule" (citing 72 Fed. Reg. 13,560 (Mar. 22, 2007)), which Region 10 has not invoked here. After eliminating these days, the commenters assert, Shell then selected the 98th percentile value of the remaining days. The commenters conclude that Region 10's apparent approval of this method plainly underestimates even the 98th percentile impact and that, instead of obtaining representative data and then finding the true 98th percentile, Shell has used unrepresentative data and then used the low quality of these data as an excuse to eliminate measurements until Shell got the result it wants.

Response: Region 10 acknowledges that Shell excluded certain days from its determination of $PM_{2.5}$ background values. However, Region 10 did not rely on Shell's background values for its determination of compliance with the $PM_{2.5}$ NAAQS. Rather, Region 10 independently determined the annual and 24-hour $PM_{2.5}$ background values for the Deadhorse monitoring site (as well as the Badami monitoring site). While Shell's approach of excluding days that were impacted by other wildfire or windblown dust might be appropriate depending on the circumstances, Region 10 took the more conservative approach of including these days in the dataset. As described in the Memorandum from Christopher Hall, Region 10, to Herman Wong, Region 10, re: EPA Region 10 Determination of Appropriate Background Values for the Chukchi Sea and Beaufort Sea OCS Permits, dated June 23, 2011 (Background Data Memo), and shown in Table 6 of that memo, as well as in Table 11 of the Technical Support Document (at 33), Region 10 used background values of 17 ug/m3 and 4 ug/m3 for the 24-hour and annual standards, respectively, calculated according to EPA's regulations and guidance.

In conclusion, Region 10 did not exclude days with windblown dust events in determining the appropriate background concentration in connection with its review of the ambient impacts of Shell's operations. Region 10 therefore disagrees with the commenter that the ambient impact analysis has understated the impact of Shell's $PM_{2.5}$ emissions.

W.3 SUBCATEGORY – SECONDARY $PM_{2.5}$ FORMATION

Comment W.3.a: Commenters state that Region 10's analysis of potential secondary $PM_{2.5}$ formation remains insufficient because, despite the EAB's clear direction on the issue, neither Shell nor Region 10 has performed a proper analysis of Shell's potential contribution to secondary $PM_{2.5}$. Noting the EAB remanded the permits for the Discoverer to Region 10, in part, based on deficiencies in Region 10's analysis for secondary $PM_{2.5}$, the commenters state that Shell cannot demonstrate compliance with NAAQS until it has performed a sufficient secondary $PM_{2.5}$ analysis. The commenters contend that, in remanding the permitting decisions for the Discoverer to Region 10, the EAB specifically instructed that "the Region should . . . provide an explanation of why modeling secondary $PM_{2.5}$ is necessary or not after determining whether $PM_{2.5}$ precursors will be emitted in significant quantities." The commenters conclude that Region 10 has ignored the EAB's order noting that the Technical Support Document states that "Region 10 has not made a determination of whether $PM_{2.5}$ precursor emissions from the project are significant . . . ." The commenters state that Region 10's refusal to make a finding on the significance of Shell's precursor emissions is noteworthy given that the Technical Support Document states that Shell's emissions will exceed the regulatory "significant emission rate" for the precursor NO_X by many times and that Shell's modeling already indicates it may cause 24-hour $PM_{2.5}$ concentrations to reach 97% of the NAAQS. The commenters contend that Region 10's approach does not provide any margin of safety in the $PM_{2.5}$ NAAQS modeling analysis because the draft permit allows for only an additional 1 µg/m3 (an additional 3%) before the impacts of the Kulluk operations would be at the level of the NAAQS so a relatively small amount of secondary formation could cause a violation. The commenters also assert that, if Region 10 does not determine whether these precursor emissions are significant, it certainly cannot accurately estimate the amount of potential secondary $PM_{2.5}$ formation and that Region 10 must assess directly whether Shell will emit a significant quantity of $PM_{2.5}$ precursors. Instead, the commenters contend, Region 10 has based its determination primarily on a rough comparison of Shell's potential emissions to North Slope emissions and the observations that North Slope sources do not currently appear to be contributing to substantial secondary formation in onshore communities. If a quantitative assessment of secondary $PM_{2.5}$ impacts is not completed, the commenters assert, then Region 10 must, at the very least, provide for NAAQS compliance with a greater margin of safety that better reflects the uncertainty in secondary $PM_{2.5}$ contributions to overall $PM_{2.5}$ concentrations and is sufficient to ensure that potential secondary $PM_{2.5}$ impacts would not cause or contribute to NAAQS violations.

Response: The EAB order referred to by the commenters is an order issued in connection the EAB's remand to Region 10 of permits for Shell's Discoverer drillship. See Shell Gulf of Mexico, Inc. and Shell Offshore, Inc., Frontier Discoverer Drilling Units, OCS Appeal Nos. 10-01 through 10-04, Order on Four Additional Issues dated March 14, 2011 (Remand Order II). It is therefore not directly applicable to this permit proceeding. In any event, Region 10's determination that secondary $PM_{2.5}$ formation associated with precursor emissions from the Kulluk and the Associated Fleet is not expected to cause or contribute to a violation of the $PM_{2.5}$ NAAQS is consistent with current EPA guidance for addressing $PM_{2.5}$ precursor emissions and the EAB Orders.

Acknowledging that EPA's preferred dispersion model for near-field $PM_{2.5}$ modeling (AERMOD) does not account for secondary formation of $PM_{2.5}$, EPA issued guidance on appropriate modeling procedures for demonstrating compliance with the $PM_{2.5}$ NAAQS that relies upon ambient monitored concentrations to adequately account for the contribution of secondary $PM_{2.5}$ to the cumulative impact assessment for demonstrating compliance with the NAAQS, in most cases. Memorandum from Stephen D. Page, OAQPS, re: Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, dated March 23, 2010, at 9 (March 23, 2010 $PM_{2.5}$ Guidance Memo). In issuing this guidance, EPA took into consideration the regional nature of secondary $PM_{2.5}$ levels, and the fact that peak ambient impacts due to facility emissions of primary $PM_{2.5}$ and secondarily-formed $PM_{2.5}$ due to facility emissions of $PM_{2.5}$ precursors are not likely to be well-correlated in space or time. The portion of EPA's guidance at issue here states

that "[w]hile representative background monitoring data for $PM_{2.5}$ should adequately account for secondary contribution from background sources in most cases, if the facility emits significant quantities of $PM_{2.5}$ precursors, some assessment of their potential contribution to cumulative impacts as secondary $PM_{2.5}$ may be necessary." Id.

There are several points worth highlighting in relation to the March 23, 2010 $PM_{2.5}$ Guidance Memo. Firstly, and at issue here, EPA does not explicitly define what "significant quantities of $PM_{2.5}$ precursors" means in this context. In addition, EPA indicated in the March 23, 2010 $PM_{2.5}$ Guidance Memo that "[w]e plan to issue separately additional guidance regarding this issue." Id. In light of these considerations, Region 10 believes that the appropriate place to explain when "some assessment" of "potential" secondary $PM_{2.5}$ contributions "may be necessary" is in the upcoming guidance that EPA plans to issue. As that guidance has not yet been issued, Region 10 here took a conservative approach by presuming that the Kulluk and Associated Fleet do emit "significant quantities" of $PM_{2.5}$ precursors, and then assessing the potential contributions of $PM_{2.5}$ precursor emissions to the formation of secondary $PM_{2.5}$.

In addition, Region 10 disagrees with the commenters' inference that the reference in the March 23, 2010 $PM_{2.5}$ Guidance Memo to "some assessment" of the source's potential contribution to cumulative impacts implies a requirement that modeling be conducted. The fact that the guidance refers to "some assessment" rather than a "modeling demonstration" indicates that an "assessment" could be comprised of qualitative and/or quantitative analyses, including a modeling demonstration if appropriate, but it is certainly not limited to nor dependent on a modeling demonstration.

The commenter is correct that, in issuing the Draft Permit, Region 10 did not make an explicit determination of whether the project emits "significant quantities" of $PM_{2.5}$ precursors as that term is used in the March 23, 2010 $PM_{2.5}$ Guidance Memo. See Technical Support Document at 21, fn 4. Instead, Region 10 took a conservative approach and presumed that the Kulluk and Associated Fleet do emit "significant quantities" of $PM_{2.5}$ precursors, and then conducted an assessment of the potential contributions of $PM_{2.5}$ precursor emissions to the formation of secondary $PM_{2.5}$, consistent with the March 23,2010 $PM_{2.5}$ Guidance Memo. Region 10 then concluded for the reasons explained in the Technical Support Document that modeling is not necessary to demonstrate that secondary $PM_{2.5}$ formation from the Kulluk and the Associated Fleet is not expected to cause or contribute to a violation of the $PM_{2.5}$ NAAQS.

In support of the Draft Permit, Region 10 provided a detailed explanation for why it believes that modeling secondary $PM_{2.5}$ emissions is not needed in order to determine that emissions of $PM_{2.5}$ precursors from the Kulluk and Associated Fleet would not, together with emissions of primary $PM_{2.5}$, cause or contribute to a violation of the 24-hour $PM_{2.5}$ NAAQS. The factors Region 10 relied on to reach this conclusion include:

1) The background $PM_{2.5}$ monitoring data considered in the air quality analysis is quality assured, quality controlled data from Deadhorse that includes impacts from onshore sources. This monitor is expected to have accounted for much of the secondary formation from existing regional emission sources that will occur in the Beaufort Sea region. Available monitoring data from onshore communities along the Beaufort Sea and in potential transport areas where monitoring is performed show low levels of daily $PM_{2.5}$, generally in the range of 2 $\mu g/m^3$, with the higher $PM_{2.5}$ values generally occurring on days where windblown dust or fires are believed to be contributing factors. Thus, there is no indication that secondary formation of $PM_{2.5}$ from existing sources in the North Slope is currently causing or contributing to exceedances or a violation of the $PM_{2.5}$ NAAQS in the onshore communities.

2) Modeled primary $PM_{2.5}$ impacts from the Kulluk and Associated Fleet that, when using a conservative "First Tier" approach to combining modeled primary $PM_{2.5}$ impacts with monitored background $PM_{2.5}$ concentrations are below the 24-hour $PM_{2.5}$ NAAQS. As the commenters note, the maximum modeled concentration is 93% of the $PM_{2.5}$ NAAQS at the assumed ambient air boundary (500 meters from the hull of the Discoverer), but the levels decrease as the distance from the Kulluk decreases.

3) Secondary $PM_{2.5}$ impacts associated with the Kulluk and Associated Fleet precursor emissions are expected to be low near the emission release points where modeled concentrations associated with primary $PM_{2.5}$ emissions are highest, because there has not been enough time for the secondary chemical reactions to occur. Conversely, secondary $PM_{2.5}$ impacts are more likely to be higher farther from the Kulluk and the Associated Fleet where impacts from primary $PM_{2.5}$ emissions from the Kulluk and the Associated Fleet are expected to be lower. This makes it unlikely that maximum primary $PM_{2.5}$ impacts and maximum secondary $PM_{2.5}$ impacts from the Kulluk and the Associated Fleet will occur at the same time (paired in time) or location (paired in space). See March 23, 2010 $PM_{2.5}$ Guidance Memo at 9.

4) The relatively small amount of NO_X emissions (a $PM_{2.5}$ precursor) that will be authorized under this permit in comparison to existing NO_X emissions in the North Slope area in general, together with the generally low levels of $PM_{2.5}$ recorded at monitoring stations in the area, make it unlikely that NO_X emissions from the Kulluk and the Associated Fleet would cause or contribute to a violation of the $PM_{2.5}$ NAAQS.

5) The background concentrations of certain chemical species that participate in photochemical reactions to form secondary $PM_{2.5}$, including ammonia and volatile organic compounds, are expected to be negligible in the offshore air masses where the Kulluk will be permitted to operate. The emissions authorized under this permit of approximately 40 tpy of VOC along with the minimal expected ammonia increases (2.16 tpy) would also not be expected to result in the conversion of significant quantities of NO_X emissions to secondary particles in the areas impacted by primary $PM_{2.5}$ emissions.

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b) There are several other conservative assumptions incorporated in the modeling of primary $PM_{2.5}$ emissions. These include the conservation inherent in using a "First Tier" approach to combining modeled primary $PM_{2.5}$ impacts with monitored background $PM_{2.5}$ concentrations; assuming that the Kulluk will be operating in a single drilling location for 3 years, when it is more likely that the Kulluk will operate in a different location each year (if not more frequently); orienting the Associated Fleet with hourly modeled wind direction and using emission release characteristics based on actual meteorological conditions; and the fact that the background monitored data used to represent offshore conditions was collected onshore, where it is influenced by local sources, and is therefore likely to be a conservative estimate of background $PM_{2.5}$ levels in the area of maximum impact near the Kulluk.

Based on these factors, and consistent with current guidance, Region 10 believes that an adequate and conservative assessment has been made to demonstrate that the $PM_{2.5}$ NAAQS will be protected, accounting for primary $PM_{2.5}$ impacts and potential contributions due to $PM_{2.5}$ precursors from the Kulluk and the Associated Fleet, and that it is not necessary to use a photochemical model to further evaluate secondary $PM_{2.5}$ formation in these permitting actions.

Comment W.3.b: Commenters state that, in analyzing potential secondary $PM_{2.5}$ formation, Region 10 should address additional factors. In particular, commenters assert that Region 10 acknowledges that secondary $PM_{2.5}$ formation can occur at a different time and place than where the precursors were emitted and that Region 10 must therefore account for the emission of precursors from Shell's operation before it has technically become an OCS source and after it has stopped being one, since these non-OCS source emissions could react with OCS source emissions.

Response: Even if Region 10 were to require Shell to conduct photochemical modeling for $PM_{2.5}$ precursors, Shell would not be required to include emissions from vessels before Shell becomes an OCS source. See response to comment V.1. On-going monitoring for $PM_{2.5}$ that is expected to continue on the North Slope will assist Region 10 in evaluating the significance of secondary formation of $PM_{2.5}$ on a broader scale in the North Slope region.

X. CATEGORY – AIR QUALITY ANALYSIS FOR OZONE NAAQS

Comment X.1: Commenters state that additional information is required for this permit regarding ozone and ask Region 10 to undertake a regional ozone air quality analysis. Noting the causes and health impacts of ozone, the commenters state that Shell will be emitting 240 tpy of NO_X and 40 tpy of VOC, and that other OCS sources permitted this year and possibly in future years will add to these numbers. The commenters contend that Shell's decision not to model ozone is not justified given that Region 10 has stated that "point sources in the North Slope oil and gas fields near Deadhorse contribute approximately 65,000 tpy of NO_X and 1,100 tpy of VOC. Given this level of activity, and the predicted emissions of ozone constituents, commenters assert that Region 10 should be assessing the cumulative impacts of permitting activities together with documented background concentrations. The commenters further state that research conducted on air quality in Nuiqsut (in light of the pollution generated by Alpine Oil Field and Prudhoe Bay) showed elevated ozone levels in the winter months.

Response: Region 10 stands by its decision that regional photochemical modeling for this project is not required. As described in the Statement of Basis and Technical Support Document, Region 10 reviewed ozone monitoring data along with existing precursor emissions that will impact ozone formation. Based on this review, Region 10 determined further analysis of ozone was not warranted. The most recent monitoring data for all pollutants is summarized in a memorandum included in the administrative record. See Background Data Memo. This memo summarized the 2009 and 2010 ozone data from Shell's and ConocoPhillips' Wainwright and Point Lay monitoring sites as well as 2006 to 2009 ozone data from two other industry run sites in the Prudhoe Bay area (A Pad and CCP) which had recently been reviewed and approved by the Alaska Department of Environmental Conservation. As shown in the data below from the Background Data Memo, the most recent data continue to show that ozone levels at sites along the Alaska Arctic Ocean are well below the ozone NAAQS.

Averaging Period	Wainwright	Point Lay	CCP	A Pad
1-hour	0.039 ppm	0.040 ppm	0.040 ppm	0.078 ppm
8-hour	0.037 ppm	0.040 ppm	0.032 ppm	0.034 ppm

Region 10 disagrees with the commenters' statement that arctic ozone levels are high because the available ozone monitoring data does not support this statement. With respect to the research on air quality in Nuiqsut and the comment stating that the monitoring data that showed elevated ozone levels in the winter months, the commenter has provided no information for consideration that would change Region 10's conclusion regarding the necessity of conducting modeling for ozone. The maximum 8-hour ozone levels shown in the referenced document (Attachment 2) are monthly maximums and are not comparable to the NAAQS, which is based on the 98th percentile of annual values. In addition, the maximums are far below the value of the NAAQS and the 98th percentile would be even lower than the monthly maximums. The reference to "elevated ozone levels in the winter months" appears to be referring to the fact that the levels in the winter are higher than in the summer, not that the levels are "elevated" in comparison to some other reference point, such as the NAAQS.

Comment X.2: Commenters emphasize the importance of Region 10's conclusion that no further evaluation for ozone is needed in light of EPA's decision to revise the 8-hour standard. The commenters note that, EPA had proposed to adopt a new primary 8-hour standard of between 0.060-0.070 parts per million (ppm) this summer, lower than the existing 8-hour standard of 0.075 ppm. The commenters ask Region 10 to ensure compliance with the new 8-hour standard for ozone because they allege that 1) current background concentrations of ozone are already as high as 0.050 ppm (8-hour average) on the North Slope and the formation of additional ozone as a result of offshore oil and

gas operations could take the North Slope out of attainment; 2) the new 8-hour standard is an important health based standard and this standard should be the one that Shell seeks to comply with in its proposed years of future operations in the Beaufort and Chukchi Seas because the proposed air permits are not time limited and thus support the need for compliance with the most recent legal requirements; and 3) both DOEMRE and Shell rely upon the NAAQS to mitigate the impacts of the air emissions associated with Shell's exploration plans on air quality, marine mammals, and other resources so it is particularly critical that compliance with these emerging standards is ensured.

Response: EPA had proposed to reconsider the 0.075 ppm ozone NAAQS set in 2008 and requested comment on a range between 0.060 and 0.075 ppm. 75 Fed. Reg. 2,935 (January 19, 2010). EPA has recently announced, however, that at the President's direction, EPA will not be taking final action on its current proposal to revise the 8-hour ozone NAAQS. EPA instead intends to consider revisions to the ozone NAAQS in connection with the 5-year mandated revision of the ozone NAAQS in 2013. Statement by the President on the Ozone National Ambient Air Quality Standard, September 2, 2011. There is no requirement that an OCS or Title V permit ensure compliance with requirements that have not even been promulgated at the time of permit issuance.

In any event, based on the most recent ozone data, current ozone levels at the four monitoring sites are well below even the low end of the range of the NAAQS EPA had proposed (0.060 ppm). See also response to comment III.3 for a discussion of the environmental justice considerations in connection with the proposed 8-hour ozone NAAQS.

Y. CATEGORY – CUMULATIVE IMPACTS

Comment Y.1: Commenters are concerned that the air quality analysis relied upon by Region 10 in issuing the permits does not account for what the commenters contend is the potentially significant contribution of pollutants from vessels/mobile sources that will operate in the same vicinity as the Kulluk and the Associated Fleet. The commenters allege that the air quality analysis does not account for emissions from the Kulluk, the Icebreakers/Anchor Handlers, or the any of the other Associated Fleet before the Kulluk is determined to be an OCS Source and that such emissions are not represented in the existing background air quality data. The commenters also contend that the modeling conducted by Shell and Region 10 fails to account for the emissions from other nearby mobile sources. Over all, the commenters continue, the air quality analysis fails to account for these potentially significant sources of air pollution, which may result in inaccurate predictions of impacts to air quality. The commenters ask Region 10 to clarify whether and how the air quality analysis incorporates the potential emissions from mobile sources related to the drilling program that are not captured in the PTE calculations for the Kulluk and the Associated Fleet. In this regard, the commenters state that they are concerned both with respect to the impacts on short-term standards, including the 1-hour NO_X, but also the annual air quality standards.

Response: Region 10 disagrees with the commenters that emissions from the Kulluk when it is not an OCS source, from vessels in the Associated Fleet when they are more than 25 miles from the Kulluk while it is an OCS source or when it is not an OCS source, or from other mobile sources in the area, whether related or unrelated to Shell's operations, need to be addressed in the air quality analysis for the OCS/Title V permit for the Kulluk. Although some such emissions may occur as a result of the activities of the OCS source, they are emissions from mobile sources. The Clean Air Act and EPA's implementing regulations for PSD, which Region 10 has used as a guide in issuing this permit, are clear with respect to the treatment of mobile source emissions in the PSD permitting process. In the 1990 amendments to the Clean Air Act, Congress clarified that a stationary source does not include emissions from mobile sources. See CAA § 302(z). In the 1990 amendments, Congress also added the OCS provision (CAA § 328), which includes the requirement that emissions from support vessels are considered to be direct emissions from the OCS source when within 25 miles of the OCS source, but does not change any other provisions of the stationary source permitting programs for OCS sources as they relate to mobile sources.

While neither the OCS regulations nor the Part 70/Part 71 regulations specifically address how mobile sources are to be treated in the permitting process, for this permit, Region 10 believes it is appropriate to follow the modeling requirements and guidance for EPA's PSD regulations (which have been incorporated by reference into the OCS regulations at 40 CFR § 55.13(d)) as to what sources of emissions must be included in considering whether Title V permit terms and conditions for a Title V temporary source assure compliance with the NAAQS, as applicable requirements for such sources. 40 CFR § 52.21(k) requires that:

> …the owner or operator of the proposed source or modification shall demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of:
>
> (i) Any national ambient air quality standard in any air quality control region; or
>
> (ii) Any applicable maximum allowable increase over the baseline concentration in any area."

EPA's regulations define "secondary emissions" at 40 CFR § 52.21(b)(18) as:

> …emissions which would occur as a result of the construction or operation of a major stationary source or major modification, but do not come from the major stationary source or major modification itself. Secondary emissions include emissions from any offsite support facility which would not be constructed or increase its emissions except as a result of the construction or operation of the major stationary source or major modification. Secondary emissions do not include any emissions which come directly from a mobile source, such as

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emissions from the tailpipe of a motor vehicle, from a train, or from a vessel." (emphasis added).

Therefore, consistent with the analysis that would be conducted in connection with an ambient air quality analysis submitted to support a PSD permit, emissions from mobile sources, specifically vessels that are not part of the Associated Fleet because the vessels are beyond 25 miles from the Kulluk when the Kulluk is an OCS source or vessels from the Associated Fleet when the Kulluk is not yet an OCS source, are not secondary emissions and Region 10 does not believe they are appropriate for consideration in issuing this permit.

Comment Y.2: The commenters state that Shell has not demonstrated that its operations will ensure protection of NAAQS because it has not considered cumulative impacts. The commenters contend that Region 10 must require Shell to perform a full impact analysis that considers numerous local sources of pollution as well as pollution generated by Shell before the Kulluk becomes an OCS Source. As support for this contention, commenters identify source of pollution near the leases on which Shell is seeking approval to drill including BP's Central Compression Plant, BP's Central Gas Facility, and 14 other sources. The commenters also cite to EPA guidelines on air quality modeling which states that "[a]ll sources expected to cause a significant concentration gradient in the vicinity of the source or sources under consideration for emission limit(s) should be explicitly modeled." 40 CFR Part 51, App. W § 8.2.3. The commenters contine that Shell has not complied with the guidelines because it has not properly determined which sources may cause a significant concentration gradient, but instead determined that its background measurements are overly conservative and therefore account for the potential effects of other sources. The commenters also reference Shell's statement that the largest source on the North Slope—BP's Central Compression Plant—is 11.5 kilometers from the monitoring location Shell uses for determining background pollution levels, and that there is no source that could be that distance or less from Shell's operations. From this, Shell asserts that no source could affect pollution levels at its drill site as much as BP's Central Compression Plant affects pollution levels at the background monitoring location, and that as a result no cumulative effects modeling is necessary. The commenters state that Region 10's approval of Shell's method of determining significant gradient areas is arbitrary because the method fails to take into account the grouping of sources and local meteorological conditions. The commenters request that Region 10 determine which sources could have overlapping emissions with Shell's source, and direct Shell to model those sources.

Response: Contrary to the commenter's allegation, Region 10 did consider the local meteorological conditions and source groupings. The Central Compressor Plant (CCP)/Central Gas Facility (CGF) complex is the largest NO_X source in Prudhoe Bay. A Pad lies in the predominate downwind direction of this complex. Since the A Pad station measures the impacts that occur from the CCP/CGF complex at a downwind distance of 11.5 kilometers, and since there are no lease blocks within this distance of the CCP/CGF complex, A Pad does account for the possible impacts from CCP/CGF.

The use of A Pad data does even more than account for the impacts from CCP/CGF. Located in-between A Pad and the CCP/CGF complex lies Gathering Center 3 (GC-3) and the Central Power Station (CPS). The potential NO_X emissions from GC-3 is just under 2,900 tons per year. The potential NO_X emissions from CPS are just under 4,000 tons per year. Therefore, the A Pad station not only measures the downwind impacts from CCP/CGF, it also measures the downwind impacts from two other substantive stationary sources. This is the worst-case alignment of Prudhoe Bay stationary sources. Since the distance between A Pad and CCP/CGF represents the nearest distance between any lease block and North Slope source, the data measured at A Pad does in fact represent the worst-case impact from off-site sources. Thus, Region 10 did consider local sources of air pollution in concluding that the permit will assure compliance with the NAAQS. With respect to emissions from Shell's operations before the Kulluk becomes an OCS source, please see response to comment Y.1.

Comment Y.3: Commenters contend that Region 10 has not assessed the combined impact of multiple drilling operations and question why EPA is assessing permit applications separately. The commenters characterize this as a partial, not complete, analysis and request that the Region assess the cumulative effects of the Kulluk, Discoverer, and ConocoPhillips operations. One commenter stated that these drilling operations could be functioning together in real life but that the draft permits for these operations do not reflect the other operations. The commenter requested that Region 10 take a comprehensive look at the cumulative impacts of all permits.

Response: Region 10 disagrees with the commenter that it is not assessing the cumulative impacts of the three drill rigs. As explained at the informational meeting, the Clean Air Act permitting programs are essentially "first come, first served" programs and each subsequent permitting action needs to account for all of those that went before but not any actions that will occur subsequent to that action. The permits for the Discoverer drill ship in the Chukchi Sea and Beaufort Sea are the first permits in their respective vicinities and they only need to assess their impacts on the existing air quality situation.

The Kulluk drill rig in the Beaufort Sea is the second permit and EPA has addressed cumulative impacts by including conditions in the permit that prevent Shell from operating the Kulluk drill rig and the Discoverer drill ship in the Beaufort Sea during the same drilling season. Permit Condition D.4.8. As such, only one of the two drill rigs can operate in the Beaufort in any year so there will be no overlapping impacts with respect to compliance with short term NAAQS. And since the modeling analyses show that each drill rig individually would not violate ambient standards if they operated in the Beaufort Sea for three consecutive years, any combination of years would also not violate annual NAAQS.

As discussed above, ConocoPhillips has withdrawn its permit application for operation of a jack-up drill rig in the Chukchi Sea.

Z. APPLICABILITY OF PSD INCREMENT AND VISIBILITY PROTECTION

Z.1 IN GENERAL

Comment Z.1.a: Although commenters support Region 10's determination that the Kulluk is a Title V temporary source, commenters state that the draft permit for the Kulluk is unlawful because it does not include conditions that will assure compliance with all applicable requirements of the CAA at all authorized locations. In particular, the commenters contend, Region 10 has failed to assess whether emissions from Shell's Kulluk operations will exceed applicable air increments. The commenters assert that, through the creation of limits called "increments," Congress designed the CAA not only to clean up dirty air but also to prevent the degradation of clean air. The commenters cite to language in CAA § 504(e) and similar language in 40 CFR Part 71 stating that no operating permit shall be issued to a temporary source "unless it includes conditions that will assure compliance with all the requirements of [the Clean Air Act] at all locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements . . . ." The commenters continue that Region 10 has both identified an offshore "baseline area" to assess increments in the Chukchi and Beaufort Seas and identified a "minor source baseline date" (namely, July 31, 2009) for SO_2, NO_2, and PM. Because the minor source baseline date has passed, the commenters assert, the CAA "places strict limits on aggregate increases in pollution within the baseline area whether the increases come from minor or major sources," citing as support *Great Basin Mine Watch v. EPA*, 401 F.3d 1094, 1096 (9th Cir. 2005), *Reno-Sparks Indian Colony v. U.S. E.P.A.*, 336 F.3d 899, 903 (9th Cir. 2003), and 75 Fed. Reg. at 64,864, 64,868 (October 20, 2010)("After the minor source baseline date, any increase in actual emissions (from both major and minor sources) consumes the PSD increment for that area.")(parenthetical added for emphasis). The commenters state that increments are thus applicable to all sources—both major and minor. The commenters further assert that EPA's interpretation that a demonstration of compliance with increments is not required to issue Title V permits to temporary sources that are not PSD major source is inconsistent with the statutory language of CAA § 504(e), EPA's own Part 70 and Part 71 regulations, and the preamble to the Part 70 regulations. The commenters also state that Region 10 is only interpreting a part of the statutory language, therefore missing both the meaning and the intent behind the provision pertaining to temporary sources. Because Region 10 did not analyze Shell's compliance with applicable increments or impose permit conditions to ensure compliance with them, the commenters conclude, the draft permit does not ensure compliance with increments and the permit violates CAA § 504(e).

Response: EPA agrees with the commenters that all emission increases and decreases from both major and minor sources (with only a few exceptions provided for in the PSD statute[38]) occurring after the minor source baseline date is triggered, will consume or expand available increment. However, EPA does not agree that the CAA and regulations applicable in this instance require that Shell demonstrate that the Kulluk will not cause a violation of the PSD increments in order to obtain the type of permit issued by EPA in this case.

The fact that minor source emissions consume increment does not necessarily mean that a minor source permit applicant is required to demonstrate that its proposed action will not cause or contribute to a violation of the increment to obtain a minor source construction permit. The criteria that must be met to obtain a minor source construction permit in this case are principally based on the terms of the minor source permitting program approved by Region 10 as part of the COA regulations. In this instance, the applicable Alaska regulations approved by EPA (18 Alaska Administrative Code (AAC) 50.502) do not require that a minor source permit applicant demonstrate that it will not cause or contribute to a violation of the PSD increment in order to obtain this type of permit.

The CAA and EPA regulations do not require that state minor source permitting programs contain criteria that require a minor source permit applicant to demonstrate that proposed construction will not cause a violation of a PSD increment. This is something states have the discretion to require, but is not a mandatory requirement under the provisions of the CAA or EPA regulations applicable to minor source permitting programs.

Section 110(a)(2)(C) of the CAA sets forth the basic requirement for preconstruction permits for both major and minor sources. Specifically, Section 110(a)(2)(C) states that the implementation plan shall:

> (C) include a program to provide for the … regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that national ambient air quality standards are achieved, including a permit program as required in parts C and D;

The permit program required in Part C of the CAA applies to major emitting facilities as defined in Section 169(1) of the CAA and the permit program required in Part D of the CAA applies to major stationary sources as defined in Section 302(j) of the CAA and in the various pollutant specific subparts of Part D. Only the major emitting facilities subject to the Part C permitting program (also referred to as the PSD permitting program) are expressly required under the CAA to demonstrate compliance with applicable PSD increments in order to obtain a permit to construct. See CAA § 165(a)(3)(A). New and modified stationary sources that are not major emitting facilities subject to the Part C permitting program are only required to demonstrate that the NAAQS will be achieved unless the applicable implementation plan provides otherwise. See CAA § 110(a)(2)(C); 40 CFR §§ 51.160(a)(2) and (b)(2).

For non-PSD sources, a state air quality management authority has a responsibility to ensure that its state implementation plan contains measures to prevent significant deterioration of air quality in accordance with section 161 of the CAA and 40 CFR §§ 51.166(a)(1) of EPA's implementing regulations. However, these provisions leave states with the discretion to determine whether it is necessary to require minor sources to

[38] See CAA § 163.

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demonstrate that they will not cause a violation of any PSD increments as a condition of obtaining a minor source permit. In this instance, Alaska has not adopted minor source permit program regulations that require a showing that a minor source will not cause a violation of an increment in order to obtain the appropriate construction permit. Thus, the minor source COA regulations applicable to this source do not require a source to demonstrate compliance with PSD increments.

Furthermore, as discussed in the Statement of Basis (at 26), EPA does not interpret CAA § 504(e) to create new permitting requirements for temporary sources with respect to demonstrating compliance with increments beyond what would otherwise be applicable to such sources under applicable CAA construction permitting programs. The statute states in relevant part that:

> The permitting authority may issue a single permit authorizing emissions from similar operations at multiple temporary locations. No such permit shall be issued unless it includes conditions that will assure compliance with all applicable requirements of this chapter at all authorized locations, *including but not limited to ambient standards and compliance with any applicable increment or visibility requirements under part C of subchapter I of this chapter*.

CAA § 504(e) (emphasis added).

The difference in phrasing here is important: ambient standards are referenced without qualification, whereas increment and visibility requirements are prefaced with "any applicable" and followed by "under part C of subchapter I of this chapter." Based on this distinction, EPA reads this provision of the Clean Air Act to require that all Title V temporary sources[17] demonstrate that the source will not violate ambient standards (NAAQS) at all authorized locations but that such a source need only assure compliance with increment at all locations where the source is otherwise required to show it will not cause of violation of increments under part C of subchapter I of this chapter, such as through section 165(a)(3) of the CAA and the applicable PSD permitting program in the case of major sources or other provisions in an implementation plan or COA regulation that implement Section 161 of the Act and may also apply to minor sources.

The language used in Section 504(e) is consistent with the provisions in the CAA and EPA's regulations described above that make the ambient standards (the NAAQS) applicable to all stationary sources (both minor and major) at the time of construction permitting, but that make the increment requirements in Part C only applicable to certain stationary sources, that is PSD major sources or minor sources when applicable under an applicable minor source permitting program. This reading of the statute gives meaning to the different language that Congress used when referring to the ambient standards on the one hand and the Part C requirements for increments on the other hand.

[17] This term includes any source that would need more than once during the life of its Title V operating permit. See Memorandum to Docket A-90-33, re: Docketing of Detailed Responses to Comments on the Part 70 Operating Permit Regulations, at 6-34. It thus includes both PSD portable sources and PSD temporary sources.

Similarly, there is no indication in EPA's promulgation of the regulations implementing Section 504(e) that EPA interpreted that section of the CAA to impose on Title V temporary sources that are not also PSD major sources a direct requirement to demonstrate compliance with increment in the Title V permitting process. The thirteenth item in EPA's definition of "applicable requirement" in the Part 70 or Part 71 Title V regulations reads as follows: "Any national ambient air quality standard or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act." 40 CFR § 70.2; 40 CFR § 71.2. The last clause makes clear that the NAAQS, increment, and visibility requirements are applicable requirements for Title V applicants only to the extent required under section 504(e) of the Act. Thus, this provision of the regulations was clearly not intended to require more than the cited provision of the Clean Air Act would otherwise require. As discussed above, because the reference to the increment in section 504(e) of the CAA is modified by the phrase "any applicable," the regulatory language EPA adopted in section 71.2 is likewise limited to requiring a Title V temporary source to demonstrate compliance with the increment where otherwise applicable under construction permitting programs.

Comment Z.1.b: Commenters state that, in the Statement of Basis (at 25), Region 10 attempts to justify its wholesale failure to address compliance with increments by suggesting that they are applicable only where a source "would otherwise be subject to PSD" and that Region 10 bases this conclusion on the observation that the word "applicable" precedes "increment" in CAA § 504(e). The commenters assert that this interpretation is wrong as a matter of law because, once triggered by a major source permit application in an area, increment limits apply to both major and minor sources. The commenters contend that Section 504(e) does not create a different rule for Title V temporary sources and, indeed, states that a Title V permit shall not be issued to a temporary source "unless it includes conditions that will assure compliance with all the requirements" of the CAA. The commenters state that the term "applicable" as used in CAA § 504(e) is not a reference to the applicability of general PSD requirements to a particular source, but rather refers to whether a major source application has triggered increment requirements for the relevant baseline area within which the temporary source is expected to operate and thus made such requirements "applicable." As support, the commenters state that, in promulgating its Title V implementing regulations, EPA declared that "NAAQS and the increment and visibility requirements under part C of title I of the Act are applicable requirements for temporary sources . . . ." Because in this case, previous major source applications have triggered the increment requirements in the area, the commenters state that Region 10 must ensure that the permit meets those requirements.

Response: EPA agrees that, once a minor source baseline date is triggered, emission increases and decreases of all sources, including minor sources after the minor source baseline date, will consume or expand increment. However, the increments themselves are not directly applicable as permitting criteria for sources that are not otherwise required to demonstrate compliance with increments to obtain a construction permit. As

discussed above the state air quality management authority is required under Section 161 of the CAA and 40 CFR §§ 51.166(a)(1) of EPA's implementing regulations to adopt measures in its SIP to prevent significant deterioration. States have the discretion to determine the types of measures that are needed to meet this objective and are not expressly required to mandate that minor sources demonstrate they will not cause a violation of an increment to obtain a construction permit. When an air pollution authority finds that these measures have not been successful and an increment violation has occurred, it must revise its SIP to adopt emission limitations or other control measures to remedy the violation. 40 CFR § 51.166(a)(3).

As discussed in the response to comment Z.1.a above, EPA does not interpret section 504(e) and EPA's Part 71 regulations to require non-PSD sources to demonstrate compliance with increments in order to get a Part 71 operating permit when the applicable state or federal implementation plan does not otherwise require such a demonstration. The commenter quotes the thirteenth item in the definition of applicable requirement, but neglects to reference the last clause of this provision, which reads as follows "but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act." As discussed above, this clause indicates that EPA's regulations do not create any additional requirements for stationary sources beyond what the Act would require. Thus, EPA is not persuaded by commenter that the "any applicable" language that precedes the reference to increments is only intended to reference circumstances when a major source permit application has triggered increment requirements in a baseline area.

If, at any time after the Kulluk begins operation under its Title V/OCS permit, Region 10 determines that the actual emissions increases from the permitted OCS source cause or contribute to an increment violation,[38] Region 10 has authority to adopt additional requirements to ensure that increments are not violated. See CAA §§ 301 and 328; 40 CFR § 55.13(h). However, as shown in the Technical Support Document (Table 11, at 33) and confirmed by the comments of the North Slope commenters' (see Table 3 at page 13), the modeling analysis for this project shows that the allowable emissions would not cause or contribute to a violation of any increment where the minor source baseline has already been triggered. And, as discussed below in the response to comment Z.2.a, $PM_{2.5}$ emissions from the Kulluk will be part of the baseline concentration and will not consume any of the available $PM_{2.5}$ increment. So, although EPA does not believe that CAA § 504(e) and 40 CFR Part 71 require a demonstration of compliance with increments in this Title V permit issuance process, the modeling analysis supporting this permit actually demonstrates that PSD increments will not be violated.

Comment Z.1.e: Commenters state that EPA's regulations fail to support the interpretation that increment and visibility are not "applicable requirements" for minor sources under CAA § 504(e) and 40 CFR Part 71. According to the commenters, EPA's regulations explain that "[p]ermits for temporary sources shall include the following: (1) Conditions that will assure compliance with all applicable requirements at all authorized locations ....." citing to 40 CFR § 71.6(c). The commenters continue that the Part 71 regulations also include a definition of "applicable requirement" that includes thirteen requirements, including "(2) Any terms or condition of the preconstruction permits issued pursuant to regulations approved or promulgated through rulemaking under title I, including parts C and D, of the Act" and "(13) Any national ambient air quality standard or increment or visibility requirement under part C of title I of the Act, but only as it would apply to temporary sources permitted pursuant to section 504(e) of the Act," citing to 40 CFR § 71.2 (definition of applicable requirement). The commenters contend that EPA's interpretation of this definition reads the thirteenth requirement out of the regulations because, under Region 10's interpretation, the thirteenth requirement is subsumed by the second requirement. Thus, the commenters conclude, an interpretation that requires temporary sources to comply with the NAAQS, increments, and visibility standards is the only reading that gives meaning to all the regulatory provisions in the definition of applicable requirement. Commenters also cite to language in the in the preamble to the final Part 70 rule which states that "Temporary sources must comply with these requirements because the SIP is unlikely to have performed an attainment demonstration on a temporary source."

Response: EPA disagrees with the commenter's assertion that its interpretation of the thirteenth requirement does not give meaning to all of the regulatory provisions in the definition of "applicable requirement." The commenters argue that EPA's interpretation would be subsumed by the second requirement – that the permit include the terms and conditions of any preconstruction permit. However, the commenter fails to recognize that the permit for a portable (temporary) source that would be issued pursuant to the PSD regulations, specifically 40 CFR § 52.21(i)(1)(viii), is not required to assure compliance with the NAAQS or increments at all future locations. Rather, the PSD permit must only ensure that, at future locations, emissions from the permitted source would not impact a Class I area or an area where the increment is known to be violated. The PSD permit for a portable source would not thus not be required to ensure that the PSD portable source would not cause a new increment violation at a future location or that it would not have a local visibility impact at a future location. So while EPA's interpretation is that Title V temporary sources that are not PSD sources do not need to demonstrate compliance with PSD increments and visibility requirements unless otherwise required by the applicable implementation plan, Region 10's interpretation does result in the imposition through the Title V permit of additional requirements on PSD sources beyond the conditions that would be included in a PSD preconstruction permit under 40 CFR § 52.21. Region 10's interpretation thus maintains the basic premise of the CAA preconstruction programs – that PSD major sources are subject to NAAQS and increment in the permitting process, where as non-PSD sources are subject only to the NAAQS unless the applicable minor source program also includes the increment – yet still has meaning by imposing on Title V temporary sources the requirement to demonstrate at subsequent locations that they continue to comply with those underlying applicable preconstruction requirements at each subsequent location.

With respect to the language in the preamble to the final Part 70 rule cited by the commenters with respect to Title V temporary sources, there is nothing in that language

[38] 40 CFR § 52.21(b)(13) (definition of "baseline concentration" is in terms of actual emission increases and decreases).

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to suggest that EPA interpreted Section 504(e) of the Clean Air Act to change the basic premise of the Clean Air Act permitting scheme for PSD sources versus non-PSD sources, namely, that PSD sources are directly subject to NAAQS and increment requirements, whereas non-PSD sources are not required to show they will not cause a violation of the increment unless the applicable implementation plan otherwise requires it for such sources. If a non-PSD Title V source applied for a preconstruction permit at one location and then applied for a new preconstruction permit to move to a new location, the source would have to demonstrate compliance with the NAAQS at each location as a condition of obtaining a permit, but would not have to demonstrate compliance with increment at either location absent a similar requirement for minor sources in the applicable implementation plan. In contrast, a PSD source that applied for a preconstruction permit at one location and then applied for a new preconstruction permit to move to a new location would have to demonstrate compliance with the NAAQS and increment at both locations. EPA believes the intent of the Title V temporary source provisions is to relieve sources of the burden of applying for Title V permits for each new location, while at the same time, assuring compliance with all requirements to which the source would be subject if it were a new source at each such new location.

Comment Z.1.d: Commenters assert that, in light of the statutory and regulatory language and the special sentiment given to temporary sources in the 1990 amendments to the Clean Air Act, it is appropriate that compliance with both the increments and visibility requirements is ensured for these permits. The commenters state that this is particularly critical because of the proximity of these operations to the Arctic National Wildlife Refuge, (ANWR) and that the OCS regulations provide that EPA "shall not issue a permit to operate to any existing OCS source that has not demonstrated compliance with all applicable requirements of this part."

Response: See the response to comments Z.1.a-Z.1.c above in general with respect to the applicability of increments to Title V temporary sources that are not PSD major sources. EPA has determined that visibility is similarly not an applicable requirement for Title V temporary sources that are not PSD major sources for the reasons set for in the Statement of Basis and response to comments Z.1.a-Z.1.c. In addition, ANWR is not a federal Class I area and as such, the increment and visibility requirements of Part C that apply to federal Class I areas are not relevant for ANWR.

Comment Z.1.e: Commenters state that EPA's regulations for SIPs provide that "[i]n accordance with the policy of Section 101(b)(1) of the CAA and for the purposes of section 160 of the Act, each applicable State Implementation Plan and each applicable Tribal Implementation Plan shall contain emission limitations and such other measures as may be necessary to prevent significant deterioration of air quality." 40 CFR § 51.166(a). This regulatory provision, the commenters continue, supports the need for the SIP to protect increments. Therefore, the commenters contend, even though the SIP would not have accounted for the temporary sources in assuring protection of the increments, any Title V temporary source permitted under Part 71 must demonstrate compliance with the increments in order to ensure all SIP requirements are met. Commenters contend that the Part 70 regulations pertain to State Implementation Plans and that the oil and gas companies have advocated that such requirements only apply in the inner OCS *(i.e.*, within 25 miles of the State's seaward boundary). The commenters assert, however, that CAA § 328 makes it clear that EPA "shall establish requirements to control air pollution from Outer Continental Shelf sources located offshore ... to attain and maintain Federal and State ambient air quality standards and to comply with the provisions of the PSD program." The commenters therefore assert that, because the goal of CAA § 328 is attainment of air quality standards, it matters little whether the source is located on the inner or outer OCS, because in both cases the relevant SIP will not have performed an attainment demonstration for such sources. Because the preamble to the Part 71 regulations relies upon the reasoning put forth by EPA in developing the Part 70 regulations, especially in discussing applicable requirements, the statutory and regulatory language for Part 70, as well as EPA's regulatory preambles, all support a finding that the NAAQS, increments, and visibility requirements are all applicable to temporary OCS sources under Part 71.

Response: See the other responses to comments in this Subcategory Z.1 with respect to the applicability of increments and visibility requirements to Title V temporary sources that are not subject to PSD permitting. Region 10 agrees that, in general, there is no intention for the Part 71 federal operating permit program that applies on the outer OCS to be different from the onshore Part 70 operating permit program that Region 10 has incorporated by reference in the COA regulations for application in the inner OCS (the only differences would be the result of differences between the State adopted program and EPA's Part 71 regulations). In this case, the requirements for Title V temporary sources in the inner OCS and outer OCS off of Alaska are the same because Alaska has adopted EPA's Part 71 rules with respect to Title V temporary sources by reference for application onshore and Region 10 has in turn adopted these requirements into the COA regulations for application in the inner OCS.

Region 10 does not agree with the rationale put forth by the commenters, however, that in both cases the relevant SIP will not have performed an attainment demonstration because there is no SIP (or implementation plan equivalent) for the outer OCS. Section 328 does not require EPA to establish an implementation plan or other comprehensive air quality management program for the outer OCS. It only requires EPA to adopt regulations for OCS sources and even then, only for certain purposes. Nonetheless, as discussed in response to comment Z.1.e, EPA does have authority to address violations of increment on the inner and outer OCS.

Z.2 SUBCATEGORY – $PM_{2.5}$ INCREMENT

Comment Z.2.a: Commenters state that the Kulluk operations, as proposed, do not comply with the 24-hour average Class II PSD increment for $PM_{2.5}$. Commenters note that on October 20, 2010, EPA adopted a final regulation that went into effect on December 20, 2010 and that establish new PSD increments for $PM_{2.5}$ that went into effect on October 20, 2011. The commenters assert that Section 328 states that "[n]ew OCS sources shall comply with such requirements on the date of promulgation," citing to CAA § 328. The commenters state that, as a "new OCS source" yet to commence operation,

Shell's proposed arctic drilling operations must comply with all NAAQS and PSD program requirements that pre-date commencement of operations, including the new $PM_{2.5}$ increments, citing to 42 U.S.C. §§ 7411(a)(2), 7475(a), 7627(a)(1) and (a)(4)(D). Moreover, with respect to OCS sources, the commenters continue, Congress clearly prohibited grandfathering by directing that even "existing OCS sources shall comply on the date 24 months" after promulgation of standards. Commenters state that application of the $PM_{2.5}$ increment is important for Shell's permit because Shell's modeling indicates that Shell's emissions could increase the 24-hour $PM_{2.5}$ concentrations by 17 ug/m^3, which substantially exceeds EPA's newly enacted $PM_{2.5}$ increment of 9 ug/m^3.

Response: For a discussion of why PSD increments are not applicable to this permit, please see responses to comments in Subcategory Z.1.

With respect to the new $PM_{2.5}$ increments, emissions from the Kulluk and the Associated Fleet, which is a minor source for purposes of the PSD regulations, will be part of the baseline concentration and therefore, will not consume any of the available $PM_{2.5}$ increment. See CAA § 169(4) (definition of "baseline concentrations"); 40 CFR § 52.21(b)(13). Until the $PM_{2.5}$ minor source baseline date is triggered (*i.e.*, any date on or after October 20, 2011—the "trigger date" for $PM_{2.5}$ increments) by submittal of a complete PSD permit application for a source that has significant $PM_{2.5}$ emissions, emissions from minor sources are part of the $PM_{2.5}$ baseline concentration and do not consume increment. Since a complete PSD permit application has not been submitted to Region 10 for a new major source on the Alaska OCS nor to ADEC for a new major source or a major modification to an existing major source in the Northern Alaska Intrastate Air Quality Control Region after the trigger date and prior to the issuance of the Kulluk minor source permit, emissions from the Kulluk will not consume any of the $PM_{2.5}$ increment.

In any event, Region 10 does not interpret the cited language from the Clean Air Act to address when new regulatory standards take effect. Section 328 authorized EPA to issue regulations to establish requirements to control air pollution from OCS sources. It directed that "[n]ew sources shall comply with such requirements on the date of promulgation and existing sources shall comply on the date 24 months after. EPA promulgated the regulations authorized by Section 328 on September 4, 1992, and they became effective on that date. 57 Fed. Reg. 40,792 (September 4, 1992). This is confirmed by the language of 40 CFR § 55.3(d), which mandates that that new sources "shall comply with the requirements of this part by September 4, 1992." The permit fully complies with that provision by requiring the sources to comply with the requirements of Part 55.

Although this permit does not need to include an air quality analysis with respect to the new $PM_{2.5}$ increment, Region 10 has nonetheless considered the new $PM_{2.5}$ increment in connection with Region 10's responsibilities under Executive Order 12898 entitled "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations." Exec. Order 12898, 59 Fed. Reg. 7.629 (Feb. 16, 1994). As discussed in the Technical Support Document (at 20-22 and 33), the emissions of the

Kulluk and the Associated Fleet, when operating in compliance with permit requirements, will not cause or contribute to a violation of the $PM_{2.5}$ NAAQS. For purposes of the Executive Order on Environmental Justice, the EAB has recently confirmed that "compliance with the NAAQS is emblematic of achieving a level of public health protection that, based on the level of protection afforded by the NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants." Remand Order I at 73. This is because the NAAQS are health-based standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics and is supported by the fact that "[t]he Agency sets the NAAQS using technical and scientific expertise, ensuring that the primary NAAQS protects the public health with an adequate margin of safety." Id. Region 10 does not believe there will be a disproportionately high and adverse human health or environmental effects due to exposure to $PM_{2.5}$ emissions because the permit ensures that emissions from the Kulluk and the Associated Fleet will not cause or contribute to a violation of the $PM_{2.5}$ NAAQS anywhere within ambient air to which the public has access and EPA has not made any findings that the current $PM_{2.5}$ NAAQS are inadequate to protect public health. In contrast to the NAAQS, which are set at a level to protect public health, CAA § 109, PSD increments are established to prevent the significant deterioration of air quality, CAA § 166. EPA's consideration of the health and welfare effects of $PM_{2.5}$ in the context of carrying out the statutory requirement to balance the goals of CAA §§ 101 and 160 (to protect public health and welfare, parks, and air quality related values and to insure economic growth) in setting increment does not support a conclusion that $PM_{2.5}$ emissions at levels below the level of the NAAQS have an adverse effect on public health.

Comment Z.2.b: Commenters also state that, for Title V permits, "applicable requirements" include "requirements that have been promulgated or approved by EPA through rulemaking at the time of issuance but have future compliance dates." Because the new increments have already been established by EPA by regulation, the commenters assert, Shell must demonstrate compliance with them. The commenters contend that, with the proposed Kulluk operations, Shell has consumed almost two times the available increment and would not be able to demonstrate compliance with these increments as of the time that the minor source baseline date is established. Even if the permits are issued prior to the establishment of the minor source baseline date, the commenters continue, Shell should be required to demonstrate that it will comply with the $PM_{2.5}$ increments prior to commencement of operations.

Response: As discussed above in the response to comment Z.2.a, the emissions from the Kulluk will not consume $PM_{2.5}$ increment because the Kulluk will be an existing source if and when the minor source baseline date for the $PM_{2.5}$ increment is triggered. Therefore, any $PM_{2.5}$ concentrations attributable to the Kulluk, such as the modeled 17.0 ug/m^3, 24-hour concentration, will simply increase the $PM_{2.5}$ baseline concentration for the area.

R011824

R011825

AA. CATEGORY – VISIBILITY PROTECTION

Comment AA.1: Commenters state that Region 10 must ensure that the permitted temporary source will not adversely impact visibility in the region including in nearby refuge lands, such as ANWR, located adjacent to Kaktovik, which is as close as 14 kilometers (8 miles) from the nearest lease area. Commenters state that Congress has recognized the "unique wildlife, wilderness and recreational values" of ANWR. Commenters also contend that Part C of the Clean Air Act recognizes the importance of protecting air quality of areas with unique wildlife and recreational values, such as ANWR and that the CAA establishes the need to "preserve, protect and enhance the air quality ... areas of natural, recreational, scenic or historic value" and to "insure economic growth will occur in a manner consistent with the preservation of existing clean air resources." The commenters generally support responsible onshore oil and gas development, including in ANWR, and also agrees with the CAA goal of protecting clean air. Given the proximity of ANWR to the proposed areas of operation, however, the commenters state that Region 10 must consider the air quality impacts, including visibility, to this area.

Response: See the responses to comments in Subcategory Z.1 for Region 10's determination that the visibility requirements of Part C of the CAA are not applicable requirements for purposes of this permit. In addition, the visibility requirements of Part C apply only to federal Class I areas, and ANWR is not a federal Class I area. While the general language in the purpose statement of Part C (specifically CAA § 160) speaks in general of preserving, protecting, and enhancing air quality in areas of special national interest, the statute then goes on to establish the specific provisions for designating certain federal lands as "Class I" areas and establishing stringent requirements for protecting visibility and other air quality related values of the areas . See CAA §§ 162(a), 164(a), 165(a)(5), and 165(d)). Other federal lands, such as ANWR, are not Class I areas under the CAA and therefore receive the same level of air quality protection as any other lands that are not Class I areas.

Similarly, the specific requirements of Part C for the protection of visibility are even more limited – just to the mandatory federal Class I areas established by Congress in section 164(a) of the CAA. See §169A(a)(1). Again, ANWR is not a mandatory federal Class I area and, as such, the visibility requirements of Subpart 2 of Part C of the CAA are not applicable.

Comment AA.2: In addition to the basic provisions for preventing significant deterioration of air quality under the CAA, commenters state that other authorities also seek to protect air quality related values (AQRVs), such as visibility, in areas designated as Class II air sheds. The commenters state that the Fish and Wildlife Service (FWS), the Federal Land Manager (FLM) of ANWR, suggests that "planning, research and monitoring outlined ... for Class I areas can also be applied in Class II areas" and further notes that "information on air quality and AQRVs of a Class II area is important for comprehensive management of these refuge resources." The commenters contend that one of the FWS' broadly stated goals is to "[i]dentify and recommend solutions for external threats to refuge habitats, such as air and water quality." The commenters further state that emissions can be seen at distances greater than the eight miles that Shell will be from ANWR. For example, the commenters contend, the modeling prepared for the Shell oil shale research, development and demonstration (RD&D) Environmental Assessments (EAs) in northwest Colorado predicted that on 8-14 days per year, the visibility "limit of acceptable change" would be exceeded as a direct result of the Shell projects (not considering cumulative sources) at Flat Tops Wilderness Area, roughly 50 miles from the proposed source. The commenters continue that, while this particular project predicted greater emissions than projected emissions from Shell exploration activities with the Kulluk, the distances at which visibility impacts were predicted indicate that, even at lower emission rates, the Kulluk operations have the potential to impact visibility onshore and in ANWR. Given the potential for visibility impacts in the FWS managed area, the commenters conclude, Region 10 must, at a minimum, notify FWS of the potential visibility effects of proposed offshore exploration activities on ANWR.

Response: Region 10 did provide notice of issuance of the draft permit to the FWS office responsible for managing ANWR. Region 10 recognizes that Federal Land Managers of areas that are not Class I areas under the CAA still have an interest in protecting air quality related values (including visibility) of those areas. However, as discussed above in the response to comment AA.1, the Clean Air Act provides no additional protections to such Class II federal lands. EPA and permitting authorities do often work with permit applicants and the Federal Land Managers to assess the effect that new emissions might have on such areas, but there is no requirement to do so.

BB. CATEGORY – ENVIRONMENTAL JUSTICE

BB.1 SUBCATEGORY – IN GENERAL

Comment BB.1.a: Commenters appreciate that Region 10 has conducted an analysis of compliance with the new 1-hour NO_2 NAAQS but are still concerned that the environmental justice analysis omits consideration of important factors that they believe may present a risk to human health and, therefore a disproportionate risk to environmental justice communities on the North Slope. The commenters state Region 10's reliance on a demonstration of compliance with the NAAQS in order to assess environmental justice considerations is inconsistent with the EAB's direction in remanding the permits for the Discoverer drillship to Region 10. The commenters contend that the existing modeling of compliance with the NAAQS appears to exclude any potential impacts from mobile source emissions that occur before the Kulluk is deemed to be an OCS Source and/or take place more than 25 miles from the OCS Source, including emissions while moving to the drill site, the emissions of the icebreaker/anchor handler while setting the anchors for the Kulluk, and the emissions from the fleet of support vessels, including icebreakers, before the Kulluk attaches to the first anchor. Although the commenters acknowledge that these emissions are not deemed to be emissions from the OCS source, they assert that Region 10 must provide a rational basis for whether and how the OCS Source and the Associated Fleet emissions have been analyzed in combination with the mobile source emissions in assessing potential adverse health impacts to local communities, both onshore and in offshore areas used for

subsistence purposes. The commenters are concerned that the NAAQS analysis, in and of itself, does not account for the potential combined impacts of the stationary and mobile source emissions, which could be relevant considerations in assessing potential health impacts from short-term and long term exposure to NO_2 as well as exposure to ozone, $PM_{2.5}$, and PM_{10}, among other pollutants. The commenters contend that Region 10 has some leeway in making sure these emissions are considered and that the ships are set up in such a way so as to bring down emissions to where they need to be.

Response: Executive Order 12898 provides that "[t]o the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and Commonwealth of the [Northern] Mariana Islands." Section 1-101 of Exec. Order 12898, 59 Fed. Reg. 7,629 (February 16, 1994). "Federal agencies are required to implement this order consistent with, and to the extent permitted by, existing law." Id. at 7632. As discussed in the Statement of Basis (at 54), the Title V operating permit program does not generally impose new substantive air quality control requirements and that, therefore, the primary means of addressing environmental justice issues in the Title V program is through increased public participation and review by permitting agencies and conditions to assure compliance with applicable requirements. Because the Title V permit in this case requires compliance with the NAAQS as an applicable requirement and established limits on PTE, Region 10 has considered environmental justice concerns in this action, where possible, in the context of assuring compliance with requirements applicable to the source. Id.

The language of the Executive Order directing federal agencies to identify and address impacts "as appropriate," and "[t]o the greatest extent practicable and permitted by law" imparts considerable leeway to federal agencies in determining how to comply with the spirit and letter of the Executive Order. Avenal Order at 24. In implementing Executive Order 12898, it is appropriate for the Agency to consider the best available data that are germane in light of the scope and nature of the action before the agency in analyzing whether there may be disproportionate adverse impacts on minority communities and low-income communities. Shell Remand Order I at 80, fn. 87; Avenal Order at 24. The EAB has recently confirmed that the Executive Order does not require EPA to reach a determinative outcome prior to issuing a permit, particularly when the available data is inconclusive. Avenal Order at 24.

The commenters acknowledge that the emissions it is asking Region 10 to consider—from the icebreaker/anchor handler while presetting the anchors for the Kulluk and from the fleet of support vessels before the Kulluk attaches to the first anchor—are mobile source emissions that occur before the Kulluk is deemed to be an OCS source and/or take place more than 25 miles from the OCS source. These mobile source emissions are therefore not subject to regulation under this permit and were not required to be addressed in Shell's application materials. Region 10 has nonetheless considered

information available to it. While the Kulluk is in transit to the drill site it will be moving, which will reduce the impact of the emissions at any one location. In addition, Shell has committed to using only ultra-low sulfur diesel fuel for its OCS exploration activities north of Bering Strait, although the permit can only require its use while the Kulluk is an OCS source and the Associated Fleet is within 25 miles of the source. This is expected to significantly reduce ambient concentrations of SO_2 well below the NAAQS for SO_2 and will also result in a reduction of particulate matter.

Shell's Exploration Plan discusses vessels relating to the Kulluk's operations that are not considered part of the Associated Fleet because they always will be located more than 25 miles from the Kulluk while the Kulluk is an OCS source. 2012 Revised Camden Bay Exploration Plan, Section 13.0. The Exploration Plan, however, does not include estimates of air emissions from these other vessels during the time they are more than 25 miles from the Kulluk or before the Kulluk becomes an OCS source. Region 10 does not have sufficient information regarding these emissions to conclude with certainty that consideration of these emissions, in conjunction with emissions authorized under the permits, would not cause or contribute to a violation of the NAAQS. However, Region 10 does not expect these additional emissions to do so because the vessels in question are expected to be in transit during this time period. Because compliance with the NAAQS is considered with respect to a specific location and because these vessels are expected to be moving during the activities in question, the impact of emissions from these vessels during these activities would be dispersed during transit and the impact at any one location would not be as great as would be the same level of emissions from a stationary source. To the extent any of these vessels would be stationary for any extended period of time, Region 10 expects that such vessels would be anchored and not using their propulsion engines, the emission units that would be expected to have the highest emissions on these vessels.

In summary, although Region 10 has insufficient information to conclude that consideration of emissions from these different vessels and activities would not, in conjunction with emissions authorized under the permits, cause or a contribute to a violation of the NAAQS, Region 10 also has no information to suggest that they would do so. Region 10 therefore has no basis to conclude that, even considering these other vessels and activities in conjunction with emissions authorized under the permits, issuance of these permits would have a disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Comment BB.1.b: A commenter states that the fact that Shell's operations comply with the NAAQS alleviates any environmental justice concerns in the local communities as both EPA and the EAB have repeatedly stated that in the context of an environmental justice analysis compliance with the NAAQS is "emblematic" of achieving the requisite level of public health and environmental protection, with a built-in margin of safety. The commenter also notes Region 10's statements that the concentration of air pollutants in the local communities would be "well below" the NAAQS, including emissions from Shell's operations and background concentration of air pollutants.

R011826

R011827

Response: Region 10 agrees with the commenter that, in the context of an environmental justice analysis, compliance with the NAAQS is emblematic of achieving a level of public health protection that based on the level of protection afforded by the NAAQS demonstrates that minority and low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants. Region 10 also agrees with the commenter that the concentration in the local communities of air pollutants authorized under this permit is expected to be well below the NAAQS.

Comment BB.1.c: Commenters state that the environmental justice concerns of communities of federally recognized tribes and peoples that inhabit the Arctic have not been sufficiently considered and that Region 10 should do a more thorough analysis, looking at air pollution impacts on communities.

Response: As discussed in Section 5.4 of the Statement of Basis and Category BB of the Response to Comments, Region 10 believes it has considered environmental justice concerns in a manner consistent with the Executive Order. Region 10's analysis did consider air pollution impacts on local communities. The commenters have not identified any specific deficiencies in Region 10's environmental justice analysis.

Comment BB.1.d: A commenter states that Region 10 must also work harder to make sure the Kulluk and Conoco air permits allow for air pollution levels that do not harm people and the environment, especially as Alaska Native communities will be disproportionately impacted by these activities. The commenter states that there are already high levels of asthma in these communities from the flaring from onshore operations and in Cook Inlet. The commenter contends that EPA's reviewing court previously found that more analysis was needed to assess the impact to Alaska Native communities for Shell's Discoverer drillship permit and the Kulluk and ConocoPhillips permits are the same. As an example, the commenter states that Conoco can emit 39,800 tons per year of carbon dioxide and the Kulluk can emit 80,000 tons of carbon dioxide per year and these equal the greenhouse gas emission levels of about 9,580 households, when there are only 2,880 North Slope Borough households today. The commenter states that this is a huge increase. The commenter also notes concerns about black carbon.

Response: For the reasons discussed in the Statement of Basis, throughout this Response to Comments, and the other documents in the administrative record for this permit, Region 10 is proceeding to issue this permit because it complies with the requirements of CAA § 328, 40 CFR Part 55, and 40 CFR Part 71. Region 10 has conducted an extensive review and analysis of the air quality impacts of the project and has determined that the permit will not cause or contribute to a violation of currently applicable NAAQS. Environmental justice considerations were thoroughly considered to the greatest extent practicable and permitted by law, as discussed in the Environmental Justice Analysis and in this Response to Comments document. Region 10 has concluded that the activities to be authorized under the permit will not have disproportionately high and adverse human health or environmental effects with respect to air pollutants authorized under the permit on minority or low-income populations residing in the North Slope, including coastal communities closest to the proposed operations and including consideration of the impact on communities while engaging in subsistence activities in areas where such activities are regularly conducted. Environmental Justice Analysis at 2. Impacts from Shell's proposed operations in the onshore communities are low, with the highest modeled concentrations occurring at Nuiqsut, constituting 50% of the 1-hour NO_2 NAAQS. With respect to carbon dioxide and black carbon, see the discussion in Category BB.4. The commenter has not identified a legal basis for denying issuance of these permits. Region 10 has complied with the Executive Order on Environmental Justice.

Comment BB.1.e: A commenter states that Region 10 has a new or renewed formal commitment to environmental justice and does not believe that EPA has not demonstrated that Shell Oil will not adversely and cumulatively impact the human health as well as the health of the other living communities in the Beaufort Sea.

Response: Region 10 agrees that EPA is committed to environmental justice and implementing the Executive Order on Environmental Justice. As discussed in Section 5.4 of the Statement of Basis, Region 10 believes that the activities proposed to be authorized under the permit will not have disproportionately high and adverse human health or environmental effects with respect to NAAQS pollutants. See also the responses to other comments in Category BB for a discussion of other environmental justice concerns.

Comment BB.1.f: A commenter states that Region 10 should not permit the air pollution by either one of these companies but that Shell Oil has a larger operation and more emissions in the Beaufort. The commenter also states that the modeling conducted did not take into account from an environmental justice perspective the cumulative impacts to the communities that are already adversely impacted, including the accumulation of multiple sources of pollutants, both from the coast, onshore and offshore.

Response: Region 10 assumes that the reference to "either one of these companies" refers to Shell and to ConocoPhillips, because Region 10 proposed issuing permits to Shell for operation of the Kulluk in the Beaufort Sea and to ConocoPhillips for operation of a jackup rig in the Chukchi Sea on the same day. ConocoPhillips has since withdrawn its permit application and Region 10 will not be giving further consideration to issuance of that permit. In addition, as discussed in the responses to comments in Category Y, Region 10 did consider in issuing this permit the cumulative impacts for projects for which Region 10 has received permit applications. See also response to comment BB.1.a.

Comment BB.1.g: A commenter notes that EPA and Shell have established a solid track record of communication with the local communities regarding air permitting for Shell's exploration activities, including these draft air permits. The commenter further explains that this communication will continue and is in fact required under the draft permits once the permits are issued.

Response: The Kulluk Permit does require Shell to communicate with the local communities on a periodic basis regarding when exploration activities are expected to

begin and end at a drill site, the location of the drill site, and any restrictions on activities in the vicinity of Shell's operations. Permit Condition D.5.1.2.2. The permit also requires Shell to submit reports to Region 10. See, e.g., Permit Conditions A.17, A.18, and A.19.

BB.2 SUBCATEGORY – PUBLIC PROCESS FOR EJ ANALYSIS

Comment BB.2.a: Commenters state that the limited public comment period presents serious environmental justice issues for North Slope communities because local communities were not given adequate opportunity to enlist technical support and provide relevant comments on the critical issue of the appropriate model to be used in assessing impacts to air quality as well as the permits more generally. The commenters state that Region 10 specifically requested input on the new air quality model used for the first time in these permit proceedings and that the modeling that went into that work took years to prepare. The commenters continue that evaluation of that work requires an extremely high level of technical expertise, which is both time consuming and resource intensive, and that the agency's decision to provide limited, overlapping comment periods for recognized environmental-justice communities to review, analyze, and then provide comment on a brand new, technical modeling exercise impairs their communities' ability to adequately participate in the process. As a result, the commenters contend, they are unable to submit comments on key aspects of the environmental justice analysis, namely whether the predicted impacts to air quality are accurate and defensible. The commenters ask that Region 10 provide adequate time to obtain an independent technical review of the chosen modeling methodologies and state that Region 10 should have given advanced public notice of this important issue in order to allow for technical review and comment on the modeling.

Response: As discussed above in the response to comments in Category C, Region 10 took a number of steps to provide the opportunity for meaningful involvement and to engage the local communities in this permitting action, including the approval of the model. Region 10 held three separate informational meetings in Barrow and Kaktovik prior to the public comment period to describe the upcoming permitting actions and public comment opportunities. Region 10 also held an informational meeting and a public hearing on the permit and the underlying model and invited the North Slope Borough, the Native Village of Kaktovik, and the Native Village of Nuiqsut to participate in government-to-government consultation in letters dated June 7, 2011. The 46 day public comment period is longer than required under 40 CFR Part 71 and 40 CFR Part 124. Moreover, as discussed in response to comment C.3, these commenters submitted comments on the modeling that was performed to support the Discoverer permits and those permits used the same model. Therefore, the commenters in fact had a period of approximately 60 days in which to review and comment on the model.

Comment BB.2.b: A commenter states that the government has a duty, as stated in Executive Order 12,898 on Environmental Justice, to protect communities and to make sure that the government is providing a meaningful opportunity for people to fully engage in the public process and share their concerns before decisions are made. Commenters contend that the comment period provided did not allow for meaningful public involvement.

Response: Region 10 agrees that the Executive Order on Environmental Justice calls on federal agencies to provide meaningful opportunities for involvement for communities of concern in decisions that potentially impact them. As described in Section 5.4 of the Statement of Basis and in response to comments BB.2.a and C.1, Region 10 believes it has provided North Slope communities potentially impacted by issuance of this permit with the opportunity for meaningful involvement in the decision-making process.

BB.3 SUBCATEGORY – 8-HOUR OZONE NAAQS

Comment BB.3.a: Commenters express concern that Region 10 did not consider a newly revised NAAQS – the 8-hour standard for ozone – in conducting its environmental justice analysis. The commenters note that EPA revised the 8-hour ozone standard because the prior standard did not adequately protect human health and that the agency is well aware of existing data suggesting that existing levels of ozone on the North Slope are as high as .059 ppm (8-hour average), and the Kulluk's operations will add to significant existing and planned sources of VOC's. The commenters continue that the EAB Orders in remanding the Shell Discoverer permits to Region 10 require Region 10 to not only consider compliance with the existing NAAQS, but must also include and analyze other data that is germane to the issue of potential disproportionate adverse health impacts. The commenters assert that the Statement of Basis did not provide for any analysis of the impacts of ozone in analyzing environmental justice concerns and that the environmental justice analysis ignores ozone entirely as a pollutant of concern despite documentation that ozone levels on the North Slope are elevated in regions impacted by existing oil and gas development. Commenters continue that Region 10's passing reference to ozone is arbitrary and inadequate for a number of reasons, including: 1) it does not provide any clarification as to whether Region 10 considered the new 8-hour ozone standard; 2) the statement in the environmental justice analysis mischaracterizes the findings of the air quality analysis, in which Region 10 concluded only that "it is unlikely this small increase in ozone precursors emissions would cause or contribute to violations of the ozone NAAQS; therefore, given the lack of quantified data and modeling, Region 10 appears to concede that violations of the NAAQS could be possible—even if they are unlikely—because Region 10 has not conducted quantified modeling; and 3) given the fact that ozone is a regional pollutant, Region 10 cannot justify its decision to ignore the combined cumulative impacts of proposed drilling operations in the Beaufort and the Chukchi Seas and that without looking at the combined emissions of ozone precursors from the Discoverer, the Kulluk, ConocoPhillip's jackup rig, mobile sources, and onshore sources, Region 10 can only speculate as to whether the Kulluk will contribute to possible violations of the NAAQS in communities like Nuiqsut or subsistence use areas like Cross Island.

Response: As an initial matter, although there may be individual 8-hour concentrations as high as 0.50 ppm, the highest design value for the 8-hour standard for any of the monitoring sites is 0.40 ppm. The design value is in the form of the standard (which for

the 8-hour ozone standard is the three year average of the annual fourth highest daily maximum 8-hour concentration), which is the appropriate value for comparison to the NAAQS.

In addition, contrary to the statement by the commenters, the ozone NAAQS had not been revised at the time the comment was submitted, but instead had been proposed for revision. As discussed in response to comment X.2, EPA had proposed to reconsider the 0.075 ppm ozone NAAQS set in 2008 and requested comment on a range between 0.060 and 0.075 ppm. 75 Fed. Reg. 2,938 (January 19, 2010). EPA has recently announced, however, that at the President's direction, EPA will not be taking final action on its current proposal to revise the 8-hour ozone NAAQS. EPA instead intends to consider revisions to the ozone NAAQS in connection with the 5-year mandated revision of the ozone NAAQS in 2013. Statement by the President on the Ozone National Ambient Air Quality Standard. September 2, 2011. In any event, current ozone levels in the area are well below even the low end of the range that had been proposed by EPA (0.060 ppm). As discussed in the response to comments for Category X above, Region 10 does not believe modeling is required to conclude that emissions of ozone precursors from Shell's operations will cause or contribute to ozone levels that would exceed the low range of the proposed NAAQS. Region 10 believes this is true even when considering the combined emissions from the oil and gas activities permitted or proposed to be permitted on the Alaska OCS. See response to comment Y.4.

BB.4 SUBCATEGORY – GLOBAL WARMING AND BLACK CARBON

Comment BB.4.a: Many commenters stated that Region 10's environmental justice analysis was inadequate because it did not consider the impact of this permit on warming in the Arctic. Commenters contend that Region 10's environmental justice analysis is arbitrary and fails to meet Executive Order 12898 because it relies entirely on expected NAAQS compliance and does not consider the effect of Shell's GHG and black carbon emissions on indigenous peoples or has fully consider the effect of Shell's emissions on subsistence users. The commenters allege that the EAB remanded Region 10's environmental justice analysis on the grounds that reliance on then existing NAAQS was insufficient because EPA had indicated that those standards were insufficient to protect public health. The commenters continue that the Arctic is already warming rapidly and that this warming has resulted in visible changes to Alaska's land, water, wildlife, and people, including the disappearance of sea ice. The commenters state that, as a result of receding and thinning sea ice, scientists have observed polar bears drowning and going hungry, walruses forced onto land, and sharp declines in numbers of ice-dependent sea birds, and that the warming is also threatening indigenous cultures because arctic animals and subsistence hunts are central to Alaska Native cultures. The commenters contend that subsistence hunters have to travel farther to access animals and that the melting permafrost is accelerating coastal erosion and forcing communities to relocate. The commenters note that EPA's Administrator has found that GHGs are "reasonably anticipated to endanger public health, for both current and future generations" and that America's Arctic—home to a large population of Alaska Natives—stands to suffer more than other locations due to the effects of high rates of projected regional warming on natural systems. The commenters assert that Shell stands to contribute to this warming, and resulting harm to indigenous cultures, by emitting GHGs and black carbon and that Region 10 has failed to consider the amount of Shell's GHGs and black carbon emissions that will be emitted over the life of the permits.

Response: Region 10 recognizes that climate change is of particular concern to arctic communities because the Arctic is expected to experience the greatest rates of warming compared with other world regions and there is evidence that climate change is already having observable impacts in the Arctic. Region 10 also acknowledges that black carbon is now recognized as an important climate-forcing agent with particular impact on the arctic region. EPA's Endangerment Finding, Frequently Asked Questions, http://www.epa.gov/climatechange/endangerment/downloads/EndangermentFinding_FAQs.pdf

Although it is clear that GHGs contribute to global warming and other climate changes that result in impacts on the environment, due to the global scope of the problem, climate change modeling and evaluations of risks and impacts of GHGs are typically conducted for changes in emissions orders of magnitude larger than the emissions from individual projects that might be analyzed in PSD permit reviews. Quantifying the exact impacts attributable to a specific GHG source obtaining a permit in specific places and points would not be possible with current climate change modeling. PSD and Title V Permitting Guidance for Greenhouse Gases. EPA Office of Air and Radiation, March 2011.

In this case, the permit limits emissions of GHGs from the Kulluk and the Associated Fleet to below PSD major source thresholds. Furthermore, emissions of GHGs from the Kulluk and the Associated Fleet only account for approximately 0.1 % of the Alaska 2005 total statewide estimated GHGs of 53 million tons and 0.40 % of the Alaska 2005 statewide oil and gas industry estimated GHGs of 15 million tons. 2012 Revised Camden Bay Exploration Plan at 3-3 to 3-4. In light of these facts, Region 10 does not expect that issuance of this permit will have disproportionately high and adverse human health or environmental effects on minority or low income communities on the North Slope based on emissions of GHGs, even when considering emissions over the life of the permit.

With respect to black carbon, see response to comment BB.4.b below.

Comment BB.4.b: Commenters state that Shell's operations also could emit up to 28 tpy of $PM_{2.5}$, a large proportion of which will be black carbon. The commenters contend that black carbon is generally regarded as the second most important driver of arctic warming and cite an EPA report stating that this occurs because black carbon absorbs incoming and outgoing radiation and darkens snow and ice, which reduces the reflection of light back to space and accelerates melting. The commenters state that emissions of black carbon from sources in the Arctic are particularly troubling because arctic emissions can cause substantially more regional warming than similar amounts of black carbon emitted outside the Arctic and cite to numerous studies supporting this conclusion. The

commenters also cite to EPA reports that discuss studies showing that black carbon radiative forcing from both atmospheric concentration and deposition on the snow and ice has contributed to arctic surface warming and that black carbon may be the cause of as much as 50 % of arctic sea ice retreat.

Response: EPA recognizes the concerns regarding black carbon and is committed to fully evaluating its role on climate change. Based on available information at this time, Region 10 does not have information on which to reach a conclusion regarding whether emissions of black carbon from the Kulluk and Associated Fleet will have disproportionately high and adverse human health or environmental effects on minority or low income communities on the North Slope. To the extent black carbon is comprised of particulate matter, it is regulated as $PM_{2.5}$ and PM_{10} and emissions of these pollutants are estimated at 28 tpy.

CC. CATEGORY – BASELINE DATA

Comment CC.1: Commenters maintain that Region 10 must account for the substantial lack of data concerning the arctic environment. The commenters note that since the EAB remanded the Discoverer permits back to Region 10, the Secretary of Interior released a major report from the U.S. Geological Survey on the gaps in the scientific understanding of the United States' Arctic, citing to Holland-Bartels, Leslie, and Pierce, Brenda, eds., 2011, An evaluation of the science needs to inform decisions on Outer Continental Shelf energy development in the Chukchi and Beaufort Seas, Alaska: U.S. Geological Survey Circular 1370. The commenters state that this document concludes that there are large information gaps about the Arctic Ocean, and these gaps are a "major constraint to a defensible science framework for critical Arctic decision making." The commenters further note that the Alaska Federal District Court remanded Chukchi Lease Sale 193 because the agency had not fully considered the importance of missing information in its environmental impact analysis. One commenter states that he does not believe any data already collected is accurate enough to be the basis for any real environmental impact assessment and that long term consistent data should be collected before development of the magnitude at issue in these permits is considered so that people can understand what the affects would be. The commenters contend that Region 10 must acknowledge these shortcomings in the scientific understanding of the Arctic and move forward cautiously, ensuring that any permits it issues are designed to provide maximum protection for human health and the environment.

Response: The commenters do not say what type of data is missing or whether the missing data is even applicable to the proposed permit action. This permit is issued under the authority of the OCS regulations, 40 CFR Part 55, and the Title V program, 40 CFR Part 71. As discussed in Technical Support Document (at 6), Region 10 believes it is appropriate to use the regulations and guidance for conducting an air quality analysis with respect to the NAAQS under the PSD program where, as here, the Title V permit requires that the permit assure compliance with the NAAQS. As discussed in Section 4 of the Statement of Basis, the Technical Support Document, and in response to comments in Category T and U above, Region 10 has determined that Shell has met the requirements to have representative background and meteorological data as necessary to assess ambient air quality in the areas that are expected to be affected by Shell's exploratory operations. While other baseline data may be useful or helpful in connection with other regulatory decisions related to Shell's exploration drilling operations in the Beaufort Sea, no other baseline data is required prior to issuance of this permit. Baseline data required for other regulatory determinations is outside the scope of this CAA permitting action.

Comment CC.2: A commenter stated that Region 10 used only data from Point Lay and did not go to Point Hope or the other villages to gather that information. The commenter states that there is not enough specific information in regards to the baseline and the data that is collected. The commenter contends that he had asked about the data that was acquired through the Arctic Monitoring and Assessment Programme which is an international program that has participation by the United States under the National Science Foundation that has been going on since 1991. The commenter questions the accuracy of the data relied on to support this permit action.

Response: Region 10 did not rely on data from Point Lay or Point Hope to support this permitting action. Both of these villages border the Chukchi Sea, not the Beaufort Sea, where the activities to be authorized under this permit will be conducted. As discussed in response to comment CC.1, while other baseline data may be useful or helpful in connection with other regulatory decisions related to Shell's exploration drilling operations in the Beaufort Sea, no other baseline data is required prior to issuance of this permit. The commenter has not identified any specific concerns regarding the accuracy of the data relied on in this permitting action. Region 10 is therefore unable to provide a further response to this comment.

DD. CATEGORY – IMPACT ON LOCAL COMMUNITIES, SUBSISTENCE ACTIVITIES, AND TRADITIONAL USE

Comment DD.1: A number of commenters expressed concerns regarding the negative impact that Shells' specific exploratory operations and increased arctic oil and gas operations in general may have on the local communities, their environment and subsistence lifestyle. These comments include:

- Shell's operations would affect a large region of the Beaufort Sea that contains important habitat for endangered species and that serves as subsistence hunting grounds for Alaska Native communities.

- By relying exclusively on NAAQS, Region 10 has failed to account for effects on subsistence users. Shell's operations would take place close to local villages and within subsistence hunting grounds. In particular, Shell would operate very close to the villages of Kaktovik and Nuiqsut. As a result, Region 10's narrow focus on NAAQS compliance fails to account for the degree to which pollution below NAAQS levels might nonetheless disrupt subsistence activities by dissuading the native population from engaging in hunts due to fear of contamination. Also,

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Region 10's analysis fails to address how Shell's air pollution might cause a disproportionate impact through non-air pathways. For instance, Shell will emit hazardous air pollutants, and some hazardous air pollutants bioaccumulate, raising the risk of human ingestion of toxic substances.

- Region 10 has not analyzed how Shell's application for air pollution permits in the outer continental shelf region may contribute to Arctic warming that might impact customary and traditional and modern cultural life ways of hunting, fishing, gathering, navigation and commerce of indigenous peoples and communities of the Arctic.

- A commenter stated concern about disproportionate adverse, cumulative toxic pollution impacts to communities of indigenous peoples and communities of birds, mammals, and fishes, and flora don avoid from permitting what is definitely a major source of air pollution and sets a dangerous precedent for underestimating and minimizing actual physical impacts of permitted air pollution in the outer continental shelf region of the Beaufort Sea.

- A commenter stated that air pollution can affect the ocean and animals around Point Hope and expressed opposition to any air pollution.

- One commenter stated that the calculations show emissions of 200 tons of carbon monoxide, 240 tons of nitrogen oxides, and 30 tons per year of particulate matter, and stated that this constitutes 60,000 pounds of particulate matter that will enter the food chain.

- A commenter stated that EPA's air permits are not supposed to have adverse effects on minority populations, but that this is occurring in the subsistence zone through the process of biomagnifications, which is the concentration of toxins through the atmphic levels. The commenter explained that pollution will magnify through the food chain to seals, walrus, and polar bears.

- One commenter explained that the bowhead whale, the Beluga, the walrus and all different species of fish are an important part of the ecosystem on which communities rely.

- One commenter stated that Shell has a bad track history and referenced Nigeria, the Shetland Islands, and the North Sea and said Shell's track history is something to which one for

- One commenter stated that EPA has a mission statement to protect the health and safety of people in the United States.

- One commenter claimed the walrus, Beluga, bowhead whale, bearded seal and other species are being destroyed by pollution.

- One commenter referenced the good quality of clean air in Alaska.

- A commenter noted that the Arctic is very unique and asked that Region 10 not give a permit to Shell. The commenter noted that the timeframe in July is when animals go to the Arctic to nurse their young and that November is unpredictable and a bad season.

- One commenter referenced seeing a tourist ship in Point Hope and noted that there were additional sources of pollution besides Shell. The commenter was concerned with the pollution associated with the different ships.

- A commenter acknowledged that the country has a national interest in developing energy, but not to the detriment and the disproportionate adverse cumulative impact to the communities who would have to suffer from the air pollution. The commenter expressed concern that the permit would allow Shell to pollute air all over the Beaufort Sea, not in just one place, and it is unclear which communities would be impacted.

- One commenter referenced values taught by Eskimo whaling captains and stated that bowhead whales and the marine mammals are out there are also very sensitive. The commenter was particularly concerned about noise from the ships and the traffic that will be authorized under the permit.

- A commenter expressed concern about harvesting an animal made sick by pollution.

Response: Region 10 appreciates the commenters' interest in and attention to the draft permit. We recognize the close, integral relationship the local communities have with the arctic environment and its resources and the importance to the local communities of subsistence hunting and fishing and the traditional way of life. However, the potential impact on the subsistence hunting or interference with traditional way of life is not a factor that the CAA requires EPA to evaluate in issuing OCS permits. Therefore, specific evaluation of impacts to subsistence hunting and fishing is beyond the scope of these OCS/PSD permits. *In re Shell Offshore Inc., Kulluk Drilling Unit and Frontier Discoverer Drilling Unit, Order Denying Review In Part and Remanding in Part*, 13 E.A.D. _ (September 14, 2007), slip op. at 68-69, fn. 66 (Kulluk EAB decision); see also *In re Knauf Fiber Glass GmbH*, 8 E.A.D. 121, 147 (EAB 1999) (stating that the Board's jurisdiction, and thus review power, is limited, extending only to those issues that are directly related to permit conditions that implement the federal PSD program).

As part of its environmental justice analysis, Region 10 generally considered Shell's impact on local communities while engaging in subsistence activities in areas where such activities are regularly conducted. For example, Region 10 noted that subsistence foods are an important component of the Inupiat diet, that the residents reported traveling long distances off shore for hunting and other subsistence activities, and that subsistence plays an important cultural role in the communities. Region 10 also noted the location of the

Shell lease blocks relative to the subsistence areas. See Statement of Basis, Figure 5.1, at 56 (Subsistence Use Areas Mapped over Exploration Sites).

There are other regulatory programs in place to address the commenters' concerns. Kulluk EAB Decision, slip op. at 68-69, fn. 66. For example, BOEMRE did consider the effect and impacts of Shell's exploration activities on subsistence activities and the Inupiat culture and way of life; risk of oil spills and their potential impacts to area fish and wildlife resources; disturbance to bowhead whale migration patterns; and harassment and potential harm of wildlife from noise, discharges, and vessel operations. See Finding of No Significant Impact, dated August 3, 2011, for Shell Offshore Inc., 2012 Revised Camden Bay Exploration Plan. http://alaska.boemre.gov/ref/EIS%20EA/2012_Shell_CamdenEP_EA/2012FONSI.pdf; Letter from Jeffrey Walker, BOEMRE, to Susan Childs, Shell, re: 2012 Revised Camden Bay Exploration Plan, dated August 4, 2011. http://alaska.boemre.gov/ref/ProjectHistory/2012Shell_BF/2011_0804_soi.pdf

Finally, as explained in the Statement of Basis and this Response to Comments, Region 10's analysis indicates that this project, as regulated by the final permit, will not cause or contribute to a violation of any currently applicable NAAQS. Since NAAQS are established to protect public health and welfare, the project is not expected to have an adverse impact upon public health or welfare.

With respect to consideration of endangered species, see Section 5.1 of the Statement of Basis and Category KK of the Response to Comments. With respect to Region 10 oversight of Shell's compliance with permit requirements, see Category O of the Response to Comments.

The comments made regarding the draft ConocoPhillips permit are not relevant to this permit proceeding for the Shell Kulluk permit.

EE. CATEGORY – HEALTH IMPACTS AND GENERAL AIR QUALITY CONCERNS

Comment EE.1: Commenters state that some of the leases on which Shell would be allowed to drill are less than 25 miles from the Alaskan coast and that the environmental and human health impacts have not been sufficiently studied or communicated to potential communities that are downwind of exploration ships and the areas where a drilling rig would be stationed. The commenters contend that 500 meters as an outer perimeter for human health considerations for air quality standards is not sufficient and legally questionable under the Clean Air Act. The commenters also assert that a 25 mile radius for a major air pollution permit from exploration ships and drilling rig do not take into considerations of impacts to other communities that were not as consulted or informed of potential impacts to furred and feathered, or finned creatures that could be impacted by airborne particulates farther downwind "Kulluk's potential operations and will establish precedents that affect the Arctic's people and Environment. (Water Advocacy and Big Village)

Response: As explained, in response to comment BB.1.a, as part of Region 10's evaluation of Shell's permit applications, Region 10 considered the NAAQS. These national air quality standards are set at a level designed to protect public health protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly, with an adequate margin of safety. For example, in setting the new 1-hour NAAQS for NO_2 and a new 1-hour SO_2 NAAQS, EPA understood that exposure to NO_2 and SO_2 concentrations above the standard has been linked to respiratory illnesses that lead to emergency room visits and hospital admissions, particularly in at-risk populations such as children, the elderly, and people with respiratory disease. In issuing the new 1-hour NO_2 and SO_2 NAAQS, EPA noted in particular that the prevalence and severity of asthma are higher among certain ethnic or racial groups such as Alaskan Natives. In these promulgations EPA specifically considered the exposure of sensitive subpopulations, including Alaskan Natives. 75 Fed. Reg. 6,482 (February 9, 2010); 75 Fed. Reg. 35,527 (June 22, 2010). See also Technical Support Document at Statement of Basis at 33-36 and Environmental Justice Analysis.

Region 10 determined through detailed modeling and careful analysis that Shell's operations as allowed under the permit will not exceed the national standards. In fact, the emissions are expected to be well below the standards in the North Slope communities on the Beaufort Sea and to be less than the NAAQS in the areas where the communities regularly conduct subsistence activities. Maximum modeled impacts from Shell's operations in the communities of Nuiqsut, Deadhorse and Kaktovik are well below the significant impact levels for the NAAQS pollutants. See Statement of Basis, Table 12, at 35. Considering existing air quality in these communities, the total impacts in these communities (from Kulluk operations and background concentrations) is less than 50% of the NAAQS for NO2 and PM2.5, and much less for all other NAAQS pollutants. Since this project will not cause or contribute to a NAAQS violation and since NAAQS are established to protect public health, the project is not expected to have an adverse impact upon public health. The commenters have provided no information to show that the impact in other onshore communities would be greater than the communities considered in this permitting action.

With respect to concerns regarding the 500 meter safety zone, please see responses to comments in Category P.

FF. CATEGORY – MODELING ICEBREAKER ACTIVITY

Comment FF.1: Commenters reference Shell's assumption that it will break ice for 38% of the time that it is authorized to operate under the Draft Permit and note that Shell used the same assumption in its application for the 2011 Discoverer Permits. Commenters question why Shell used the same assumption when the drilling vessels are different and conditions in the Beaufort and Chukchi Seas are different, and ask that Region 10 explain why Shell used the same assumption of ice breaking time for both permits. (NSB, p. 33)

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Response: The Draft Permit limits Shell's operations to a 120-day period between July and November. This period coincides with expected open water conditions but as Shell noted in its application, the frequency and intensity of ice conditions is unpredictable. In submitting its application, Shell relied on multi-year data from 2003-2005 collected at the Sivulliq drill site that showed a 15% frequency of ice at the drill site and 23% frequency of ice within 30 miles of the drill site. Shell summed these numbers to obtain a probability of ice management of 38% and used this assumption to estimate the maximum expected emissions for purposes of determining appropriate synthetic minor limits. See response to comments H.1.b, FF.2 and FF.3. Considering the year-to-year variability of ice conditions, Shell's use of multi-year data is appropriate and Region 10 does not consider the use of the same dataset for both the Draft Permit and the 2011 Discoverer Permits to be unreasonable.

In regards to their air quality modeling analysis, Shell assumed the open water period coincides with the availability of data from the buoys they deployed in the Beaufort Sea in 2009 and 2010 to model open water and ice conditions. Permit Application Supplement at 97. Shell also conservatively assumed that the ice management vessels are continuously operating at maximum load during the entire 120-day period (see Section 3.3.3 of the Technical Support Document). The question regarding ice duration is therefore moot in regards to modeled emissions.

Comment FF.2: Commenters reference Shell's permit application which states:

> For emission estimation purposes the ice management fleet is assumed to be operating at maximum (nameplate rates) rate for 38 percent of the 120-day OCS period. For modeling purposes, the ice management vessels are assumed to be operating at maximum emission rate whenever the meteorology indicates that ice is present and assumed to be beyond the 25-mile radius when the data indicates open water.

Commenters state that there is no mention of icebreaker activity assumptions in the Statement of Basis or Air Quality Impact Analysis and that the amount of time the icebreaker fleet was assumed to be operating in the modeling analysis is unclear. Commenters question how the modeling analysis compares to the 38% figure used for estimating emissions and request that Region 10 make clear that the modeled activity represents the worst case operating scenario.

Response: The modeling assumptions regarding icebreaker activity are described Section D.3.2 (page 9) of the Technical Support Document. The assumptions regarding open water periods are described in Section E.2 (page 28) of the Technical Support Document. Shell did not use the 38 % assumption in its modeling analysis. They instead defined the open water period as the time a buoy could be (and was) deployed in the Beaufort Sea (August 5 – October 13, 2009; and August 14 – October 10, 2010). However, the distinction between open water and ice conditions only affected which dispersion model/meteorological data set they used (AERMOD for ice conditions or AERMOD-COARE for open water conditions).

It is true that in its initial air quality analysis, Shell assumed that the ice management vessels would be beyond a 25-mile radius from the Kulluk during open water periods. Region 10 questioned this assumption and in response Shell revised its analysis by assuming that both ice management vessels would operate at maximum loads during the open water periods. Shell therefore modeled both ice breakers as if the vessels were managing ice continuously throughout the 120-day operational period. As described in the Technical Support Document (p.9), Region 10 believes that this approach is conservative because Shell does not intend to operate the primary ice management vessel within the 25-mile radius during open water periods, and should not need to operate the anchor handler under full load conditions during this period.

Comment FF.3: Commenters express concern that ice management activities may be underestimated in Shell's analyses. The commenters explain that heavier ice conditions result in heavier engine load factors and higher emissions, and reference that the 38% frequency of ice within 30 miles of the Kulluk is based on data from 2003-2005. The commenters cite to Shell's application to the US Coast Guard for safety zone designation in which the company stated that:

> Ice conditions during 2006 were such that the areas of drilling interest were ice covered the majority of the period between July and October. If ice conditions are similar during 2007, then each drill rig will be constantly ice managed within its anchor array.

The commenters also reference the permit application in which Shell stated that "[t]he frequency and intensity of ice conditions is unpredictable and could range from no ice to ice sufficiently dense that the ice management vessels have insufficient capacity to push it out of the way". Commenters contend that Region 10 must use an unbiased source of data which is something other than the applicant's estimate of ice conditions. Commenters also state that if estimates are based on a scientific analysis of ice flow data from 2003-2005 then that analysis should be made available for review and more recent data should be incorporated into the analysis, if possible. Commenters suggest that icebreaker emissions could be estimated and modeled to account for the maximum potential operation scenario, and any percentage less than the worst possible case would need to be specified as an enforceable permit conditions (e.g., the permit could include an enforceable provision limiting the icebreaker operations to no more than 38% of the time).

Response: Region 10 agrees that the frequency and intensity of ice conditions in the Arctic is unpredictable. To provide operational flexibility to account for, among other things, unpredictability in ice frequency and intensity, the Region established source-wide emission limits and operational restrictions. Shell is required to comply with these limits and restrictions and has accepted the risk that, if ice conditions are worse than assumed, Shell may be required to curtail its drilling season or otherwise curtail

operations to ensure compliance with the permit terms and conditions. For this reason, the Region disagrees with commenters suggestion that an enforceable provision limiting icebreaker operations to 38% of the operational period should be included in the Permit. There is no need to specifically state that Shell can only operate the icebreakers for 38% of the time as the emissions from the ice breakers are counted against the source-wide limits and restrictions. Similarly, Region 10 does not believe it is necessary to obtain ice data from another source or to require that Shell use data that is more recent than the 2003-2005 dataset.

GG. CATEGORY – ANNUAL MODELING ANALYSIS

Comment GG.1: Commenters state that one of the basic principles of the Clean Air Act is that EPA may not issue a permit unless it can "assure" that allowable emissions will not result in a violation of any applicable requirement, including NAAQS, citing to 42 U.S.C. §§ 7661c(e) and 7661c(a); 40 CFR §§ 71.2, 71.6(a)(1), 71.6(c)(1). Consistent with this basic principle, the commenters continue, Region 10 has interpreted Title V as requiring that an operating permit applicant demonstrate compliance with NAAQS in the same manner as the PSD program requires, citing to the Statement of Basis (at 26-27). Commenters therefore assert that, to receive a Title V permit, Shell must show that emission increases allowed by the permit will not result in a violation of NAAQS, but that the modeling of Shell's proposed operations is both complex and wholly uncertain because Shell has not identified many of the emission units it will use. The commenters contend that Region 10 acknowledges that Shell's failure to identify many emission units means that it has not actually demonstrated allowable increases will not violate NAAQS, citing to the Statement of Basis (at 36), where Region 10 stated "different configurations of emission units as well as their stack characteristics (height, diameter, location relative to structures) can change the modeled impact even if emissions are the same." The commenters state that Region 10 attempts to overcome this uncertainty and comply with the law by "[r]equiring subsequent modeling analyses to be conducted. . . to establish that any future configuration" will not cause a violation of standards, making Shell's present modeling a preliminary and purely hypothetical exercise that Region 10 intends to revisit once Shell identifies the equipment it intends to use. The commenters assert that this approach does not comply with the requirement that Shell demonstrate, before it is issued a permit, that its emissions will not cause a violation of applicable standards. The commenters further state that allowing Shell to provide its final modeling after Region 10 issues the permit violates the public's right to comment on the complete draft permit, including the modeling demonstration, citing to 40 CFR § 71.11. The commenters conclude that Region 10 must withdraw the permit and require Shell to make this showing based upon the actual equipment that Shell intends to use in its exploratory drilling operations.

Response: Region 10 continues to believe that the limitations on emissions and operations, along with the associated monitoring, recordkeeping, and reporting requirements, together ensure that the Kulluk and Associated Fleet would not, at any authorized location or with any authorized changes in equipment, cause or contribute to a violation of the NAAQS when operating in compliance with the terms and conditions of the permit.

As discussed in the Statement of Basis (at Section 2.6.2), Section 504(c) of the CAA, 40 CFR 71.6(c), and the comparable Title V COA regulations authorize Region 10 to issue Shell a single permit authorizing emissions from similar operations at multiple temporary locations, provided that the permit includes conditions that will assure compliance with all applicable requirements at all locations. [19] As also discussed, the NAAQS are an "applicable requirement" for Title V temporary sources. CAA § 504(e); 40 CFR §§71.2 (definition of applicable requirement) and 71.6(c). Thus, this permit must include terms and conditions that assure compliance with the NAAQS at all authorized locations.

With respect to the locations at which operation is authorized under this permit, the modeling that has already been conducted demonstrates that the NAAQS will be protected with the modeled equipment configuration at all locations that constitute ambient air lease holdings.

With respect to potential changes in equipment referred to by the commenters, Region 10 acknowledges that the specific equipment to be installed on the Kulluk and the specific Associated Fleet vessels and emission units on those vessels are not specified in the permit or known at this time. EPA's Part 71 regulations were revised in 2009 to clarify the availability of just this kind of flexibility in Title V operating permits. See Operating Permit Programs, Flexible Air Permitting Rules; Final Rule, 74 Fed. Reg. 51,418 (October 6, 2009). Use of the Flexible Air Permitting Rules is particularly appropriate in the case of Title V permits for Title V temporary sources under CAA § 504(e) and 40 CFR § 71.6(c). Congress specifically recognized that the operations of such Title V temporary sources would be "similar" and did not require that they be "identical." See CAA § 504(e)

The applicable requirement at issue is the NAAQS as it applies to a Title V temporary source. In addition to the emission limits, operational restrictions, and monitoring, recordkeeping, and reporting requirements, the permit includes an "approved replicable methodology" or "ARM" to provide a reasonable assurance that the NAAQS will continue to be protected with any actual changes of vessels or equipment. Kulluk Final Permit, Condition C.4. An ARM is defined as Title V permit terms that

> (1) Specify a protocol which is consistent with and implements an applicable requirement, or requirement of [Part 71], such that the protocol is based on sound scientific and/or mathematical principles and provides reproducible results using the same inputs; and
>
> (2) Require the results of that protocol to be recorded and used for assuring compliance with such applicable requirement, any other requirement

[19] As discussed in the Statement of Basis (at 4) and the Technical Support Document (at 5-6), this permit also serves as a minor source permit under the COA regulations that govern operation in the inner OCS. ADEC's minor source rules, which are approved as part of the COA regulations applicable to this permitting action, specifically authorize the issuance of a single permit that is valid for multiple locations. See 18 AAC 50.502(d)). The rules do not require the permittee to update its ambient assessment prior to moving to a location previously authorized under the permit.

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implicated by implementation of the ARM, or requirement of [Part 71], including where an ARM is used for determining applicability of a specific requirement to a particular change.

CFR § 71.2 (definition of ARM). Under the flexible permitting provisions, Title V permits can include ARMs provided that no ARM shall contravene any terms needed to comply with any otherwise applicable requirement or requirement of Part 71 or circumvent any applicable requirement that would apply as a result of implementing the ARM. 40 CFR § 71.6(a)(1).

In promulgating the flexible permitting provisions, EPA discussed pilot projects under which permitting authorities determined that replicable procedures could be used to ensure that future changes at a source would meet ambient air quality requirements:

> The plantwide VOC emissions caps used in the pilots were determined to be adequate for purposes of safeguarding the ozone NAAQS, but for other pollutants (e.g., air toxics) states sometimes required a replicable modeling procedure to screen the impacts of individual emissions increases relative to acceptable ambient levels. In the case of one pilot, an ambient dispersion model, complete with implementation assumptions, was included in the permit to evaluate any new air toxic pollutants of concern, or increases in existing toxic pollutants. Failure of a particular change to meet the screening levels triggered a case-by-case review of that change by the permitting authority."

74 Fed. Reg. 51,424.

In this case, Region 10 believes that the permit condition establishing the modeling procedure in the event of equipment changes is a protocol based on sound scientific/mathematical principles. The condition requires reproducible results using the same inputs and requires the results of the protocol to be used for assuring compliance with the NAAQS. Only changes in equipment that are shown to comply with the NAAQS after complying with the modeling condition are allowed to be made under the permit condition. Requiring subsequent modeling analyses to be conducted in an identical manner, reflecting only specific equipment or configuration changes, to establish that any future configuration satisfying this requirement would protect the NAAQS, is using a protocol based on sound scientific principles to provide reproducible results with the same inputs. Thus, Region 10 disagrees with the commenter that the demonstration must be made with the actual equipment that Shell intends to use in future years, provided the permit terms and conditions assure compliance with all applicable requirements (here, the NAAQS as applied to a Title V temporary source) in light of such potential changes in equipment.

Although the commenter asserts that Shell must demonstrate compliance with the NAAQS before a permit can be issued, the commenter does not reference the actual requirements of the Part 71 rules related to compliance demonstrations (plans) in permit applications (specifically 40 CFR § 71.5(c)(8)).[20] Under these requirements, applicants for Part 71 permits are not required to demonstrate that they will comply with applicable requirements but rather only provide a description of the compliance status of the source with respect to all applicable requirements.[21] For requirements that would apply to future changes at the source (such as alternative operating scenarios (AOS) or preapproved changes), the applicant would only need to provide a statement that they will continue to comply with the applicable requirements.

Region 10 also disagrees with the commenter's contention that allowing Shell to submit additional modeling after Region 10 issues the permit if Shell changes any equipment violates the public's right to comment on the complete draft permit, including the modeling demonstration. As explained in the preamble to the proposed Flexible Air Permits rule (72 Fed. Reg. 52,20n. 52,208, September 12, 2007), a key purpose of a flexible air permit is to provide flexibility for certain changes after the permit is issued without further review, including further public notice and comment, under permit terms that assure compliance with applicable requirements. The public is given the opportunity to comment on permit terms that provide for such operational flexibility at a source, including terms implementing "alternative operating scenarios" and "approved replicable methodologies," during the initial permit issuance rather than when the source avails itself of the flexibility provided by the terms. This opportunity to review and comment on the draft ARM (including the conditions under which the ARM can be used and whether the draft permit terms meet the Part 71 requirements for an ARM) satisfies the public participation requirements of 40 CFR § 71.11.

With respect to the operations of the Kulluk in the Inner OCS, the ADEC "minor source" rules, which are approved as part of the COA regulations applicable to this permitting action, would not require a permit for equipment changes unless the increased emissions

[20] As discussed in footnote 21 below, although Region 10 has relied on the PSD requirement for a NAAQS modeling demonstration as a guide for the showing here that the NAAQS will be protected when the source is operating in compliance with the permit terms and conditions, the commenter's reference to 40 CFR § 52.21(k) is not directly applicable to issuance of this permit since this source is not subject to PSD.

[21] The application requirements of Title V and Part 71 do not expressly require the submission of the modeling demonstration that Shell has submitted in support of this permit action. However, 40 CFR § 71.5(c) requires that the applications include information sufficient to determine applicable requirements and to implement and enforce such requirements. In order for the permit issued by Region 10 to contain terms and conditions necessary to assure compliance with the unique applicable requirements at issue in this permit (i.e., the NAAQS as directly applicable requirements for this Title V temporary source), Region 10 requested from Shell information on the air quality impacts of emissions from the Kulluk and Associated Fleet for Shell's anticipated operational scenarios. References in documents prepared by EPA in the administrative record to "required compliance demonstrations," "NAAQS demonstrations," "a Title V temporary source demonstrating compliance with the NAAQS," or similar terms should not be interpreted to alter the Title V and Part 71 permit application requirements, but refer instead to the modeling analysis and other information determined to be necessary by Region 10 in these specific circumstances under the Part 71 rules to support issuance of this permit. As discussed in the Technical Support Document for Sh Shell was required to submit a demonstration that its proposed potential emissions will not violate the NAAQS for NO_2, SO_2, and PM_{10}.

(if any) exceed 10 tons per year of NOx, SO_2 or PM-10. See 18 AAC 50.502(c)(3).[9] The rules therefore allow some degree of operational flexibility, as long as the permittee stays within the terms and conditions of their permit. Region 10 reiterates, however, that, as provided in Kulluk Final Permit Condition D.16,[10] nothing in the permit relieves Shell of complying with the ADEC minor source rules for changes that would qualify as modifications under those rules.

HH. CATEGORY – OTHER PERMIT TERMS AND CONDITIONS

Comment HH1.1: Commenters request that the Region include as a permit condition that the "approval to construct shall become invalid if construction is not commenced within 18 months after receipt of approval" or "if construction is discontinued for a period of 18 months or more."

Response: This preconstruction requirement is already set forth in Permit Condition A.6.5.

Comment HH1.2: Commenters request the Region 10 include in the permit a provision that discusses when the permit will be reopened for cause.

Response: The permit states that it will be reopened for cause and that cause exists under any of the circumstances described in 40 CFR § 71.7(f). Permit Condition A.7.1. That section of Part 71 provides that cause exists when:

> (i) Additional applicable requirements under the Act become applicable to a major part 71 source with a remaining permit term of 3 or more years. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions have been extended pursuant to paragraph (c)(3) of this section.
>
> (ii) Additional requirements (including excess emissions requirements) become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.
>
> (iii) The permitting authority (or EPA, in the case of a program delegated pursuant to §71.10) determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

[9] The terms of this permit, however, would not allow such an increase in emissions without a permit revision.
[10] This condition was Condition B.15.7 in the Kulluk Draft Permit.

> (iv) The permitting authority (or EPA, in the case of a program delegated pursuant to §71.10) determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

40 CFR § 71.7(f). Through the cross-reference to 40 CFR § 71.7(f), the Kulluk Permit does include provisions that discuss when cause exists to reopen the permit.

Comment HH1.3: Commenters request that Shell demonstrate compliance with the new 8-hour Ozone NAAQS within six months of the new standard being announced.

Response: As discussed in response to comment X.2, the proposal to revise the 8-hour ozone NAAQS has not been finalized and indeed EPA has stated that it does not intend to take final action on that proposal at this time. Part 71 has provisions that address when a permit must be reopened to add newly promulgated requirements. See 40 CFR § 71.7

Comment HH1.4: Shell commented that its permit application requested aggregate limits for the three deck crane engines. Shell states that aggregate limits are essential for the cranes because the proposed activity requires the flexibility to operate up to two cranes simultaneously and it's impossible to know in advance which cranes will operate at any given time. Given the intermittent nature of crane operation and operational limits that will keep the crane engines from operating at maximum rated power, Shell believed that this approach supported aggregate limits that would ensure NAAQS protection.

Shell recognizes, however, that Region 10 set draft permit limits based specifically on the emission rates used in the modeling analysis (Statement of Basis, p. 40). Shell notes that because the crane modeling in the application divided total 24-hour emissions by three, Region 10 assigned a portion of the aggregate to each crane, resulting in per-crane-engine limits for NO_2, $PM_{2.5}$, and PM_{10}. Furthermore, the dispersion analysis in the permit application evaluated daily average NOx emission rates when evaluating compliance with the short-term NOx ambient air quality standard; maximum one-hour emissions would be higher than daily average hourly emissions.

Specifically, Shell requests that Condition D.6.4 in the Draft Permit be revised to include the following language:

6.4 Deck Crane Engines (Units K-4A – 4C)

6.4.1 During Drilling Activity, aggregate emissions from all deck crane engines combined shall not exceed the emission limits specified for each of the pollutants below.
- D.6.4.1.1 NO_2: 12.0 lb/hr
- D.6.4.1.2 $PM_{2.5}$: 3.4 lb/day
- D.6.4.1.3 PM_{10}: 3.4 lb/day

6.4.2 During all times other than Drilling Activity, aggregate emissions from all deck crane engines combined shall not exceed the

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emission limits specified for each of the pollutants below.

D.6.4.2.1 NOx: 12.0 lb/hr
D.6.4.2.2 PM2.5: 5.7 lb/day
D.6.4.2.3 PMfine 5.7 lb/day

Shell providing additional modeling runs to support this requested permit change. Shell characterized the dispersion modeling runs as using the same model and modeling procedures that Shell used in its permit application, and involving no altered assumptions or any other changes to source characterizations other than as explained below.

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Shell re-evaluated the ambient air quality implications of crane emissions by increasing the hourly emissions and assuming that all crane emissions came from a single crane. Specifically, there are three modeling scenarios:

> Scenario 1 considers all three crane engine emissions come from crane engine stack A, with emissions from crane engines B and C set to zero.
>
> Scenario 2 considers all three crane engine emissions come from crane engine stack B, with emissions from crane engines A and C set to zero.
>
> Scenario 3 considers all three crane engine emissions come from crane engine stack C, with emissions from crane engines A and B set to zero.

Shell notes that changing these variables involves no changes to the underlying model, modeling procedures, or assumptions that were subject to public review. The model already contains inputs for the crane engine stacks; the three separate crane locations are already imbedded in the emission sequences used to determine the probabilistic design day. Shell states that the modeling runs supporting this comment simply changed the numerical values associated with those inputs. Anyone running the model would get the same results.

Shell explains that this demonstration focuses on compliance with the 1-hour NO_2 and 24-hour $PM_{2.5}$ NAAQS, which are the most constraining ambient standards for the Kulluk project. As shown in the application, PM_{10} concentrations are well below the NAAQS and any changes to these concentrations would be proportional to the changes in $PM_{2.5}$ concentrations. Therefore, an explicit analysis is not performed for PM_{10}.

Shell states that the modeling approach taken to support this comment provides hourly data, spatial specificity, and a conservative approach that ensures NAAQS compliance while allowing for aggregate limits for the cranes. In its application, Shell demonstrated that the proposed crane emissions contributions to maximum concentrations on the "design days" are very small, showing that the highest-impacting crane engine would contribute approximately 1.2% of the Kulluk concentrations for 1-hour NO_2, and 0.5% for 24-hour $PM_{2.5}$.

By modeling total emissions from all three cranes as coming from a single crane location, Shell contends that the modeling runs provided in support of this comment present an even more conservative approach. This approach shows the maximum possible concentrations from the requested aggregate crane emission rates, because spreading emissions among multiple sources results in lower concentrations than simulating those same emissions from a single location. This is reflected in the modeling results, which are summarized in the table below. Shell explains that with these conservative assumptions, the total 1-hour NO_2 and 24-hour $PM_{2.5}$ concentrations are only slightly increased from the permit application values, and in all cases project concentrations remain below the NAAQS.

1-hour NO_2 & 24-hour $PM_{2.5}$ Concentrations – Comparing Application Results and Revised Crane Engine Scenario Results

NAAQS	Total Concentrations ($\mu g/m^3$) (includes background)			NAAQS ($\mu g/m^3$)
	Application	Revised Crane Engine Scenarios	Increase from Application	
1-hour NO_2	151.49	162.17	10.68	188
24-hour $PM_{2.5}$	34.01	34.05	0.04	35

In summary, Shell states that the modeling runs provided with this comment support replacing the per-crane limits with aggregate emission limits for the three crane engines. They demonstrate that even if all of the aggregated emissions came from a single crane – which represents the maximum possible impact of the requested limits – the NAAQS would be protected. Shell contends that spreading the aggregate allowable emissions among the three cranes, regardless of the distribution, will result in concentrations that are at-worst equal to, but likely lower than, the concentrations calculated based on all of the emissions coming from a single crane. Shell states that imposing aggregate emission limits will, therefore, ensure that the NAAQS are protected while giving the project necessary operational flexibility.

Response: The air quality impact analysis for 1-hour NO_2 and 24-hour $PM_{2.5}$ provided by Shell during the public comment period supports the permittee's request to adjust the numerical emission limits in Condition D.6.4.1 and D.6.4.2 to reflect aggregate limits for all emission units in that category instead of emission limits on a per unit basis. Accordingly, the numerical limits have been amended as requested.

For PM_{10}, the analysis provides the basis for revising the permit to move forward with emission limits that apply to all three deck crane engines combined, not separately as the draft permit proposed. For PM_{10}, the new analysis assumes no emissions increases. The analysis assumes that the same total emissions are generated. But this time, all emissions are assumed to be exhausted through a single stack rather than three stacks that are spread across three locations on the Kulluk deck. The new $PM_{2.5}$ analysis shows an increase of 0.12 percent to the maximum concentration previously predicted. The new resultant ambient concentration of 34.05 $\mu g/m^3$ (which includes background) remains less than the

24-hr $PM_{2.5}$ NAAQS of 35µg/m^3. Because NAAQS remain protected, Region 10 has revised the emission limits to reflect the emission rates modeled.

For the revised NO_2 analysis, Shell again modeled emissions as if exhausted from a single stack. This time, however, Shell increased the combined emission rate from 3.6 lb/hr to 12 lb/hr for Well Drilling Activity and from 6 lb/hr to 12 lb/hr for all other activities. Whereas the 12 lb/hr emission rate is based upon an hourly fuel combustion capacity value of 26 gallons per hour, the "3.6 lb/hr" and "6 lb/hr" emission rate values reflect average daily fuel consumption for different activity levels expressed as an hourly value for modeling purposes.[24] The new NO_2 analysis shows an increase of 7 percent to the maximum concentration previously predicted. The new resultant ambient concentration of 162.17 µg/m^3 (which includes background) remains less than the 1-hr NO_2 NAAQS of 188µg/m^3. Because NAAQS remain protected, Region 10 has revised the emission limits to reflect the emission rates modeled.

Region 10 also revised the text of the permit, but not as requested. Region 10 used the same sentence structure as used in Permit Condition D.6.2.1 for the MLC HPU Engines. Region 10 took this approach because Shell modeled the deck crane engines in an analogous manner to the MLC HPU engines. In both cases, emissions from identical emission units were conservatively assumed to be generated at a single location on the Kulluk deck. Demonstrating compliance with the NAAQS using this conservative assumption provides for additional flexibility in the corresponding permit condition.

While the change to Permit Conditions D.6.4.1 and D.6.4.2 does increase the amount of NO_X the deck crane engines can emit during any given hour, this revision does not increase the overall PTE of the OCS source which remains at 240 tpy.

Comment III.5: The Alaska Department of Natural Resources provided the following specific comments on the Draft Permit and Statement of Basis:

Kulluk Draft Permit

1. Page 20, Item 26.3.4 refers to a form in Appendix B for recording visibility, but there was no Appendix B provided with the document.
2. Page 23, Item 3.1.1.4 refers to a form in Appendix B for recording visibility, but there was no Appendix B provided with the document.

Kulluk Statement of Basis

1. Page 20, final paragraph, sentence four references the Discoverer drill rig. This reference should be changed to the Kulluk drill rig.
2. Page 34, Condition B.15 – the text refers to 18 AC 50.110. The correct citation should read 18 AAC 50.110.

[24] Max 1-hr: (26 gal/hr) x (0.462 lb NO_X/gal) = 12lb/hr
Average Well Drilling Activity: (854 gal / 24 hr) x (0.462 lb NO_X/gal) = 3.6 lb/hr
Average Cementing/Logging Activity: (307 gal / 24 hr) x (0.462 lb NO_X/gal) = 6 lb/hr
See Permit Application, Appendix G pages 4 and 6.

3. Page 39, Condition D.4.9 – prohibits Shell from operating the Kulluk in the Beaufort Sea within the same drilling season as the Noble Discoverer drilling vessel. This condition appears as Condition D.4.8 on page 38 of the permit. Consideration should be given to adding a caveat on this condition that in the unlikely event of a well blowout emergency this condition should not preclude the use of a second drilling vessel to drill a relief well.
4. Page 53, Section 5.3 Coastal Zone Management – it should be noted that the Alaska Coastal Management Program described in this section ceased to exist as of July 1, 2011.
5. Page 55, Footnote 20, line 2 – The reference refers to Alaska's North Slope. It should refer to Alaska's North Slope.

Response: Region 10 erroneously omitted the Visible Emissions Field Data Sheet as Appendix B of the proposed permit. In the final permit, the Visible Emissions Field Data Sheet is presented as Appendix B.

With respect to the comments regarding errors in the Statement of Basis, Region 10 acknowledges the errors the commenter points out. Region 10 inadvertently referenced the Discoverer drill rig rather than the Kulluk drill rig on page 20; incorrectly cited 18 AAC 50.110 on page 34; and misspelled the word "North" on page 55.

With respect to the comment regarding the termination of Alaska's Coastal Zone Management Program, see response to Category JJ earlier in this document.

Lastly, the commenter asks Region 10 to consider including a caveat to Condition D.4.8 to ensure that this condition does not prohibit the use of a second vessel to drill a relief well in the event of an emergency blowout. Condition D.4.8 prohibits Shell from operating the Kulluk in the Beaufort Sea in the same drilling season as the Discoverer because Shell's application did not consider the air quality impacts or the aggregation aspects (*i.e.*, what constitutes the "stationary source") of operating both vessels in the same sea during the same drilling season. See response to comment E.1. As a general matter, Clean Air Act stationary source permitting programs are not intended to address emergency activities, such as those that may be necessary to respond to a blowout. See generally *Shell Gulf of Mexico, Inc. and Shell Offshore, Inc.*, Frontier Discoverer Drilling Units, OCS Appeal Nos. 10-01 through 10-04, Order on Four Additional Issues, dated March 14 2011, at 26-38. To the extent Shell determines that safety considerations associated with an emergency blowout require operation of both the Discoverer and the Kulluk in the Beaufort Sea in violation of Permit Condition D.4.8, Region 10 will evaluate any such situation in accordance with EPA's excess emissions policy.[25]

[25] See e.g., Memorandum from Kathleen M. Bennett to Assistant Administrator for Air, Noise and Radiation Regional Administrators, Regions I-X, Re: Policy on Excess Emissions During Startup, Shutdown, Maintenance, and Malfunctions, dated September 28, 1982; Memorandum from John B. Rasnic, Director, Stationary Source Compliance Division Office of Air Quality Planning and Standards to Linda M. Murphy, Director, Air, Pesticides and Toxics Management Division Region I, Re: Automatic or Blanket Exemptions for Excess Emissions During Startup, and Shutdowns Under PSD, dated January 28, 1993; Memorandum from Eric Schaeffer, Director, Office of Regulatory Enforcement, to Addressees, Re:

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Comment III.a: Shell recommended the following changes to the Draft Permit to correct what it characterized as unintended errors:

- Page 6, Table 2 in "Source Description." The bottom right cell of the table (the "600 hp" Approximate Aggregate Rating for OSRV WD-1A-1Z) should also refer to footnote "h."
- Page 33, Table D.2.1, footnote p. This footnote is for the $PM_{2.5}$ column in the table, so should refer to "$PM_{2.5}$ emission factors," not "PM emission factors."
- Page 34, Table D.2.2. The column headings for N_2O and CH_4 are swapped. The 0.0009 lb/gal emission factor for engines is for methane (CH_4), not N_2O (see 7/20/11 EPA memo, "Derivation of Emission Factors in Tables D.2.1 and D.2.2 of Draft Permit to Shell for Operation of Kulluk in Beaufort Sea").
- Page 40, Condition D.6.3.1. To be consistent with the language in Condition 6.4.1, delete the word "Combined," the "s" from the word "engines," and the phrase "operating at a single location", and add the word "each" before "MLC" so it reads: "Emissions from each MLC air compressor engine shall not exceed …"

Response: With respect to the last cell in Table 2 of the proposed permit, Region 10 acknowledges that we inadvertently referenced footnote "g" rather than footnote "h." In the final permit, the last cell of Table 2 references footnote "h." With respect to the text within footnote "p," Region 10 inadvertently references "PM_{10}" rather than "$PM_{2.5}$" in the final permit. footnote "p" makes reference to "$PM_{2.5}$." Finally, Region 10 acknowledges inadvertently misidentifying N_2O and CH_4 emission factors in Table D.2.2. The final permit's Table D.2.2 correctly identifies N_2O and CH_4 emission factors.

With respect to the comment regarding Permit Condition D.6.3.1, commenter requests Region 10 to consider amending the text. Region 10 is revising Permit Condition D.6.3.1 and is creating Permit Condition D.6.3.2 to provide clarity with respect to the emission limits applicable to MLC Air Compressors engines necessary for NAAQS protection.

The Draft Permit's Condition D.6.3.1 stated,

6.3.1 Combined emissions from MLC air compressor engines operating at a single location shall not exceed the emission limits specified for each of the pollutants below:

6.3.1.1	NO_X:	14.8 lb/hr
6.3.1.2	$PM_{2.5}$:	7.4 lb/day
6.3.1.3	PM_{10}:	7.4 lb/day

Guidance on the Appropriate 6-12 9S Meyer Memo, Memorandum from Steven A. Herman, Assistant Administrator for Enforcement and Compliance Assurance; Robert Perciasepe, Assistant administrator for Air and Radiation to Regional Administrators, Regions I-X, Re: State Implementation Plans: Policy Regarding Excess Emissions During Malfunctions, Startup, and Shutdown, dated September 20, 1999.

Although not made clear in the Draft Permit, Region 10 intended to limit emissions from two groups of engines operating at two separate locations through this one permit term. As the application clearly illustrates, one group was modeled as if located on the Port side of the Kulluk while the other was modeled as if located on the Starboard side. The two groups were modeled simultaneously, and each group's emissions were modeled as exhausting through a single stack distinct from the other group's stack.

The Port engines were modeled with the following emission rates: NO_X - 14.8 lb/hr, $PM_{2.5}$ - 7.4 lb/day and PM_{10} - 7.4 lb/day. The Starboard engines were modeled with the following emission rates: NO_X - 14.8 lb/hr, $PM_{2.5}$ - 7.4 lb/day and PM_{10} - 7.4 lb/day. See Technical Support Document Tables 3 and 4.

Region 10 recognizes that the Draft Permit language can be improved to better reflect emission rates that were modeled for the MLC Air Compressor Engines. The following two Permit Conditions, which do not represent an increase in allowable emissions, are being inserted into the permit to clarify Draft Permit Condition D.6.3.1.

6.3.1 Combined emissions from Port MLC air compressor engines shall not exceed the emission limits specified for each of the pollutants below:

6.3.1.1	NO_X:	14.8 lb/hr
6.3.1.2	$PM_{2.5}$:	7.4 lb/day
6.3.1.3	PM_{10}:	7.4 lb/day

6.3.2 Combined emissions from Starboard MLC air compressor engines shall not exceed the emission limits specified for each of the pollutants below:

6.3.2.1	NO_X:	14.8 lb/hr
6.3.2.2	$PM_{2.5}$:	7.4 lb/day
6.3.2.3	PM_{10}:	7.4 lb/day

II. CATEGORY – GOVERNMENT-TO-GOVERNMENT CONSULATION

Comment II.1: Commenters questioned whether Region 10 had properly engaged in government-to-government consultation. One commenter referenced the trust relationship between federal and tribal governments and stated that the federal government has a fiduciary responsibility to Indian tribes to protect their lands and resources. The commenter stated that the federal government must recognize tribal governments as separate sovereign nations. The commenter read from a document that was described as Department of Interior order number 3225 concerning the Endangered Species Act and subsistence uses in Alaska. In reading from this document the commenter stated that the Department of Interior will ensure government-to-government consultation with Alaska natives, and the Department of Commerce will comply with relevant orders and policies in consulting with Alaska natives. The commenter also read

from what was described as a court case concerning the question of whether the Alaska Native Claims Settlement Act can lawfully extinguish aboriginal title or rights in Alaska. The commenter also cited to a Supreme Court case, City of Sherrill v. Oneida Indian Nation of New York, 544 U.S. 197 and stated that the Alaska Native Claims Settlement Act was unconstitutional and an act of genocide and fraud upon the indigenous people of Alaska.

Response: Region 10 recognizes that the federal government has a unique legal relationship with tribal governments which involves, among other things, providing for meaningful and timely consultation. Executive Order 13175, issued on November 9, 2000 and entitled "Consultation and Coordination with Indian Tribal Governments," requires federal agencies to have an accountable process to ensure meaningful and timely input by tribal officials in the development of policies that have tribal implications. 65 Fed. Reg. 67,249; EPA Policy on Consultation and Coordination with Indian Tribes, May 4, 2011. To ensure meaningful and timely consultation, Region 10 has established a tribal consultation framework and developed a communications protocol to provide for meaningful involvement of North Slope communities in decision making.

Given the geographic proximity between the Kulluk's proposed operations and off-shore areas where subsistence activities occur, Region 10 determined that tribal consultation was warranted. In letters dated June 6, 2011, Region 10 invited the Inupiat Community of the Arctic Slope, Native Village of Kaktovik, and Native Village of Nuiqsut to engage in government-to-government consultation. The Region also held informational meetings in Barrow and Kaktovik on June 15-17, 2011 to discuss OCS permitting actions, including the Draft Permit. These meetings were open to the public and all North Slope entities (city governments, tribal governments, the North Slope Borough, and the Alaska Eskimo Whaling Commission) received invitations to attend these early informational meetings. The Region believes its actions have ensured meaningful and timely consultation with tribal governments.

Comments regarding the Alaska Native Claims Settlement Act are outside the scope of this proceeding.

JJ. CATEGORY – COASTAL ZONE MANAGEMENT

Comment JJ.1: Commenters reference the fact that Alaska's Coastal Management Program (ACMP) expired by operation of statute on June 30, 2011. One commenter stated that it is premature for Region 10 to issue the Draft Permit without a coastal management program.

Response: Region 10 is aware that the ACMP expired on June 30, 2011 by operation of Alaska Statutes 44.66.020 and 44.66.030. Because a federally approved coastal zone management program must be administered by a state agency, the National Oceanic and Atmospheric Administration (NOAA) withdrew the ACMP from the National Coastal Management Program established under the Coastal Zone Management Act. 76 Fed. Reg. 39,857 (July 7, 2011). As a result, the Coastal Zone Management Act consistency provisions at 16 U.S.C. § 1456(c)(3) and 15 CFR Part 930 no longer apply in Alaska and consistency certifications are no longer required. However, prior to the expiration of the ACMP, Region 10 conducted a review of the projects required to undergo ACMP consistency review and determined that a consistency review for the Draft Permit was not required under the ACMP. Accordingly, Region 10 does not believe that a decision on the Draft Permit would be premature in the absence of a coastal management program.

KK. CATEGORY – ENDANAGERED SPECIES ACT

Comment KK.1: At the public hearing in Barrow, one commenter questioned whether he should be concerned about the Draft Permit with respect to the Coastal Zone Management Act and Endangered Species Act (ESA).

Response: Although the Alaska Coastal Management Program is no longer in effect, the Region determined that a consistency review would not have been required under the former program. See response to comment JJ.1. Section 7 of the ESA requires federal agencies, in consultation with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service (collectively "the Services"), to ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of a species listed as threatened or endangered, or result in the destruction or adverse modification of designated critical habitat of such species. The BOEMRE is the lead agency for ESA Section 7 compliance with respect to Shell's oil exploration activities and has consulted with the Services regarding Shell's activities in the Beaufort Sea. In fulfilling its ESA obligations for this permitting action, Region 10 reviewed the ESA consultation documents prepared by BOEMRE and the biological opinions issued by the Services. A discussion of Region 10's ESA process is provided in the Statement of Basis (pp.50-51).

II. SUMMARY OF CHANGES TO THE PERMIT

The following table lists the changes made to the Draft Permit and provides a brief summary of the rationale for the changes (as compared to July 22, 2011 Revised Draft Permit).

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
Page 1	Added actual issuance date.	
Page 1	Added actual date permit is to become effective.	
Page 1	Added actual date Title V permit is to expire.	
Page 5	Added acronym for continuous monitoring	

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
	system	
Table 2	Corrected two typos. In row "OSRV Work Boats (OSRV WBj", correct reference is to footnote "g" rather than footnote "f". In last cell of table, correct reference is to footnote "h" rather than footnote "g".	Corrected typo. See also RTC Comment III-6.
A.18	Revised to make minor changes to reflect most recent COA requirements for excess emissions and permit deviation reports.	OCS permits on the Inner OCS must include COA requirements. See 40 CFR 55.14. The draft permit did not include the most current COA language. See 18 AAC 50.346(b)(2), Standard Permit Condition III Excess Emissions and Permit Deviation Reports.
D.2.2.1	Replaced language that required visible emissions observations to be conducted within 6 months of permit issuance. Revised permit condition states, "Within 30 days of the Kulluk becoming an OCS source or within 30 days of startup of an emission unit, whichever is later, observe exhaust for 18 minutes."	In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Ruddy, Shell, Region 10 is deviating from standard operating permit language to account for the fact that this is both a Title V permit and a construction permit. Equipment may not be installed, much less operating, within 6 months of permit issuance. The Kulluk is prohibited from becoming an OCS source until July 1, 2012. New language provides flexibility to permittee to conduct observations within a reasonable time after startup.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
B.14.1	Added "Perform regular maintenance considering the manufacturer's or the operator's maintenance procedures."	Revised to include a subparagraph in a COA requirement that was erroneously omitted. See 18 AAC 50.346(b)(5), Standard Permit Condition VI Good Air Pollution Practices.
B.16	Re-numbered Condition B.15.7 as Condition B.16. Entitled B.16, "COA Obligations for Modifications Subject to 18 AAC Article 5 Minor Permits."	Clarifying change.
B.17	Created condition to require permittee to provide emissions information consistent with COA requirement born out of the State's emissions reporting obligations in 40 CFR Part 51.	OCS permits on the Inner OCS must include COA requirements. See 40 CFR 55.14. Region 10 erroneous omitted this standard condition from the draft permit. See 18 AAC 50.346(b)(8), Standard Permit Condition XV Emission Inventory Reporting.
C.3.3	Added language clarifying that permittee is to report capacity of boilers and heaters in units of "MMBtu per hour" and "gallons per hour."	Clarifying change.
Table D.2.1 – Row for Units K-5A – 5Z. Table D.2.2 – Rows for Units B1-2A – 2Z and B2-2A – 2Z.	Revised CO emission factor to 0.007 lb/gal	See RTC Comment I.3.a-c. See also October 21, 2011 EPA memo. New value reflects worst-case emissions test results for boiler on the Discoverer.
Table D.2.1 – Row for Unit K-6. Table D.2.2 – Row for OSRV WB-1A – 1Z	Revised NO_x and PM_{10+} emission factors to 0.399 lb/gal and 0.038 lb/gal, respectively.	See RTC Comment I.3.a. See also October 21, 2011 EPA memo. New values reflect 90th percentile

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
		emissions test result values for engines with output greater than 600 hp on Discoverer and Associated Fleet.
Table D.2.1 – Last Cell	Revised CH_4 emission factor to 1596 lb/month.	See RTC Comment I.3.d. New value assumes that what was projected to be emitted during an entire drilling season is emitted in just one month.
Table D.2.1 – Footnote p	Changed "PM_{10}" to "$PM_{2.5}$"	Corrected typo.
Table D.2.2	Under column "Emission Unit ID," replace "OSRV WB 1 – 4" with "OSRV WB-1A – 1Z."	Corrected typo.
Table D.2.2	Exchange emission factor values in columns "N_2O" and "CH_4."	Corrected typo. See also RTC Comment III.6.
D.3.4	Added phrase "within a drilling season" to the end of condition.	Clarifying change. Revised language is consistent with language in Condition D.3.3.
D.3.10	Added requirement to calculate and record information on the number of days the Kulluk operates as an OCS source, the number of hours of drilling activity, and the number of hours of MLC activity.	Requires recordkeeping to provide a reasonable assurance of compliance with Conditions D.3.2, D.3.3, and D.3.4 and are generally responsive to concerns expressed in comments within Category I.1, J.1, K and M.1 that the permit include sufficient monitoring to assure compliance with limits.
D.4.1.2, D.4.1.3, D.4.2.2, D.4.2.3, D.4.4.3, D.4.4.4, D.6.14.2, D.6.15.2, D.6.15.3	Corrected a series of typos in which cross references failed to identify correctly the permit condition being referenced.	Corrected typos. Each cross reference failed to identify the letter (D.4.4.1, for example) in the designation of the referenced permit conditions.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
D.4.1.4, D.4.2.4, D.4.4.5, D.6.14.3, D.6.15.4	Deleted conditions requiring Shell to calculate heater and boiler emissions assuming operation at maximum capacity.	In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Ruddy, Shell, Region 10 is revising these conditions to make the emission calculation requirement for heaters and boilers consistent with emission calculation requirement for regularly operated engines.
D.4.5	Corrected a typo that erroneously referenced Condition F.2.3 rather than Condition F.2.4.	Corrected typo.
D.4.6	Revised total fuel combustion allowance to 7,804,428 gallons.	See RTC Comment I.3.d. New fuel allowance reflects increased projection of mud degassing PTE.
D.4.9	Created condition prohibiting permittee from purchasing any liquid fuel other than ULSD. Condition requires permittee to keep records to show compliance.	See RTC Comment G.1. Permittee originally requested operating limit that restricts diesel fuel purchases to ULSD. Proposed permit inadvertently omitted this owner-requested limit. Final permit includes operating limit.

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Permit Condition or Location	Description	Explanation or Response to Comments Discussion
D.8.5	Make reference to "drilling season" rather than "rolling 12-month period." Clarify that an activity occurring during parts of two days is considered two events regardless of whether the activity lasts longer than 24 hours.	Clarifying change. The changes recognize that compliance with the NAAQS is based upon air quality observations that occur within blocks of time that align with the calendar. The specific 24-hour period is the day, and the specific 12-month period is the calendar year. That portion of the calendar year in which permittee is authorized to operate is the drilling season.
D.6.3.1, D.6.3.2	Revised Condition 6.3.1 and created Condition 6.3.2 to clarify that one set of emission limits apply to "Port" emission units and the other apply to "Starboard" emission units.	See RTC Comment III.6. The change limits Shell to installing MLC Air Compressor Engines to two distinct locations and makes it more clear what emission limits apply at those locations. Change in no way represents an increase in allowable emissions from draft permit.
D.6.4.1, D.6.4.2	Revised deck crane engines' emission limitations.	See RTC Comment III.4. Emissions from all engines now aggregated to determine compliance with new limits. Change represents an increase to hourly NO_X allowable emissions, but no increase to allowable $PM_{2.5}$ emissions. Change results from new modeling provided by Shell.
D.6.10.1.2	Revised the $PM_{2.5}$ emission limit from 73.9 lb/day to 74.4 lb/day.	Corrected typo.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
D.6.14	Revised permit condition to require that units K-5A – 5Z and K-8 demonstrate compliance with 1-hour NO_X limit by multiplying appropriate emission factor by hourly operation rate.	To demonstrate compliance with 1-hour NO_X limit, hourly emissions must be calculated for these emission units. In the proposed permit, Region 10 inadvertently exempted permittee from making this hourly demonstration for the Kulluk incinerator (K-8). The change to the permit corrects this error. In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Reddy, Shell, Region 10 is also revising this condition with respect to Kulluk heaters and boilers (K-5A – 5Z). In the proposed permit, Region 10 had erroneously thought the permittee was accepting of calculating boiler emissions assuming operation at maximum hourly capacity in exchange for not monitoring operating rate. In the final permit, permittee is required to collect hourly operating data for heaters and boilers and to use the data to calculate emissions.
D.6.15.3	Revised permit condition to delete the following language, "multiplied by the appropriate emission factor (lb/ton) specified in Tables D.2.1 – D.2.2 times 24."	Clarifying change. The deleted language is not necessary given the language in D.6.15. Revised permit condition is now consistent with D.6.15.2

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
E.3.2	Revised permit to require all incinerators undergo source testing to determine test-derived emission factors for CO and NO_X.	See RTC Comment I.3.a.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
F.1.1	Added additional GPS requirement for Shell to monitor the date, time and location of the Associated Fleet when the Kulluk becomes and ceases to be an OCS source and when the Associated Fleet enters or leaves the 25 mile radius area around the Kulluk.	The revised permit condition makes it more clear that all fuel combusted while the Associated Fleet is within 25 miles of the Kulluk must be accounted for if the permit requires Shell to record the time at which each vessel enters or leaves the 25 mile radius area around the Kulluk when the Kulluk is an OCS source, as well as the location of the Associated Fleet at the time the Kulluk becomes and ceases to be an OCS source. These requirements have been added to Condition F.1.1 of the permit and will require the collection of information needed to ensure, in conjunction with other permit requirements, that all of the fuel combusted by the Associated Fleet while regulated by this permit is accounted for and considered when determining compliance. These changes are generally responsive to concerns expressed in comments within Category I.1, J.1, K and M.1 that the permit include sufficient monitoring to assure compliance with limits.

R011844

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
F.2.2	Amended condition to require permittee monitor heater and boiler fuel consumption.	In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Ruddy, Shell, Region 10 is revising this condition to make the fuel monitoring requirements for heaters and boilers consistent with fuel monitoring requirement for engines that operate regularly.
F.2.2.1.1	Amended condition to replace "engine" with "emission unit or emission unit group" to recognize that fuel flow meters may be employed to determine fuel consumption rate of an individual combustion unit or a group of combustion units.	Clarified that a fuel flow meter should have no inflows or outflows between it and the associated individual emission unit or emission unit group. Clarifying Condition F.2.2.1.1 is generally responsive to comments within Category I.1, J.1, K and M.1 that the permit include sufficient monitoring to assure compliance with limits.
F.2.2.5	Added requirement to record fuel usage for all emission units.	Added to ensure the annual fuel usage limit has appropriate recordkeeping requirements. Enhancing Condition F.2.2.5 is generally responsive to comments within Category I.1, J.1, K and M.1 that the permit include sufficient monitoring to assure compliance with limits.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
F.2.4.2	The revised language in the permit specifies that the permittee is to "determine the sulfur content of each delivery of fuel to the Kulluk and Associated fleet." In lieu of sampling and analyzing each delivery, the permittee may "Obtain from the fuel supplier certification of the sulfur content of the fuel as purchased, and obtain documentation that each storage tank transporting the fuel between purchase and delivery has not caused the fuel delivered to become higher than 100 ppm sulfur content."	See RTC Comment G. Changes to language more clearly specify options for determining sulfur content of fuel shipments.
F.2.5	Added language to clarify when monitoring of the incinerator temperature is required.	In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Ruddy, Shell, Region 10 is revising this condition to more clearly describe the time period during which the permittee is required to monitor incinerator temperature. Temperature monitoring is to begin as soon as waste is introduced to the incinerator.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
F.2.7	Created condition to require permittee to monitor Kulluk emergency generator operation.	Added to ensure the Kulluk emergency generator operating restrictions have appropriate recordkeeping requirements. Creating Condition F.2.7 is generally responsive to comments within Category I.I, J.1, K and M.1 that the permit include sufficient monitoring to assure compliance with limits.
F.3	Spell out abbreviation for CMS as continuous monitoring system.	Clarifying change.
F.3.2	Added language to clarify when operation of the SCR inlet temperature and urea pump CMS is required.	In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Ruddy, Shell, Region 10 is revising this condition to clarify the time period during which the permittee is required to operate these two aspects of the SCR CMS.
F.3.7	Correct typos that cross reference incorrect permit conditions.	Clarifying change.
F.4.2	Added language to clarify when monitoring of the exhaust gas inlet temperature to the oxidation catalyst is required.	In response to concerns raised by Shell in a telephone conversation on October 13, 2011, between Doug Hardesty, EPA, and Pauline Ruddy, Shell, Region 10 is revising this condition to clarify the time period during which the permittee is required to monitor temperature.

Permit Condition or Location	Description	Explanation or Response to Comments Discussion
G.1, G.2, G.3, G.4, G.5	Added descriptive titles.	Clarifying change.
G.1.5, G.1.6.1, G.1.7.1, G.1.7.4, G.1.8.1, G.2.12.2, G.3.3	Correct typos that cross reference incorrect permit conditions.	Clarifying change.
G.1.8, G.1.8.1 and G.1.8.2.	The revised language in the permit specifies that the permittee is to "determine and record the sulfur content, cetane index and aromatic content of each delivery" in accordance with the appropriate sampling and analysis methods. In lieu of sampling and analyzing each delivery, the permittee may "Obtain from the fuel supplier certification of the sulfur content of the fuel as purchased, and obtain documentation that each storage tank transporting the fuel between purchase and delivery has not caused the fuel delivered to become higher than 15 ppm sulfur content."	See RTC Comment G. Original permit language simply requiring "the purchase" of ULSD lacked specificity. The fuel being delivered to storage tanks serving affected sources must meet specification as it is delivered from supply vessel. Requirement applies to all fuel intended to be combusted while Kulluk is an OCS source. Revisions also specify how compliance is to be determined.
G.3.5	Correct a typo that identified the incorrect underlying regulation.	Corrected typo.

R011846

Permit Condition or Location	Description	Explanation or Response to Comments/Discussion
G.3.5.1, G.3.5.2, G.3.5.3	Replace "or" with "and" with respect to requirement to determine cetane index and aromatic content. Replace "ASTM D 4737-10" with "ASTM D 976-80." Replace "ASTM 5186-03" with "ASTM D 1319-03."	Changes consistent with changes to G.1.8.1.1 that correctly reference requirement to test for cetane index "and" aromatic content not cetane index "or" aromatic content. Changes also correct the references to analytical methods for determination of cetane index and aromatic content for diesel fuel as referenced in ASTM D975-11 "Standard Specification for Diesel Fuel Oils."
G.5.2.2.3	Correct a typo where a cross reference failed to identify the letter in the designation of the referenced permit condition.	Corrected typos.
Attachment A – EPA Notification Form – Excess Emission and Permit Deviation Reporting	Added form to permit.	Region 10 erroneously omitted this form from the draft permit.
Attachment B – Visible Emission Field Data Sheet	Added form to permit.	Region 10 erroneously omitted this form from the draft permit. See RTC at Comment 10.1.5.
Attachment C – Emission Inventory Reporting Form.	Added form to permit.	Region 10 erroneously omitted this form from the draft permit. EPCS permits on the Inner OCS must include COA requirements. See 40 CFR 55.14, Sec 18 AAC 50.346(b)(9). Standard Permit Condition XVI Emission Inventory Reporting Form. Form is referenced by newly created Condition B.12.

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:	)	
	)	
	)	
	)	
Shell Offshore, Inc.	)	OCS Appeal Nos.
OCS Permit No. R10 OCS030000	)	11-05, 11-06 & 11-07
	)	
	)	
Kulluk Conical Drilling Unit	)	
	)	
	)	
	)	

RESPONSE TO PETITIONS FOR REVIEW

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INTRODUCTION

The Board should deny review because Petitioners have not demonstrated clear error in Region 10's October 21, 2011 decision to grant Outer Continental Shelf ("OCS")/Permit to Construct and Title V Air Quality Operating Permit No. R10 OCS030000 ("permit") to Shell Offshore, Inc. ("Shell") for operation of the Kulluk drilling unit ("Kulluk") in the Beaufort Sea under section 328 and Title V of the Clean Air Act ("CAA"). This decision is fully supported by the record, including a detailed Response to Comments ("RTC"). Petitions were filed by: (1) the Iñupiat Community of the Arctic Slope ("ICAS Petitioners"); (2) Earthjustice on behalf of a number of environmental organizations ("Earthjustice Petitioners"); and (3) Daniel Lum.[1]

BACKGROUND

The permit authorizes Shell to conduct air pollutant emitting activities for the purpose of oil exploration with the Kulluk on lease blocks in the Beaufort Sea as authorized by the United States Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE"). The permit also provides for the operation of associated support vessels ("Associated Fleet").[2]

The permit was issued in response to an application submitted by Shell on February 28, 2011. Region 10 proposed a draft permit and accepted public comment from July 22 to September 6, 2011, and held public hearings in Barrow and Anchorage, Alaska on August 23 and 26, 2011. After review and full consideration of the comments received, Region 10 issued the permit on October 21, 2011.

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[1] Petitions are identified as "ICAS Pet.," "Earthjustice Pet.," and "Lum Pet."

[2] The "Associated Fleet" refers to vessels supporting the Kulluk that will be within 25 miles of the Kulluk while it is an "OCS source." *See* CAA § 328(a)(4)(C); 40 C.F.R. § 55.2.

STANDARD OF REVIEW

Petitioners bear the burden of demonstrating that review is warranted. To meet this burden, a petitioner must not only specify objections to the permit, but also explain why the permit issuer's previous response to those objections is clearly erroneous or otherwise warrants review. A "petitioner's burden is particularly heavy in cases where a petitioner seeks review of issues that are fundamentally technical or scientific in nature, as the Board typically defers to the expertise of the permit issuer on such matters if the permit issuer adequately explains its rationale and supports its reasons in the record." *In re Avenal Power Center, LLC*, PSD Appeal Nos. 11-02 through 11-05, slip. op. at 4-5 (EAB Aug. 18, 2011)(internal citations omitted).

ARGUMENT

Considering the full record, Petitioners fail to demonstrate that Region 10's permitting decision constitutes clear error or an abuse of discretion, or involves an important policy consideration that the Board should review. *See* 40 C.F.R. §124.19(a)(1)-(2).

I. Petitioners Have Not Shown Clear Error in Region 10's Determination that the Prevention of Significant Deterioration ("PSD") Increments are not "Applicable Requirements" and Will not be Exceeded in Any Event

Petitioners have not demonstrated that section 504(e) of the Clean Air Act ("CAA") or EPA's Part 71 regulations preclude issuing a Title V permit to a Title V temporary minor source[3] unless the record shows that the source will not cause an exceedance of PSD increments. The dispute here centers on competing interpretations of

[3] References to "minor source" status in this brief are to a source with emissions below the PSD applicability thresholds.

the phrase "any applicable increment or visibility requirements under Part C of subchapter I of this chapter." CAA § 504(e). A substantial portion of the Earthjustice Petition (19-37) is focused on proving a point that Region 10 does not contest—that CAA § 504(e) is a unique provision that creates requirements for Title V temporary sources that are in addition to those otherwise applicable to such sources under other provisions of the CAA and EPA regulations. On the point that is disputed, Petitioners have not shown that their preferred reading of the key phrase in the CAA is the better reading, much less that Region 10's reading of these terms is clearly erroneous.

Generally, Title V does not impose on sources substantive pollution control requirements of its own. Instead, Title V requires that each source have a comprehensive operating permit to ensure compliance with all emissions limits and requirements applicable through other provisions of the CAA. *See In re Peabody Western Coal Company*, 12 E.A.D. 22, 27 (EAB 2005). However, Region 10 agrees with Petitioners that CAA § 504(e) is exceptional in that it imposes additional requirements on Title V temporary sources in many cases. AR-EPA-H-4, H000148-50. In the Statement of Basis ("SB"), Region 10 explains how EPA interprets this provision of the CAA to make the NAAQS an applicable requirement for all Title V temporary sources at all authorized locations, which means that this Title V permit "must contain terms and conditions that ensure compliance with the NAAQS at all relevant locations." *Id.* at 26. Region 10's view is based on a prior conclusion EPA reached when adopting its Part 70 Title V regulations in 1992. *Id.* (quoting the same passage that Petitioners rely upon from 57 Fed. Reg. 32,550, 32,276 (July 21, 1992)). EPA's 1992 rulemaking and Region 10's reasoning supporting this permit do not contain any discussion of the contrast between

CAA §§ 504(a) and 504(e) emphasized by Petitioners. But Petitioners' comparison of these provisions serves only to illustrate a point that is not disputed—that section 504(e) adds something beyond what is required for permanent sources under other parts of Title V. The parties diverge only with respect to the extent of the requirements added by section 504(e) and the corresponding regulatory language adopted by EPA in 40 C.F.R. §§ 71.2 and 71.6(e).

In the case of temporary sources, the first sentence of section 504(e) allows a Title V permitting authority to issue a single permit authorizing emissions from similar operations at multiple locations. But this grant of authority is conditioned on meeting the criteria discussed in the second sentence, which reads: "No such permit shall be issued unless it includes conditions that will assure compliance with all the requirements of this chapter at all authorized locations, including, but not limited to, ambient standards and compliance with any applicable increment or visibility requirements under part C of subchapter I of this chapter." CAA § 504(e). The parties agree on the effect of the first clause of this sentence but disagree about the scope of the CAA requirements that are applicable to this source and must be met at each authorized location.

The operative language at the end of this sentence is "any applicable increment ... requirement." Section 504(e) does not specify what the increment is "applicable" to or the nature of the increment "requirements" under Part C, and the legislative history does not shed any light on this issue.[4] This leaves an ambiguity that is resolved differently by

[4] Petitioners assert that the "plain language" of section 504(e), together with the structure and underlying purpose of Title V, make plain Congress's "unambiguously expressed intent" and compels their reading of CAA § 504(e). Petitioners' statements, however, are generally mere assertions, not supported by citations to case law or legislative history. The few citations to case law or post-enactment statements of legislators are statements about Title V generally and not the difference in treatment for permanent sources versus temporary sources. *See In re Shell Gulf of Mexico, Inc. and Shell Offshore, Inc.*, OCS Appeal Nos. 10-01

Region 10 and Petitioners. Region 10's reading centers around the applicability of an "increment requirement" to permanent stationary sources under the PSD permitting program and permitting requirements of the applicable State Implementation Plan ("SIP"), depending on the type of source (major or minor) and terms of the SIP. AR-EPA-J-3, J000319-22; AR-EPA-H-4, H000149. Region 10 explained in the RTC that it believes the intent of the Title V temporary source provision is to relieve sources of the burden of applying for a Title V permit for each new location, while at the same time assuring compliance with all requirements to which the source would be subject if it were a new permanent source at each such new location. AR-EPA-J-3, J000325. Petitioners read the clause at the end of the second sentence of section 504(e) to mean that whenever increments are applicable to a baseline area, then all Title V temporary sources that consume increment and seek a Title V permit are subject to a requirement to demonstrate that they will not cause an exceedance of the increment value.

The statutory language supports the reading applied by Region 10 in several respects. First, section 504(e) establishes requirements for sources rather than areas. Therefore, it is reasonable for Region 10 to look to CAA requirements that are applicable to *sources* to guide the interpretation of this provision. Second, this section does not stop at the phrase "any applicable increment" but extends further to describe "requirements under part C of subtitle I." In its RTC, Region 10 explains that there are two sources of "requirements" that are directly applicable to permit applicants under Part C of Title I of the CAA. These are the requirements in section 165(a)(3)(A) that a major source show it will not cause or contribute to a violation of an increment to obtain a PSD permit, and

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through 10-04 (EAB Dec. 30, 2010)(*Shell II*), slip op. at 25 (rejecting Earthjustice Petitioners previous broad assertion that a statute was not ambiguous).

any requirement contained in the SIP adopted in accordance with section 161 of the CAA and 40 C.F.R. § 51.166(a)(1). AR-EPA-J-3, J000320.

Petitioners erroneously contend that Region 10's interpretation would require only large sources to demonstrate that they will not cause a violation of the increment. Earthjustice Pet. 29. Although there may be statements in the SB that could be read to suggest such an approach, the RTC clarifies that a SIP may also require increment demonstrations as a condition of obtaining a minor source permit. AR-EPA-H-4, H000149; AR-EPA-J-3, J000320-21. Petitioners also argue that the "increment requirement" of the PSD program is established in section 163 of the CAA and that Region 10 has overlooked this provision. But it is Petitioners who overlook the specific text of section 163, which provides that "each applicable implementation plan shall contain measures assuring that maximum allowable increases over baseline concentrations … shall not be exceeded." CAA § 163(a). Likewise, section 161 of the CAA provides that the SIP shall contain "emission limitations and such other measures as may be necessary … to prevent significant deterioration of air quality." These provisions, not acknowledged by Petitioners, show that the "increment requirements" they refer to are implemented through the SIP, and are not directly applicable to sources. The statute and regulations establishing requirements for the construction of new minor sources require a minor source to demonstrate, as a condition of construction or modification, that it will not cause or contribute to a violation of the NAAQS, but do not require a minor source to demonstrate that it will not cause or contribute to a violation of increment. *Compare* CAA § 110(a)(2)(C) and 40 C.F.R. § 51.161(a)(requiring SIPs to include provisions prohibiting construction or modification of a source that would cause

or contribute to a NAAQS violation) *with* 42 U.S.C. §§ 110(a)(2)(J) and 161 (requiring SIPs to ensure protection of increment but not tying those requirements to authorizing construction or modification of sources); *see also*AR-EPA-J-3, J000320-21. Region 10 noted, however, that a state has discretion to impose such a requirement to meet its obligations under CAA §§ 161 and 163(a). AR-EPA-J-3, J000321-22. Thus, it is consistent with the CAA, and not clearly erroneous, for Region 10 to read the term "any applicable increment … requirements" in section 504(e) as describing requirements applicable to permanent sources under the applicable state or federal implementation plan (or in the case of OCS sources, under CAA § 328 and 40 C.F.R. Part 55), including the major source permitting program, and making sure such requirements would be met for temporary sources at each location.

Petitioners fall short in their attempt to give meaning to the use of the term "applicable"[5] by asserting that increments are not applicable to an area until the "minor source baseline date" when the baseline concentration is established. This premise does not hold up because increases in emissions at major stationary sources begin to consume increment at an earlier point called the "major source baseline date." 42 U.S.C. § 7479(4); 40 C.F.R. §§ 52.21(b)(13)(ii)(a) and (b)(14)-(15); 53 Fed. Reg. 40,656, 40,658 (October 17, 1988); 75 Fed. Reg. 64,864, 64,868 (Oct. 20, 2010); *see also Great Basin Mine Watch v. EPA*, 401 F.3d 1094, 1096 (9th Cir 2005). The fact that minor sources do not consume increment before the minor source baseline date does not necessarily mean that the increment is not applicable to either the area or to sources in that area before that

[5]Although it is true that the term "any" has an expansive meaning, in the CAA provision at issue here, Petitioners overlook the fact that "any" is directly adjacent to the term "applicable." Eartjustice Pet. 31. The latter term has a limiting rather than expansive effect. When these two terms are combined, the phrase "any applicable" has a far different meaning than when the term "any" is used in isolation.

date. Because major source construction may consume increment in any baseline area before the minor source baseline date, the increments established in section 163 of the CAA actually became "applicable" to every baseline area and certain types of sources in those areas at the inception of the statutory PSD program.

Petitioners assume that if a source consumes increment, then it is axiomatic that the source may not obtain any permit under the CAA unless it demonstrates that it will not cause a violation of the increments. While there may be superficial appeal to this approach, it ignores the fact that increment requirements are applied to sources through the SIP or the major source permitting program. As discussed above and in the RTC, the CAA does not require state new source construction programs to require a minor source to demonstrate it will not cause or contribute to a violation of increments as a condition of obtaining a minor source permit. AR-EPA-J-3, J000321-22.[6] Petitioners do not point to anything specific in the CAA or EPA regulations that demonstrate Region 10 erred in recognizing a distinction between the fact that certain emissions may consume increment in a baseline area and a requirement that a source must show it will not cause an exceedance of increment before it may begin to construct or operate. *Id.* The former determines air quality management obligations, while the latter is a permitting criterion

[6] This permit is three separate permits, one of which is a minor source permit under the COA regulations. AR-EPA-H-4, H000127. The COA regulations applicable to issuance of the minor source permit do not require that an applicant demonstrate that it will not cause or contribute to a violation of increments in order to obtain this type of permit. AR-EPA-J-3, J000321; *see* 18 AAC 50.502. Petitioners do not directly dispute this, but suggest that there is a "conflict" between federal and state requirements and that Alaska's requirements are "more lenient" than federal regulations. In fact, in the inner OCS, both the minor permit and Title V permit are COA requirements and thus "state" requirements. *See* 40 C.F.R. § 55.13(f). Moreover, CAA regulations do not require that a state minor new source review program require compliance with increments as a condition of obtaining a permit. Because a source is not obligated to submit a Title V permit application until 12 months after commencing operation under the COA Title V regulations on the inner OCS, 18 AAC 326(c); AS 46.14.150, and because the COA regulations provide authority to establish limits on potential to emit in a minor permit, 18 AAC 50.225, only a COA minor permit containing limits on potential to emit is needed to initially authorize operations in the Inner OCS.

directly applicable to sources. One does not necessarily equate with the other. Sections 161 and 163 of the CAA illustrate that states have a certain degree of discretion with respect to imposing measures to protect the increment, particularly in the case of minor source permitting programs. *Id.* When Region 10 observed in the RTC that EPA may act to remedy increment exceedances caused by minor source construction, this was simply a recognition that EPA and states have remedies available if the measures to protect increment in the applicable plan fall short.[7] Region 10 does not contend that an implementation plan is not allowed, when appropriate, to require minor sources to demonstrate they will not cause a violation of increment to obtain a construction permit. Rather, Region 10's contention is that Congress left states discretion to manage potential impacts of minor sources on increment through the planning process rather than *requiring* that such source make an explicit demonstration before obtaining a permit, as Congress has required for PSD major sources.

Nor have Petitioners shown that Region 10's conclusion regarding the applicability of increment requirements to this source is undermined by the terms of EPA's Part 71 regulations. Region 10 explained in the RTC why its conclusion does not render meaningless the thirteenth item in the definition of "applicable requirement" contained in 40 C.F.R. § 71.2. AR-EPA-J-3, J000324. As discussed, the intent of the Title V temporary source provisions is to relieve sources of the burden of applying for Title V permits for each new location, while at the same time assuring compliance with

[7] Although no SIP or SIP-type requirements apply in the outer OCS, 40 C.F.R. § 55.13(h) gives EPA authority to promulgate into Part 55 additional requirements as necessary to protect federal or state ambient air quality standards or to comply with Part C of Title I of the CAA. AR-EPA-J-3, J000323. In the inner OCS, ADEC's COA regulations apply, which are similar to the Alaska SIP. *See* 40 C.F.R. § 55.14. The question here is whether Title V requires that increment concerns at a Title V temporary minor source be addressed through the Title V permitting process when there is no such requirement in Title V or the applicable SIP or COA regulations that permanent minor sources ensure compliance with increment as a condition of obtaining a minor source construction permit or a Title V operating permit.

all requirements to which the source would be subject to if it were a new permanent source at each such new location. AR-EPA-J-3, J000325. For a Title V temporary source that is also subject to the PSD permitting requirements, this would include ensuring that NAAQS and increment are met at each future location, adding something to requirements applicable to the source under PSD alone. *See* 40 C.F.R. § 52.21(i)(1)(viii)(no affirmative requirement that a source considered "temporary" at multiple locations demonstrate compliance with NAAQS and increment at future locations). For a minor source, this would include ensuring that the NAAQS and, if required under the SIP for minor permanent sources, increment are met at each future location even if the SIP did not require such a demonstration for minor sources that are temporary or portable. Petitioners make no effort to confront this reasoning or demonstrate why it is clearly erroneous. Petitioners suggest the Title V regulations have a more expansive meaning than Region 10 ascribes to the provision in the CAA on which the regulation is based. Although the thirteenth item in the definition of applicable requirement (40 C.F.R. § 71.2) does not use language that is identical to CAA § 504(e) in all respects, it is expressly limited by a reference to the statute itself and therefore cannot expand the meaning of the statute. AR-EPA-J-3, J000322-23.

Even if the Board determines that increment is an applicable requirement for this Title V temporary minor source, Petitioners have not demonstrated that the permit fails to assure compliance with increments for nitrogen dioxide ("NO_2"), sulfur dioxide ("SO2") and particulate matter ("PM_{10}").[8] As discussed in the RTC (AR-EPA-J-3, J000323), Table 11 in the Technical Support Document ("TSD"), AR-EPA-H-1, H000033, shows

[8] No petitioner has challenged Region 10's conclusion in the RTC that the Kulluk does not consume any $PM_{2.5}$ increment. AR-EPA-J-3, J000327.

that increments for NO_2 and SO_2 will not be exceeded because, if one conservatively assumes the baseline concentration is zero, this table shows that the sum of Shell's impacts and background concentrations would cause an increase less than the Class II increments for these pollutants in 40 C.F.R. § 52.21(c). As explained in the RTC, it is appropriate in this particular case to use monitored background levels to represent the total impact of sources in the area, which includes baseline and increment-consuming sources. AR-EPA-J-3, J000317-18.[9] Region 10's conclusion with respect to PM_{10} is supported by the fact that modeling analyses for previous permits issued by the Alaska Department of Environmental Conservation ("ADEC") have documented that the contribution to existing PM_{10} levels by onshore sources along the Beaufort Sea, both baseline and increment consuming, is not significant.[10] For example, in issuing a permit for Endicott located on an island 3.8 miles offshore, ADEC determined that, based on past modeling assessments, off-site sources of PM_{10} do not have a significant impact at Endicott for purposes of an increment analysis. AR-EPA-B-30, B001111-13.[11] Therefore, the addition of Shell's impact shown in Table 11 of the TSD[12] to the PM_{10}

[9] Although EPA has stated that ambient monitoring has not been used to establish baseline concentrations or to evaluate increment consumption, EPA explained that "ambient measurements reflect emissions from all sources, including those that should be excluded from the measurements." 72 Fed. Reg 31,372, 31,376 (June 6, 2007). Therefore, the use of monitoring data in this case, where the monitor is adequately sited to capture impacts from off-site sources (AR-EPA-J-3, J000317-18)—an issue that was not the subject of a petition with respect to the NAAQS analysis— is a conservative representation of increment that has been consumed in the area because it includes impacts from sources that consume increment as well as sources that do not.

[10] Unlike NO_2 and SO_2, monitored background concentrations of PM_{10} include a more significant contribution from sources that do not consume increment (*i.e.*, that are part of the baseline), such as windblown dust.

[11] If the impact from Prudhoe Bay sources is insignificant at Endicott (AR-EPA-B-31, B001126), it would be insignificant at the Kuliuk leases because concentrations decrease with distance and the lease blocks are farther from the Prudhoe Bay sources than Endicott. The impact from the Endicott facility's small PM_{10} emissions (AR-EPA-B-30, B001095-96), which is farther from the lease blocks than the Prudhoe Bay sources are from Endicott, would also be insignificant at the lease blocks.

[12] Annual PM_{10} emissions are not shown in Table 11 because there is no longer an annual NAAQS for PM_{10}. As shown in the permit (AR-EPA-J-2, Tables D.2.2 and D.2.1), however, PM_{10} and $PM_{2.5}$ emissions are the same for all sources except incinerators. For incinerators, PM_{10} emissions exceed $PM_{2.5}$ emissions

significant impact levels in 40 C.F.R. § 51.165(b) is a conservative demonstration of total increment consumption and show that the PM_{10} increments will not be exceeded. Petitioners have not shown clear error in Region 10's technical determination that the increments will not be exceeded if they are deemed to be applicable to this source.

II. Petitioners Do Not Demonstrate Clear Error in Limits Established to Restrict Potential to Emit

Petitioners allege Region 10 committed clear error in establishing limits to restrict the potential to emit ("PTE") nitrogen oxides ("NO_X"), carbon monoxide ("CO"), and SO_2 to below the applicable 250 ton per year ("tpy") major source threshold, and to restrict Greenhouse Gases ("GHG"), measured as carbon dioxide equivalent ("CO_2e"), below the threshold at which GHGs become subject to regulation for a new stationary source under the Tailoring Rule.[13] The several theories advanced by Petitioners do not demonstrate clear error, especially in light of the heavy burden Petitioners bear in challenging Region 10's technical determinations in establishing PTE limits. *Peabody Western*, 12 E.A.D. at 30.

A. Source-Wide PTE Limits for NO_X and CO are Enforceable as a Practical Matter

Petitioners describe the source-wide emission limits to restrict PTE for NO_X and CO as "blanket emission limits" that are not enforceable as a practical matter. ICAS Pet. 10-13; Earthjustice Pet. 10-11. EPA guidance documents and memoranda "illustrate that the CAA and its implementing regulations allow for a flexible, case-by-case evaluation of

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by at most 20%, so annual modeled PM_{10} concentrations from Shell's operations alone would also be expected to exceed annual modeled $PM_{2.5}$ concentrations by at most 20%, resulting in an annual PM_{10} concentration of 1.2 ug/m^3.

[13] 75 Fed. Reg. 31,514 (June 3, 2010).

appropriate methods for ensuring practical enforceability of PTE limits. The key consideration throughout these policy and guidance documents is whether the terms and conditions that limit the potential emissions are, in fact, enforceable as a practical matter." *In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC*, Pet. No. II-2001-05 (Adm'r Apr. 8, 2002)("*Masada II*"), 4-5 (AR-EPA-B-17, B000642-43). EPA has explained that to establish a limit that is enforceable as a practical matter a permit must specify: (1) a technically-accurate limitation and the portions of the source subject to the limitation, (2) the time period of the limitation, and (3) the method to determine compliance. *Peabody Western*, 12 E.A.D. at 32 (quoting Options for Limiting PTE Guidance, AR-EPA-B-9, B000214).

The permit establishes source-wide emission limits for NO_X (240 tpy) and CO (200 tpy) covering all emission units on the Kulluk and Associated Fleet. AR-EPA-J-2, Conditions D.4.1 and D.4.2. To ensure practical enforceability, these emission limits are rolled on a 365-day basis[14] with compliance determined by calculating daily emissions of NO_X and CO to add to the calculated emissions from the previous 364 days. *Id.* In addition, the permit establishes a method of compliance based on continuous monitoring and recording of fuel usage and the application of source-test derived or specified emission factors. AR-EPA-J-2, Conditions D.1., D.4.1., D.4.2., E.2, and F.2; AR-EPA-J-3, AR-EPA-J-3, J000245-47. The practical effect of the emission limits and source-test derived or specified emission factors functions to constrain fuel use, which Shell must continuously monitor and manage to ensure compliance with the PTE limits. AR-EPA-J-3, J000247.

[14] Region 10 determined a 365-day rolling limit was appropriate in light of the annual variations in Shell's operations and the fact operations occur only part of the year. AR-EPA-B-4, B000181-82; AR-EPA-J-3, J000242-43.

To derive emission factors for the units responsible for approximately 91% of NO_X emissions and 97% of CO emissions, the permit requires multiple stack tests of engines at a wide-range of operating loads (40%, 65% and 95%), and stack tests of incinerators while operating within 10% of maximum capacity. AR-EPA-J-2, Condition E.2.1 and E.2.3; AR-EPA-J-3, J000245-46. To account for operational variability, the worst-case emission factor observed at any of the tested loads is applied to calculate emissions under all operating loads. AR-EPA-J-2, Conditions D.1.5, E.2.2, and E.2.4. In other words, for purposes of calculating emissions for comparison to the PTE limits, the permit requires Shell to assume that source-tested emission units operate at the test load that resulted in the highest emissions rate even when the units operate at loads that result in lower emissions. AR-EPA-J-3, J000245-46. For the emission units not subject to testing, which consist of heaters/boilers and "small and/or infrequently operated sources,"[15] the permit specifies emission factors that reflect AP-42 values or the 90th percentile value or higher of stack tests conducted for comparable units associated with Shell's Discoverer drillship operations. AR-EPA-J-2, Tables D.2.1-2; AR-EPA-J-3, J000245-46 and J000249; *infra* section II.A.1.

The permit further requires that Shell continuously monitor and record the hourly, daily, and monthly fuel combusted in each emission unit using a fuel flow meter, except that for the small and/or infrequently operated sources the permit specifies three alternatives to measure and record fuel usage before and after operation. AR-EPA-J-2, Conditions F.2.2; AR-EPA-J-3, J000245. For incinerators, the permit requires that Shell

[15] The "small and/or infrequently operated sources" are the Kulluk emergency generator (operated two hours every 30 days, AR-EPA-J-2, Condition D.5.3), seldom-used sources (lifeboats and other emergency equipment, AR-EPA-A-7, Supplemental Information pp. 10 and 16), and Oil Spill Response (OSR) workboats (operated for exercises six hours a day, five days a week, AR-EPA-A-7, Appendix G, p. 2).

either record the hours of operation each day (for the Kulluk incinerator)[16] or assume that the incinerators operate continuously throughout the day (for incinerators on the Associated Fleet). AR-EPA-J-2, Conditions D.4.1.2-3, D.4.2.2-3. The continuously monitored fuel usage, incinerator operation rate, and source-test derived or specified emission factors are used to calculate daily emissions of NO_X and CO to determine compliance with the rolling 365-day source-wide limits. AR-EPA-J-2, Conditions D.1.1-2 and D.4.1-2; AR-EPA-J-3, J000246.

As explained above, the NO_X and CO source-wide limits are not, as Petitioners assert, mere blanket limitations, and meet the criteria for enforcement as a practical matter. *Peabody Western* 12 E.A.D. at 32. EPA has previously found that rolling emission limits accompanied by prescribed emission factors and appropriate monitoring and recordkeeping sufficiently restricts PTE. *See, e.g., In the Matter of Pope and Talbot, Inc.*, Petition No. VIII-2006-04 (Adm'r 2007)(AR-EPA-B-24). Petitioners do not explain why the PTE limits for NO_X and CO are not actually enforceable as a practical matter, nor do they demonstrate clear error in Region 10's technical decisions.

Petitioners allege that the PTE limits for NO_X and CO conflict with EPA's 1989 Guidance on Limiting Potential to Emit in New Source Permitting ("1989 PTE Guidance", AR-EPA-B-4). ICAS Pet. 12. This is not the case. Region 10 explained in its RTC that while sources like the Kulluk and Associated Fleet were not contemplated by the 1989 PTE Guidance, which was written prior to the enactment of CAA § 328, the circumstances here are analogous to the Guidance's discussion of VOC surface coating operations. AR-EPA-J-3, J000246-47; AR-EPA-B-4, B000180. The 1989 PTE Guidance recognized that due to the wide variety of coatings and unpredictable nature of

[16] Kulluk incinerator operation is restricted to 12 hours a day. AR-EPA-J-2, Condition D.5.4.

operations, an emission limit supported by monitoring the VOC content of coatings and the quantity of coatings used, coupled with a requirement to calculate daily emissions, would provide for "emission limits that are more easily enforceable than operating or production limits." AR-EPA-B-4, B000180. Similarly, the Kulluk and Associated Fleet contain numerous small and large sources (more than 50 engines) spread across the drillship and a mobile fleet of vessels. Emissions from these units will vary by source, the type of activity being conducted, and due to the unpredictable conditions in the Beaufort Sea. Furthermore, the lack in uniformity of NO_X and CO emission factors for the units comprising nearly the entire emissions inventory precludes the creation of a source-wide fuel limit that can accurately restrict these pollutants,[17] and establishing unit-by-unit fuel limits would require Region 10 to prophetically distribute fuel allowances such that the unit-specific fuel supply perfectly aligns with forecasted demand. AR-EPA-J-3, J000244-45. In consideration of these realities, and consistent with the VOC coating discussion in the 1989 PTE Guidance, Region 10 determined that an effective way to readily restrict PTE for NO_X and CO was through source-wide emissions limits supported by test-derived or specified emission factors, akin to the VOC content of coatings, and continuous monitoring and recording of operational parameters, akin to tracking the quantity of VOC coatings used. AR-EPA-J-3, J000247.

In an unpersuasive attempt to discredit the analogy to VOC coating operations, Petitioners describe the VOC coating discussion as a "limited circumstance," which they interpret to mean that it does not apply to other operations. Earthjustice Pet. 13-14. However, the Guidance's discussion of VOC coating operations has been applied "in

[17] In contrast, uniformity of SO_2 and CO_2e emission factors enable Region 10 to establish a 12-month rolling limit on fuel usage to limit emissions of these pollutants from sources that combust fuel. AR-EPA-B-55; AR-EPA-J-3, J000252.

principle" to other sources. AR-EPA-B-6, B000200. Alternatively, Petitioners argue that the VOC coating discussion is not applicable because fuel use and operational duration are parameters that are easily tracked. This argument misses the point. The use of an emission limit for VOC coating operations was predicated on the notion that emissions limitations may be more easily enforceable than operating or production limits for certain sources with variable emissions and unpredictable operations, as is the case here.

Petitioners also misconstrue the VOC analogy by focusing on the permit conditions that limit aggregate fuel use and hours of drilling. ICAS Pet. 20-21. As explained above, the relevant comparisons are to the permit conditions that establish the method for calculating emissions using unit-specific emission factors and provide for continuous monitoring and recording of fuel combustion. AR-EPA-B-4, B000180; AR-EPA-J-3, J000247. Petitioners' claim that the permit requirement to calculate daily emissions each week means that emissions are not calculated on a daily basis is also unavailing. The VOC discussion in the 1989 PTE Guidance specifies "a requirement to calculate daily emissions," but does not suggest that such calculation must be made each day, especially when the data necessary for the daily calculations is collected on a continuous basis and compliance can therefore be assessed at a given point in time, as is the case here. *Id.*, *see infra* section II.A.2. Petitioners have not demonstrated that the permit is inconsistent with the 1989 PTE Guidance, particularly when read in conjunction with subsequent EPA guidance and memoranda.

1. Emission Factors for NO_X and CO Provide for Reliable Emission Calculations

Petitioners raise several technical claims regarding alleged deficiencies with the emission factors used to calculate NO_X and CO emissions, and frame their arguments by

citing to the Board's discussion of generic AP-42 factors in *Peabody Western* for the proposition that all emission factors are unreliable estimates. ICAS Pet. 15-19; Earthjustice Pet. 11-13. In this sense, Petitioners ignore the distinction between the generic AP-42 factors discussed in *Peabody Western*, 12 E.A.D. at 38-39, and the approach in the permit which relies on worst-case emission factors derived from multiple source tests of the actual emission units.

Petitioners first argue that Region 10 erred by not requiring source testing for all emission units. The sources not subject to testing are the heaters/boilers and small and/or infrequently operated sources, which together constitute around 9% of NO_X and 3% of CO emissions. For these sources the permit specifies emission factors based on either the 90th percentile value of the distribution of stack-test results from comparable Discoverer sources or AP-42 factors. AR-EPA-J-3, J000245-46. Region 10 carefully reviewed the Discoverer test data and AP-42 factors and made a technical determination that they provide a conservative assessment of emissions for the units Shell is not required to test. AR-EPA-J-3, J000249-50. Based on its review, and in light of the small emissions contribution from these sources, Region 10 determined that adding these units to the already numerous stack tests Shell is required to conduct in a short time period was unnecessary to ensure reliability in source-wide emission calculations. AR-EPA-J-3, J00050, and J000259-60.

Petitioners allege internal inconsistency because the Region recognized uncertainty in Shell's application that necessitated source testing but did not require testing of all units. Earthjustice Pet. 12. However, Region 10 addressed the uncertainty it saw in the application through a combined approach of source testing nearly all units

and the application of specified emission factors it determined were appropriate for a limited number of sources with a small overall emissions contribution. This is reasonable and not internally inconsistent.

Petitioners assert that the Discoverer stack tests used to calculate the 90th percentile value and assess the appropriateness of AP-42 factors included the application of BACT and are therefore not comparable to Kulluk emission units. ICAS Pet 18-19. The Discoverer stack tests on which Region 10 relied were not subject to post-combustion controls limiting NO_X or CO and therefore provided an appropriate comparison for purposes of deriving emission factors for the Kulluk. AR-EPA-B-55; AR-EPA-B-63; AR-EPA-C-406; AR-EPA-C-489. Petitioners single out the only Discoverer emission factor that is higher than what is being used for the Kulluk—the NO_X factor for heaters/boilers (representing 1% of source-wide NO_X emissions). AR-EPA-J-3, J000249. The 0.026 factor for Discoverer boilers cited by Petitioners is based on the manufacturer's predicted emissions, but actual stack tests of these boilers revealed a range of 0.011 to 0.015, and an average factor of 0.013. Region 10 determined that the AP-42 factor of 0.020 was appropriate in comparison with the average factor of 0.013 derived from testing. *Id.*; AR-EPA-J-3, J000263.

The tenuous comparison Petitioners draw to *Peabody Western* (ICAS Pet. 19) is clearly distinguishable from the permit here. In *Peabody Western* the Board upheld Region 9`s technical determination that the proposed PTE limit for fugitive emissions was not enforceable because it relied exclusively on AP-42 factors for a different type of operation, unverified control assumptions, and inadequate monitoring. 12 E.A.D. at 37-40. In declining the source's requested PTE limit, Region 9 acknowledged that for the

limit to be enforceable "either source testing or the use of a continuous emissions monitoring system" would be necessary, but the fugitive nature of emissions precluded such options. *Id.* at fn. 35. Here, the permit establishes a clear and enforceable compliance regimen based on source-testing, continuous parameter monitoring, and a continuous monitoring system to verify the controls that limit NO_X and CO emissions. AR-EPA-J-2, Conditions F.3-4; AR-EPA-J-3, J000253-54.

Petitioners misinterpret the permit as requiring source tests "once a year for one or two years depending on the source." ICAS Pet. 16. What the permit actually requires is that source-tested units[18] be tested prior to each of the first two drilling seasons, and subsequently every two or five years depending on any variability observed between the initial two tests. AR-EPA-J-2, Condition E.2.1. This approach establishes a testing schedule based on the consistency of results, requiring more frequent testing if variability is observed. AR-EPA-J-3, J000262-63. Contrary to Petitioners' assertion that only a "single annual test" will be performed, the permit requires three 1-hour test runs at each tested operating load (for engines, nine total). AR-EPA-J-2, Conditions E.2.3.1. and E.2.2.1.3.

Citing a statement from Shell's comments on the 2010 Discoverer draft permit that "the uncertainty in stack test data is upwards of 15%," Petitioners reach the broad conclusion that the test-derived NO_X and CO emission factors must be inadequate because they do not account for 15% variability. ICAS Pet. 17. The technical literature referenced in Shell's comments, however, addresses uncertainty in determining front-half PM emission rates and does not squarely address the procedures for deriving NO_X and

[18] One exception is the Kullak deck cranes which are tested before the first drilling season and subsequently every five years due to the fact they must be physically removed and transported for testing. AR-EPA-J-2, Condition E.3.1; AR-EPA-C-406, D-15 p. 2.

CO emission factors specified in the permit. More importantly, Petitioners have not demonstrated that the worst-case stack-test results will be biased low and under-report emissions. To improve test reliability, Shell must submit a test plan, follow the EPA-approved test methods, and Region 10 can require additional stack tests if necessary. AR-EPA-J-2, Conditions E.1.2, E.1.7 and E.1.14.

Petitioners have not met their heavy burden in challenging Region 10's technical decisions concerning the emission factors.

2. Monitoring Requirements Adequately Determine Compliance with NO_X and CO Limits

Petitioners contend that the permit requirement to calculate daily NO_X and CO emissions once a week does not provide for compliance assessment or enforcement at a given point in time. ICAS Pet. 13-15. This narrow focus on when the daily calculations are conducted overlooks the permit requirements to continuously monitor and record the data necessary to conduct daily emissions calculations which allows Shell or a Region 10 inspector to readily determine and verify compliance at a given point in time between required weekly calculations. AR-EPA-J-2, Conditions F.2.2 and F.2.6; AR-EPA-J-3, J000261. Furthermore, the weekly requirement to calculate daily emissions provides a sufficiently frequent assessment of where emission levels are vis-à-vis the PTE limits. AR-EPA-J-3, J000238. Petitioners do not demonstrate error in the requirement to calculate daily emissions weekly.

Petitioners raise a baseless theory that a buffer of 5-10% of the major source threshold must be applied to PTE emission limits. ICAS Pet. 15. The closest Petitioners come to authority for this claim is citing to Region 9 comments on two state permits that "encouraged" a buffer of 5-10% where the PTE limits were 1 and 1.5 tpy below the

applicable threshold. Region 10 explained in the RTC that Congress established specific thresholds to determine when a source would be considered major for purposes of PSD review, and that the permit buffers for NO_X (10 tpy) and CO (50 tpy) provide a sufficient measure of confidence with respect to the major source threshold. AR-EPA-J-3, J000247-48. Petitioners do not demonstrate error in the Region's decision not to establish a larger buffer than already exists in the permit.

B. Petitioners Do Not Demonstrate Clear Error in Permit Conditions Limiting GHG Emissions

Petitioners allege that the limits which restrict source-wide GHGs to below the Tailoring Rule "subject to regulation" threshold of 100,000 tpy CO_2e are not enforceable as a practical matter. The permit establishes a 12-month rolling limit for CO_2e (80,000 tpy) supported by independently enforceable operational limitations restricting aggregate fuel use on a 12-month rolling basis and a capacity limitation on incinerators. AR-EPA-J-2, Conditions D.4.4, D.4.6, and D.4.7.

Consistent with EPA guidance, Region 10 determined that 12-month rolling limits for CO_2e emissions and total fuel use were appropriate in light of the annual variations in operations and the fact that the source operates during only part of the year. AR-EPA-J-3, J000243; AR-EPA-B-4, B000181. Thus, Petitioners' argument for "day-to-day enforceability" (ICAS Pet. 21-22) would do little to assure compliance with these monthly limits. Nevertheless, continuous monitoring and recording of fuel usage assures that compliance can be assessed at a given point in time.

Petitioners' main argument why the CO_2e limit is unenforceable involves Region 10's technical determination that methane emissions from the drilling mud system (DMS) represent the full PTE of this unit on a monthly basis. ICAS Pet 22-26. The majority of

GHG emissions authorized under the permit (99.89%) come from the combustion of diesel fuel in engines and boilers/heaters, and the combustion of waste in incinerators. AR-EPA-J-3, J000251-53. A tiny portion (0.11%) of all permitted GHG emissions is emitted as methane from the DMS, which Region 10 determined (based on several conservative assumptions) has an unrestricted PTE of 1,596 pounds of methane on a monthly basis.[19] To determine compliance with the source-wide CO_2e limit, the permit accounts for methane emissions by requiring that the maximum potential emissions from the DMS (17 tons CO_2e) for each month of operation be added to the monthly monitored emissions of CO_2e from the combustion sources. AR-EPA-J-2, Condition D.4.4.5.

Petitioners allege internal inconsistency in Region 10's determination that methane emissions from the DMS are subject to an inherent physical limitation because the Region also makes reference to operational restrictions limiting the drilling season and hours of drilling activity. ICAS Pet. 22-23. The inherent limitation is based on the finite amount of methane present in the hydrocarbon-bearing zones into which Shell will drill. This inherent limitation is further strengthened by permit conditions that restrict drilling to 1,632 hours. AR-EPA-J-2, Condition D.3.3; AR-EPA-J-3, J000251.

Petitioners apparently do not dispute that inherent limitations can restrict the potential emissions of individual emission units, or that where these inherent limitations can be documented by the source and confirmed by the agency it is appropriate to factor such judgments into estimates of PTE. AR-EPA-B-9, B000216. Instead, they argue that the DMS is not permitted at its full PTE on a monthly basis because the air permit application submitted by ConocoPhillips provided a higher methane estimate. ICAS Pet.

[19] Region 10 agrees with Petitioner that the 1,596 pounds of methane per month is not an emission limit on the DMS. ICAS Pet. at 22. It is the unrestricted PTE of the DMS on a monthly basis.

24-26. Region 10 requested and reviewed additional information concerning Shell and ConocoPhillips' methane calculations and assumptions, and determined that Shell had a sound basis for its calculations. AR-EPA-J-3, J000251; AR-EPA-C-574; AR-EPA-C-575; AR-EPA-C-577.

The main difference between the estimates is ConocoPhillips' assumption that it would drill through a hydrocarbon-bearing zone everyday for the entire 100-day drilling season, whereas Shell assumed it would reach a hydrocarbon-bearing zone a maximum of four times, which corresponds to the total number of wells it could drill in a season under the permit. *Id.* AR-EPA-C-577. This alone caused ConocoPhillips' predicted emissions to be 25 times higher than Shell's.[20] To a lesser extent, the different estimates also reflect differences in well data relied upon by the companies. Shell based its calculations on data from actual Arctic wells, whereas ConocoPhillips' relied on a 1977 EPA report based on drilling throughout the United States and particularly the Gulf of Mexico. *Id.*

For this project, Region 10 determined that the Arctic well data was more appropriate. AR-EPA-J-3, J000251-52. To account for the possibility that Shell could encounter a deeper hydrocarbon-bearing zone than indicated by past Arctic well data, Region 10 added several layers of conservatism to Shell's calculations. First, Region 10 assumed all methane emissions would be point source emissions when, in actuality, a significant amount will be fugitive emissions that are not counted in determining the PTE of this source.[21] AR-EPA-H-4, H000161-62; AR-EPA-J-3, J000252. Next, Shell's

[20] That ConocoPhillips may prefer to use this extremely conservative assumption does not mean it is appropriate to require another source to adopt such an approach.

[21] Petitioners argue that 40 C.F.R. § 71.3(d) requires that fugitive emissions be included in determining PTE. ICAS Pet. 24. This provision does not address inclusion of fugitive emissions in determining whether a source is a major source. The definitions of major source in 40 C.F.R. §§ 52.21(b)(1)(iii) and 71.2 clearly state that fugitive emissions are not considered in determining whether this source is a major source. This

methane estimates are based on the four wells it could conceivably drill in a single season, even though it is unlikely Shell will be able to drill this many wells. Finally, Region 10 assumed that the total methane emissions during the drilling season would be generated each month, and increased the methane emissions accordingly to obtain a conservative value for methane emitted during each month of operation. AR-EPA-J-3, J000252-53. Due to the conservatism applied to the methane emissions, and their insignificant contribution to overall GHG emissions, Region 10 determined that adding the full monthly PTE of the DMS to the calculated monthly emissions from combustion sources provides a reliable assessment of source-wide GHG emissions. *Id.*

Region 10's approach is consistent with EPA's guidance for grain handling terminals which applies a safety factor of 1.2 to the highest previous five years of throughput to constitute a reasonable upper-bound PTE. AR-EPA-B-10. Other than the unconvincing attempt to attribute ConocoPhillips' estimates to Shell, Petitioners provide no information to show that Shell's underlying estimates are inaccurate or that Region 10's conservative adjustments do not provide a reasonable upper bound on emissions.

The amount of methane emitted by the DMS involves a technical dispute and Region 10's determination is reasonable and supported in the record. Petitioners have not met the showing required for the Board to set aside this determination.

C. Petitioners Do Not Demonstrate Clear Error in Permit Conditions Limiting SO_2 Emissions

Petitioners raise several unpersuasive arguments challenging the PTE limit for SO_2. ICAS Pet. 26-28. The permit establishes a 12-month rolling SO_2 emission limit (10

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approach was retained by the Tailoring Rule in determining when a source becomes subject to regulation. 75 Fed. Reg. at 31,591.

tpy) supported by independently enforceable operational limitations to combust fuel with a sulfur content less than 100 parts per million ("ppm") and a 12-month rolling limit on total fuel usage. AR-EPA-J-2, Conditions D.4.3 and D.4.5-6; AR-EPA-J-3, J000245. Together, these operational limits restrict SO_2 emissions to 4.9 tpy. AR-EPA-J-3, J000235-36. As explained in EPA guidance, this approach provides for enforcement as a practical matter. *See* AR-EPA-B-9, B000224. Accordingly, Petitioners' baseless suggestion to establish operational limits for each emission unit is unnecessary.

Petitioners argue the SO_2 limit is unenforceable because fuel flow monitors are not required for the small and/or infrequently operated sources, but do not explain why the specified fuel measurement alternatives, in conjunction with the requirement to record fuel usage before and after operation, do not provide for a reliable assessment of fuel usage. *See* AR-EPA-J-2, Condition F.2.2.2. Petitioners do not demonstrate clear error in the permit conditions that restrict the PTE for SO_2.

D. Region 10 Responded to Petitioners' Concern that the Permit is a Sham

Petitioners claim an alleged discrepancy between the 78 days of drilling in Shell's Incidental Harassment Authorization and the permit's 1,632-hour operational limit on drilling, which they describe as 68 days, suggests Shell may operate in a manner not represented to Region 10. ICAS Pet. 28-29. Region 10 explained in the RTC that the permit's operational limit on drilling is expressed in terms of hours, not days, and Shell could conduct 1,632 hours of drilling over a 78-day period. AR-EPA-J-3, J000239. Furthermore, the determination of whether a permit is a sham is based on the intent and objective indicia of a source's planned mode of operation, and there is no evidence in the record that Shell intends to operate as a major source. AR-EPA-B-4, B000182-83.

Petitioners have not demonstrated that the permit is a sham or that Region 10 failed to respond to their comments.

III. Petitioners Do Not Demonstrate Clear Error in Region 10's Determination of the Ambient Air Boundary

Region 10 determined that the area within 540 meters of the center of the Kulluk is not ambient air if the permit conditions are met. AR-EPA-H-4, H000163 fn. 18; AR-EPA-J-3, J000268-69. This determination is consistent with the regulatory definition of ambient air and an appropriate application of EPA guidance to the specific over-water situation at issue in this permit. Petitioners have not demonstrated clear error in Region 10's determination.

A. The USCG Safety Zone Will Legally Preclude Public Access

Ambient air is defined as "…[t]hat portion of the atmosphere, external to buildings, to which the general public has access." 40 C.F.R. § 50.1(e). The permit requires that the Kulluk be subject to a United States Coast Guard (USCG) safety zone that encompasses an area of at least 540 meters from the center of the Kulluk. The safety zone must also prohibit members of the public from entering except for attending vessels[22] or vessels authorized by the USCG. AR-EPA-J-2, p. 8. This, coupled with implementation of the access control program and other factors discussed below, ensures that public access is precluded. As such, it is fully consistent with the definition of ambient air in 40 C.F.R. § 50.1(e).

The longstanding interpretation of the definition of ambient air referred to by Petitioners (Earthjustice Pet. 16) is an interpretation that, by its terms, applies over land.

[22] An attending vessel is any vessel "operated by the owner or operator of an OCS facility located in the safety zone…" 33 C.F.R. § 147.20.

See AR-EPA-BB-1. Region 10 explained in the RTC that the criteria previously laid out by EPA for application over land must be adapted to some extent because the permitted activities in this case occur over open-water in the Arctic and Shell does not and cannot "own" the areas of the Beaufort Sea on which the Kulluk will operate as might be the case for a stationary source on land.[23] Region 10 also noted that EPA has previously recognized a USCG safety zone as evidence of sufficient control for establishing the ambient air boundary over-water where the safety zone is monitored to pose a barrier to public access, citing as an example a 2007 determination from EPA Region 2 (Broadwater Letter).[24] Petitioners contend there is insufficient information in the record to address possible distinctions between the Broadwater example and the Kulluk, and that one unlawful decision does not justify another. Earthjustice Pet. 18 n. 37. But Petitioners do not suggest any facts that might make the Broadwater Letter not relevant for the Kulluk, nor do they address Region 10's acknowledgement of, and explanation why EPA guidance for determining the ambient air boundary on land must be adapted to some extent to address the unique circumstances involved in a source operating over-water.

EPA guidance for determining ambient air boundaries in the context of lessor-lessee relationships must also be adapted to some extent to the over water situation involved in this permit. Indeed, a key EPA guidance document on this issue applies to "land" by its title and terms.[25]

Petitioners are correct that the USCG ultimately controls access within a prescribed area around the drilling activities through its promulgation of the safety zone.

[23] AR-EPA-J-3, J000269.
[24] AR-EPA-BB-19
[25] AR-EPA-B-26.

See 33 C.F.R. § 147.10. The permit, however, authorizes "attending vessels" to enter the safety zone.[26] Given that "attending vessels" are defined to include vessels operated by the owner or operator of the OCS source in the safety zone, *see* 33 C.F.R. § 147.20, Shell will exercise considerable control over the vessels that are allowed to enter the USCG safety zone.

B. Conditions in this Case Are Tantamount to a Physical Barrier

Petitioners are correct that legal authority to exclude the public is not alone sufficient to exclude an area from ambient air. Public access must also be precluded by a fence or physical barrier. EPA has previously recognized, however, that an access control program, in conjunction with facts specific to the particular situation, can serve as a barrier on par with a fence or a physical boundary.

Depending on the facts of a particular situation natural physical features such as rivers or rugged terrain, coupled with a program of signage and patrol designed to warn and intercept members of the public, may be sufficient to preclude public access. *See* 50 Fed. Reg. 7056, 7057 (Feb. 20, 1985)("Kennecot's man-made barriers, and other security measures, together with the inherently rugged nature of the mountainous terrain involved here, combine to effectively preclude public access."); AR-EPA-B-3 (river coupled with posting and regular patrols could be adequate to preclude public access).[27] In the RTC,[28]

[26] This is based on the safety zone established for Shell's Discoverer drillship in 2010. *See* 33 U.S.C. § 147.T001(b)(1); 75 Fed. Reg. 18,404, 18.407 (April 12, 2010).

[27] Petitioners contend that reliance on the harsh, remote environment should be disallowed as *post hoc* rationale because in the RTC Region 10 did not cite or discuss EPA guidance documents that rely on these factors for concluding public access is precluded. Earthjustice Pet. 19. The RTC specifically states that "for the overwater locations in the arctic environment at issue in this permitting action, such a program of monitoring and notification is sufficiently similar to a fence or physical barrier on land.." AR-EPA-J-3, J000269. That subsistence activities occur in the Beaufort Sea does not undermine the fact that the overwater location and harsh conditions obviously pose some barriers to public access, which in this case is accompanied by a monitoring and patrol program.

[28] AR-EPA-J-3, J000269.

Region 10 cited to the Broadwater Letter as an example of a situation where a radar detection system in combination with a radio warning system accompanying a USCG safety zone was deemed sufficient to preclude public access.[29] Alaska, whose COA regulations apply in the Inner OCS, has also recognized that an access control program can, depending on the circumstances, serve the same function as a fence or physical boundary. *See* AR-EPA-B-60, B001806 ("In these rare cases, ADEC has allowed applicants to establish an access control plan for their ambient air boundary.").

In this case, the permitted operations will be miles offshore in harsh and rugged seas. The permit requires Shell to develop in writing and implement a public access control program to locate, identify, and intercept by radio, physical contact, or other reasonable measures to inform the public that they are prohibited by USCG regulations from entering the safety zone. The permit also requires Shell to communicate to the North Slope communities on a periodic basis when exploration activities are expected to occur, where they will be located, and any restrictions on activities in the vicinity of Shell's exploration operations. AR-EPA-J-2, Condition D.5.1. Petitioners have not demonstrated clear error in Region 10's determination that the permit conditions adequately ensure that public access will be precluded within the meaning of the definition of ambient air and EPA guidance, as applied to the unique facts underlying this permit.

[29] Petitioners suggest a USCG safety zone established for safety considerations cannot be relied on to determine the ambient air boundary. Earthjustice Pet. 17-18. This suggestion is unfounded. Fences are typically erected for reasons that relate to safety and business considerations, not just to establish a facility's ambient air boundary.

IV. Petitioners May not Raise and the Board Should Reject Petitioners' Argument that the Agency has Changed its Position on the Modeling Demonstration Required for the 1-Hour NO_2 NAAQS

Petitioners assert for the first time on appeal that Region 10 improperly accepted Shell's modeling for the 1-hour NO_2 NAAQS because Region 10 relied on a March 1, 2011 guidance document[30] regarding the use of background data that they contend takes a different position on this issue than an earlier June 29, 2010 guidance document,[31] with no explanation for this change in position. Earthjustice Pet. 37-41. Petitioners did raise several legal and technical issues regarding the 1-hour NO_2 modeling analysis, but none of these comments raised the alleged discrepancy between the approaches in the two guidance documents that Petitioners now ask the Board to consider. *See* AR-EPA-I-53, I002169-74 and I002176-77. The Board should reject Petitioners' attempt to raise this issue for the first time on appeal. *See* 40 C.F.R. § 124.19(a).

The new issue raised by Petitioners here is based on a clear misreading of the June 2010 Guidance in particular and a clear misunderstanding of the nature of such guidance in general. Petitioners cite language that relates to the 24-hour $PM_{2.5}$ NAAQS, not the 1-hour NO_2 NAAQS. The June 2010 Guidance explains that "[a]s noted in the March 23, 2010 memorandum regarding 'Modeling Procedures for Demonstrating Compliance with the $PM_{2.5}$ NAAQS' [], combining the 98th percentile monitored value with the 98th percentile modeled concentrations for a cumulative impact assessment could result in a value that is below the 98th percentile of the combined cumulative distribution and would, therefore, not be protective of the [$PM_{2.5}$] NAAQS." It then states that a different approach is appropriate for the 1-hour NO_2 NAAQS. *See* AR-EPA-

[30] AR-EPA-BB-83 ("March 2011 Guidance").
[31] AR-EPA-BB-62 ("June 2010 Guidance").

BB-62, BB005105 This is clear from the next sentence stating "*However, unlike* the recommendations presented for $PM_{2.5}$...." and is explained in more detail in the March 2011 Guidance. *Id.* (emphasis added).[32]

> The June 2010 Guidance discusses a very conservative "first tier" approach:
>
> A "first tier" assumption that may be applied without further justification is to add the overall highest hourly background NO_2 concentration from a representative monitor to the modeled design value, based on the form of the standard, for comparison to the NAAQS.

Id. But the June 2010 Guidance then makes clear that "[a]dditional refinements to this 'first tier' approach based on some level of temporal pairing of modeled and monitored values may be considered on a case-by-case basis, with adequate justification and documentation," *Id.*, and thus would not be using the highest monitored 1-hour NO_2 background value.

The March 2011 Guidance references the June 2010 Guidance regarding a conservative "first tier" approach and the specific provision for "additional refinements" before stating, "[g]iven the importance of this aspect of the analysis and the challenges that have arisen in application of the guidance to date, we feel compelled to offer additional guidance on this issue." AR-EPA-BB-83, BB008780. The March 2011

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[32] The conservative "first tier" modeling approach recommended in the March 2010 Guidance is to combine the 98th percentile 24-hour monitored $PM_{2.5}$ background concentration with the highest average of the maximum modeled 24-hour averages across 5 years of NWS meteorological data or the maximum modeled 24-hour average for one-year of site-specific meteorological data. AR-EPA-BB-48, BB004117-18. In contrast, the conservative "first tier" approach recommended in the June 2010 Guidance is to combine the highest monitored 1-hour NO2 concentration with the 98th percentile modeled concentration following the form of the 1-hour NO2 standard. AR-EPA-BB-62, BB005105. Two factors account for differences in the "first tier" approaches recommended for the 24-hour $PM_{2.5}$ NAAQS and the 1-hour NO_2 NAAQS. First, although both are "probabilistic" standards, the 24-hour $PM_{2.5}$ standard is based on the distribution of 24-hour averages, whereas the NO_2 standard is based on the distribution of daily maximum 1-hour values. *Compare* 40 C.F.R. § 50.13(c) *with* 40 C.F.R. § 50.11(f). There is thus a greater probability of high modeled and monitored values occurring at the same time for the 24-hour $PM_{2.5}$ NAAQS than for the 1-hour NO_2 NAAQS. Second, monitored background concentrations of $PM_{2.5}$ play an important role in accounting for the contribution of secondary $PM_{2.5}$ formation in the cumulative impact assessment. AR-EPA-BB-48, BB004115 and BB004119.

Guidance explains that, although the approach in the June 2010 Guidance "should be acceptable without further justification in most cases," it "could be overly conservative in *many* cases…, *increasing the potential for double-counting* of modeled and monitored contributions." *Id.* (emphasis added). EPA then described several possible refinements, including the use of the monitored NO_2 design value or the pairing of modeled and monitored concentrations based on hour of day. *Id.* Shell's approach for combining modeled concentrations with monitored background concentrations is consistent with the March 2011 Guidance. Petitioners do not contend otherwise. But it is also consistent with the June 2010 Guidance because it is "based on some level of temporal pairing of modeled and monitored values" and Region 10 "considered on a case-by-case basis, with adequate justification and documentation" that such an approach was appropriate. AR-EPA-BB-62, BB005105. Although this approach may be less conservative than using the highest monitored background value, there is no requirement that a permit be based on the most conservative approach.

Shell's modeling is also consistent with the other aspects of the June 2010 and the March 2011 Guidance, as explained at length in the TSD and RTC.[33] Petitioners do not attempt to directly challenge the 1-hour NO_2 analysis based on the issues they raised in comments, presumably because of the strong technical analysis underlying the permit. Petitioners instead offer a new, specious argument regarding an alleged change in EPA's position. The Board should decline on procedural grounds to consider Petitioners' attempt to raise this specific issue for the first time on appeal. Alternatively, the Board should reject the substance of Petitioners' argument because it is contradicted by the language of the June 2010 and March 2011 Guidance. Petitioners have not demonstrated

[33] AR-EPA-H-1, H000019 and H000031; AR-EPA-J-3, J000291-307.

clear error on this issue, and have certainly not met their high burden for obtaining review of a technical disagreement with the Region.

V. Region 10 Took Appropriate Action in the Context of These Permitting Decisions to Identify and Address Potential Disproportionately High and Adverse Human Health or Environmental Effects

Petitioners argue that Region 10 failed to put forth a valid basis for concluding that Alaska Natives will not be disproportionately impacted by emissions from Shell's operations and that there are substantive and procedural problems with the Region's environmental justice analysis. None of the arguments, however, demonstrate clear error in Region 10's permitting decision or involve an exercise of discretion or important policy consideration which the Board in its discretion should review. The Board recently noted that the language of Executive Order 12898, 59 Fed. Reg. 7,629 (Feb. 11, 1994)("EO 12898," AR-EPA-FF-1), directing federal agencies to identify and address impacts "as appropriate," and "[t]o the greatest extent practicable and permitted by law" imparts considerable leeway to agencies in determining how to comply with the spirit and letter of the Executive Order. *Avenal*, slip op. at 24.

In accordance with EO 12898, Region 10 thoroughly considered and appropriately addressed environmental justice concerns associated with this permitting action, as detailed in the 15-page Environmental Justice Analysis (AR-EPA-F-1)("EJ Analysis") and a 6-page summary of the analysis in the SB (AR-EPA-H-4, H000176-81). *See Shell II*, slip op. at 71 (the Region must provide "some analysis or record evidence to demonstrate compliance with" EO 12898).[34]

[34] This permit is a minor source construction permit under the COA regulations and a Title V permit, not a PSD permit. EPA has recognized that its discretion to address environmental justice concerns in PSD and Title V permits may differ. *See* AR-EPA-FF-7, F000201-02.

A. Region 10 Complied with Applicable Public Participation Requirements and Provided Meaningful Public Process for North Slope Communities

Petitioners raise several challenges to the public process and argue that Region 10 did not provide meaningful process for North Slope communities. Petitioners' arguments concerning public participation for North Slope communities under EO 12898 (ICAS Pet. 38-39) refer back to and incorporate each argument raised in challenging the public process under the applicable regulations (ICAS Pet. 6-9). Accordingly, Region 10 addresses all of Petitioners' public process arguments here.

The public process provided by Region 10 fully complied with applicable requirements at 40 C.F.R. Parts 124 and 71.[35] The Kulluk draft permit was subject to a 46-day comment period that exceeded the minimum 30-day period required under 40 C.F.R. §§ 124.10(b) and 71.11(d)(2)(i). AR-EPA-J-3, J000222-24; AR-EPA-HH-16; *see In re Knauf Fiber Glass, GmbH*, 9 E.A.D. 1, 17 (EAB 2000)(permit issuer need not go beyond regulatory requirements in providing for public participation). In addition to complying with the regulatory requirements, Region 10 implemented several affirmative measures to engage North Slope communities and provide for meaningful involvement that fulfill its responsibilities under EO 12898.[36]

Petitioners advance a contrived argument that because the 46-day comment period overlapped with comment periods for other draft permits, the comment periods for each permit should be summed and averaged, and thus the 46-day comment period was actually only 16 days. ICAS Pet. 7-8. Petitioners implicitly ask the Board to rewrite the regulations by finding clear error in Region 10's compliance with regulatory requirements. The Board should decline this invitation.

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[35] Part 124 and 71 procedures both apply to this permit. *See* AR-EPA-J-3, J000223, fn. 3.
[36] *See* AR-EPA-J-3, J000223-24 and J000335 (describing Region 10's outreach efforts)

Due to their alleged inability to hire an air modeler, Petitioners argue that they were denied a meaningful opportunity to comment. ICAS Pet. 8. Accepting Petitioners' claim would place the Region in a difficult predicament as it would need to account for what is essentially a contractual agreement between external parties in determining the adequacy of a comment period. Furthermore, Petitioners have previously challenged air permits for OCS sources and are certainly aware of the technical complexities inherent in such permits. *See, e.g., Shell II.* As part of its outreach efforts to North Slope communities, Region 10 notified Petitioners on May 25, 2011 that the comment period would begin in late July, providing nearly two months to plan for public comment and retain technical assistance. AR-EPA-HH-1. Even assuming Petitioners had no foreknowledge of the technical issues in the permit, their claimed inability to hire a technical consultant does not mean that the 46-day comment period was inadequate.

Petitioners also contend that their June 15, 2011 letter to Region 10 demonstrated a need for additional time pursuant to 40 C.F.R. § 71.11(g). ICAS Pet. 8-9. In denying this request Region 10 described some of the affirmative steps implemented to assist North Slope communities with public participation and explained the need to balance the competing interests of providing for meaningful participation and issuing timely permits. AR-EPA-C-532. Rather than explaining how Region 10 erred in not granting its request, Petitioners' brief merely reiterates statements made in their June 2011 letter. Furthermore, the detailed and substantive comments Petitioners submitted undercut their claim that it was infeasible to provide meaningful written comments. *See* AR-EPA-I-54.

Petitioners claim that the Barrow public hearing was inadequate because there were problems with the teleconference connection, a Powerpoint presentation was not

made available to teleconference participants, and Region 10 provided insufficient notice that an interpreter was available. At the start of the Barrow public hearing there were sound difficulties with the teleconference system which were resolved quickly. Nevertheless, Region 10 was able to transcribe all oral testimony using redundant teleconference recordings and the court reporter transcript. AR-EPA-J-3, J000226. Petitioners' argument concerning the presentation is misplaced. The presentation was not for the hearing, the purpose of which is to receive oral comment, but for an informational meeting on the permit held before the hearing. With respect to the interpreter, Region 10 contacted ICAS prior to the hearing to arrange for an Iñupiaq interpreter. AR-EPA-J-3, J000227-28. Providing an interpreter is not a legal requirement, yet Region 10 did arrange for an interpreter to be available.

Petitioners raise two additional arguments in the context of public participation under EO 12898. First, Petitioners selectively cite to language in Region 10's North Slope Communications Protocol ("Protocol") to create the false impression that it is a binding document setting forth the Region's obligations. AR-EPA-GG-4. Specifically, they quote a statement that the Region "will routinely plan for a 60-day window for public comment opportunity," to argue that the 46-day comment period was inadequate, but omit the following sentence which states "[t]his does not mean we will routinely offer 60-day comment periods." AR-EPA-GG-4, GG000023. The purpose of the 60-day planning window is to provide flexibility in the public process; it does not extend all comment periods on the North Slope to 60 days.

Petitioners also argue that the public process for North Slope communities was inadequate because Region 10 did not travel to Kaktovik and Nuiqsut. Region 10 did

travel to Kaktovik for an informational meeting in June 2011, and therefore interprets this argument to mean that it should have held public hearings in Kaktovik and Nuiqsut. Region 10 explained in the RTC that it is not able to travel to each North Slope community, but recognizes that many communities have an interest in the permit. AR-EPA-J-3, J000226-27. Barrow was selected as the appropriate hearing location because it has a teleconference system that enables many North Slope communities to participate and thus allows for a more inclusive hearing. *Id.*

In sum, Petitioners do not show clear error in Region 10's public process or in its efforts to provide for meaningful involvement of North Slope communities under EO 12898.

B. Region 10 Adequately and Appropriately Considered Comments Regarding Ozone

Petitioners contend Region 10 committed legal error in relying on compliance with the existing 8-hour ozone NAAQS. ICAS Pet. 30. Their petition on this issue raises issues that are largely technical, rests on a series of inaccuracies and mischaracterizations, and does not demonstrate clear error in Region 10's decision.

Most importantly, EPA has not, as Petitioners assert, "itself determined that the 8-hour ozone NAAQS is inadequate to protect human health and the environment." ICAS Pet. at 31. EPA proposed a revision to the 8-hour ozone NAAQS, 75 Fed. Reg. 2938, (Jan. 9, 2010), but did not take final action on the proposal. What Petitioners refer to as the "outdated" 8-hour ozone standard (ICAS Pet. 32) is in fact the Agency's current legal standard—0.075 ppm. Petitioners' argument is really a back-door suggestion that the Board second-guess the Agency's decision not to issue a revised NAAQS at the present time.

Nor is this permitting action "analogous" to the "unusual" circumstances in *Shell II* (slip op. at 71), as Petitioners' contend. In contrast to *Shell II*, EPA has not made a final determination that the current 8-hour ozone standard is inadequate. Region 10 therefore appropriately based its consideration of ozone impacts on local communities on the ozone NAAQS currently in effect, including the 8-hour ozone NAAQS of 0.075 ppm. Region 10's technical determination that Shell's emissions will not cause or contribute to a violation of the currently effective 8-hour ozone NAAQS is therefore "emblematic of achieving a level of public health protection that…demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to exposure to relevant criteria pollutants." *Shell II*, slip op. at 73.

Petitioners have not demonstrated that the Region's technical analysis with respect to the 8-hour ozone standard is inconsistent with EO 12898, as interpreted by the Board.[37] Importantly, Petitioners do not appear to directly challenge Region 10's conclusion that emissions from the Kulluk will not cause or contribute to a violation of the *current* 8-hour ozone NAAQS. Rather, they allege that Region 10 "Ignored Petitioner's Comments and EPA's Scientific Findings On The Need For A New Ozone Standard." ICAS Pet. at 30. Even if there were a requirement to consider a standard that EPA has proposed but not finalized, the RTC shows that Region 10 appropriately considered and responded to all comments regarding the proposed 8-hour ozone standard. Region 10 explained that EPA had not finalized a previous proposal to establish a revised

[37] Petitioners are correct that the discussion of ozone in the EJ Analysis accompanying the draft permit was brief. ICAS Pet. at 30-31. The record, however, also contains the TSD and RTC which provide a more detailed discussion of Region 10's determination with respect to ozone. AR-EPA-H-1, H000020 and H000033-34; AR-EPA-J-3, J000313-15 and J000335-36.

8-hour ozone standard and that EPA will instead consider revisions to the ozone NAAQS in connection with the 5-year mandated review in 2013. AR-EPA-J-3, J000315 and J000336-37; AR-EPA-B-58.

Region 10 then stated that it did not believe ozone levels would be expected to exceed even the lowest level that EPA had proposed for consideration (0.060 ppm). AR-EPA-J-3, J000313. Region 10 explained the technical basis for that statement: (1) existing regional ozone levels for the 8-hour ozone NAAQS are a maximum of 0.32 ppm (barely half of the lowest range proposed by EPA) in the Beaufort Sea and a maximum of 0.40 ppm (2/3rds of the lowest range proposed by EPA) in the Chukchi Sea, and (2) the contribution of ozone precursors under this permit and other sources permitted and currently proposed to be permitted on the Alaska OCS is small in proportion to precursor emissions from other sources in the area. AR-EPA-J-3, J000313-14, J000317, and J000336-37.[38] Region 10 also responded to all comments specifically raising concerns with cumulative impacts from other proposed OCS operations. *Id.*[39]

Region 10 appropriately considered and responded to all "superficially plausible" claims of disproportionately high and adverse impacts from ozone precursors on low-income and minority populations. Petitioners' request for review on this issue should be denied.

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[38] It is important to note that in the "draft final" ozone rule referred to in the petition (ICAS Pet. 31 n. 28). the "draft final" standard is 0.070 ppm, 0.010 ppm higher than the 0.060 ppm level Region 10 considered in issuing this permit.

[39] Region 10 explained that permit conditions prohibit the Kulluk from operating in the Beaufort Sea if the Discoverer drillship operates in the Beaufort Sea during the same drilling season, and that Conoco-Phillips had withdrawn its application for operation in the Chukchi Sea. AR-EPA-J-3, J000317; AR-EPA-J-2, Condition D.8. Potential OCS operations in the Chukchi Sea and the Beaufort Sea are over 200 miles apart at the closest point.

C. Region 10 Adequately and Appropriately Considered Comments Regarding the 1-Hour NO_2 NAAQS

Petitioners challenge Region 10's reliance on the 1-hour NO_2 NAAQS in the EJ Analysis as insufficient and ignoring salient evidence in the record. The record and petition fail to demonstrate clear error.

The permit is supported by a robust analysis demonstrating that permitted emissions comply with the 1-hour NO_2 NAAQS. The record shows that the maximum modeled impact together with background concentrations is 81% of the 1-hour NO_2 NAAQS, occurs 540 meters from the center of the Kulluk (*i.e.*, in the Beaufort Sea), and declines rapidly with distance. AR-EPA-H-1, H000033-34. Onshore impacts from Shell's operations are just 0.16% of the NAAQS. Total concentrations in onshore communities (Shell's impact plus background) are at most 50% of the NAAQS, almost all of which is due to background concentrations and not emissions from Shell's operations. *Id.* The RTC also explains the many conservative assumptions underlying the 1-hour NO_2 NAAQS analysis. AR-EPA-J-3, J000273, J000294, J000296, J000299, J000307, and J000345-46. Even with these conservative assumptions Region 10 found no NAAQS violation.

Petitioners ask the Board to consider what they claim are "significant questions" over whether permitted emissions will comply with the 1-hour NO_2 NAAQS. ICAS Pet. 35 n.31, 37-38. As support, Petitioners point to several technical issues they raised during the public comment period relating to how pollution controls for NO_2 will function in the Arctic, NO_X/NO_2 ratios used in modeling, the use of diurnal pairing, the number of stack tests required, the need for additional tracer experiments to establish the accuracy of the model, and their request for continuous emission monitors. Region 10

responded to each of these comments. AR-EPA-J-3, J000249-50, J000253-56, J000259-65, J000276-77, and J000297-305. Importantly, Petitioners do not directly challenge Region 10's responses by demonstrating legal or factual errors in Region 10's analysis. Instead, Petitioners point to these issues collectively as evidence of the inadequacies in Region 10's EJ Analysis, in an apparent attempt to avoid the need to demonstrate legal or factual error or carry the especially heavy burden a petitioner bears in challenging a fundamentally technical decision. The Board should reject this thinly veiled attempt to avoid the demonstrations a petitioner must make to justify review by the Board.

As part of their argument, Petitioners assert that Region 10 failed "to *analyze* the impacts of Shell's emissions on subsistence hunters and fishers while offshore" and "never discusses whether subsistence hunters and fishers could be adversely impacted by this pollution [from Shell's operations]." ICAS Pet.36-37 & n. 19 (emphasis in original). This is not accurate. The modeling demonstrated, and Region 10 explained, that the NAAQS would be met in all areas that constitute ambient air (*i.e.*, more than 540 meters from the Kulluk), including in areas where subsistence activities are regularly conducted. AR-EPA-H-4, H000176 and H000180-81; AR-EPA-F-1, F000002, F000011, and F000012-14; AR-EPA-J-3, J000333-34 and J000342-44. A map showing where subsistence activities are regularly conducted is included in both the SB and the EJ Analysis.[40] Petitioners' statements relating to consideration of NO_2 emissions on subsistence hunters and fishers are flatly contradicted by the record.

As a final argument, Petitioners contend that Region 10 should have considered emissions from vessels related to Shell's operations before the Kulluk becomes an OCS source or that occur more than 25 miles from the Kulluk when it is an OCS source.

[40] AR-EPA-H-4, H000179; AR-EPA-F-1, F000004.

Petitioners' acknowledge that these emissions are not emissions of the "OCS source" and are not required to be considered under applicable permitting regulations. AR-EPA-I-54, I002225. As explained in the RTC, EPA specifically excluded mobile source emissions that occur as a result of the construction or operation of a stationary source from the definition of secondary emissions considered in the modeling analysis required by the PSD regulations, which Region 10 used as a guide for the analysis in this permit. AR-EPA-J-3, J000316-17. Region 10 also explained that when vessels are moving the impact of emissions at any one location would be reduced, and when not moving the vessels would likely be anchored and thus not using the emission units with the highest impact. AR-EPA-J-3, J000331-32; AR-EPA-J-3, J000286. Elsewhere in the RTC, Region 10 noted the vast areas over which operations would be occurring and the many conservative assumptions underlying the 1-hour NO_2 NAAQS analysis of the emissions from vessels required to be considered under the applicable permitting program. AR-EPA-J-3, J000229, J000273, J000281, J000283, J000293, J000295, J000298, J000306, and J000345-46. Based on the information before it, Region 10 found that it had insufficient information to determine with certainty whether or not emissions from these different vessels and activities that are not required to be considered in the NAAQS analysis would, in conjunction with permitted emissions, cause or a contribute to a violation of the 1-hour NO_2 NAAQS. Region 10 also stated it had no reason to believe that emissions from these Shell mobile/"non-OCS" sources would change Region 10's conclusion that the 1-hour NO_2 NAAQS is not expected to be exceeded. AR-EPA-J-3, J000331-32.

Petitioners note that after issuance of the permit, Shell provided to BOEMRE, in response to its request, an inventory of emissions from similar Shell mobile/"non-OCS" sources supporting operations of the Discoverer in the Chukchi Sea. ICAS Pet. 35. Petitioners assert that Region 10 should have requested this type of information from Shell, but they provide no basis for finding that it was clear error not to do so. Petitioners also appear to suggest the Board should grant review and remand the permit so that Region 10 can reopen the record, assess the accuracy of the inventory, and then use the information to conduct an EJ analysis that accounts for all of the impacts from Shells' operations. *Id.* The Board should decline Petitioners' invitation to further delay decision in this case and, by extension, to treat the record of a permit decision as continually open to accommodate post-permit information as it becomes available.

Furthermore, a review of the information provided by Petitioners does not suggest to Region 10 that a violation of the 1-hour NO_2 standard is likely to occur. These additional Shell mobile/"non-OCS" source emissions would be emitted at least 25 miles from the Kulluk. It is unlikely that these vessels would all operate at the same location or even at the same time, or that their plumes would simultaneously travel to the Kulluk's point of maximum impact on the day and hour that the maximum 1-hour NO_2 impact occurs. However, even if all of this did occur, the resulting concentration would likely be so diluted that it would not substantively influence Shell's modeling analysis which shows that the maximum modeled impact occurs near the source and rapidly declines with distance. In Shell's case, the maximum impact occurred 540 meters from the center of the Kulluk—which is an eightieth of the distance from where these other mobile/"non-OCS" source vessels would be located if they were continuously located just beyond 25

miles from the Kulluk. Shell's conclusion regarding emissions from these mobile source/"non-OCS" sources is consistent with Region 10's tentative conclusions in issuing the permit—that they will be dispersed over a large area and are therefore expected to have a minimal impact on ambient levels of NO_2. ICAS Pet. Ex. 15, p.2; AR-EPA-J-3, J000332.

In sum, Region 10 considered the best data available while the permit was under consideration that are germane in light of the scope and nature of the action before the agency in analyzing the technical issues of likely concentrations of pollutants, and thus whether there may be disproportionate and adverse impacts on minority and low-income communities. Petitioners do not demonstrate otherwise, especially given the heavy burden they bear on technical issues. *Avenal*, slip op. at 24. EO 12898 does not require EPA to reach a determinative outcome prior to issuing a permit, particularly when the available data is inconclusive. *Id.*

VI. Concerns Relating to Oil Spill Response and Toxins in the Food Chain are Outside the Scope of these Permit Proceedings

Petitioner Lum contends Region 10 failed to consider all of the health, cultural, and environmental impacts in issuing the permit, including Shell's ability to respond to oil spills and the potential impact of toxins on subsistence resources. Such considerations are outside the scope of this permitting action and other programs are in place to consider and address these concerns. *In re Shell Offshore, Inc.*, 13 E.A.D. 357, 405-406 (EAB Sept. 17, 2007); AR-EPA-J-3, J000222 and J000342. The Lum Petition should therefore be denied.

CONCLUSION

WHEREFORE, for the reasons set forth above, Region 10 requests that the Board deny the Petitions for Review.

Dated: December 21, 2011

Respectfully submitted,

/s/

Alexander Fidis
Julie A. Vergeront
Office of Regional Counsel
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101
Telephone: (206) 553-4710
FAX: (206) 553-1762
Fidis.Alexander@epa.gov
Vergeront.Julie@epa.gov

David Coursen
Office of General Counsel
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW (2322A)
Washington, DC 20460
Telephone: (202) 564-0781
FAX: (202) 501-0644

STATEMENT OF COMPLIANCE WITH WORD LIMITATION

I hereby certify that this Response to Petitions for Review by EPA Region 10 contains 13,999 words, as calculated using Microsoft Word word processing software. This excludes parts of the brief exempted from the EAB's PSD Review Order.

/s/
Alexander Fidis

EXHIBITS

(Documents in the Administrative Record Cited in Region 10's Response to Petitions for Review, OCS Appeal Nos. 11-05, 11-06, and 11-07)

Shell Kulluk Administrative Record Documents Cited by Region 10

Section A. Application Materials

EPA Exhibit Number	Date	Document Description
A-7	6/29/2011	Final Application Supplements: – Final_Kulluk_Applications_Part1 – Final_Kulluk_Applications_Part2 – Kulluk_Submittals_20110629-ReducedSize – KullukOCSApplication_20110629 – KullukOCSAppLtr_20110629 – Shell_Kulluk_app_and_supp_cover_ltr_20110629

Section B. Guidance, Background Information, and Technical Analysis

EPA Exhibit Number	Date	Document Description
B-3	4/30/1987	United States Environmental Protection Agency Office of Air Quality Planning and Standards Research Triangle Park, Memorandum, RE: Ambient Air
B-4	6/13/1989	Memorandum from Terrel Hunt, EPA, to John Seitz, EPA, RE: Guidance on Limiting Potential to Emit in New Source Permitting, transmitting "Limited Potential to Emit in New Source Permitting," dated June 13, 1989
B-6	3/13/1992	Memorandum from John B. Rasnic, EPA, David Kee, Air and Radiation Division, Subject: Policy Determination on Limiting Potential to Emit for Koch Refining Company's Clean Fuels Project
B-9	1/25/1995	Memorandum from John Seitz, EPA, to Director, Air, Pesticides and Toxics Management Division, Regions I and IV, RE: Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act (Act)
B-10	11/14/1995	Memorandum from John Seitz, EPA, to Director, Office of Ecosystem Protection, Region I, RE: Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities
B-17	10/1/2001	In the Matter of Orange Recycling and Ethanol Production Facility, Pencor-Masada Oxynol, LLC, Order Responding to Petitioner's Request that the Administrator Object to Issuance of a State Operating Permit, Petition No.: II-2001-05
B-24	4/11/2006	In the Matter of Pope and Talbot, Inc., Lumber Mill 1 Spearfish, Order Responding to Petitioner's Request that the Administrator Object to Issuance of a State Operating Permit, Petition Number: VIII-2006-04

EPA Exhibit Number	Date	Document Description
B-26	6/22/2007	Memorandum from Stephen Page, EPA, to Regional Air Division Directors, EPA, RE: Interpretation of "Ambient Air" in Situations Involving Leased Land Under the Regulations for Prevention of Significant Deterioration (PSD)
B-30	3/3/2009	Alaska Department of Environmental Conservation Air Permits Program, Technical Analysis Report For Air Quality Control Minor Permit No. AQ0181MSS04, BP Exploration (Alaska) Inc. (BPXA) Endicott Production Facility
B-31	10/13/2009	Alaska Department of Environmental Conservation, Technical Analysis Report, Air Quality Control Minor Permit AQ0166CPT04 and Air Quality Control Construction Permit AQ0270CPT04, Prepared by Zeena Siddeek
B-55	7/20/2011	Memorandum, from Dan Meyer, Office of Air, Waste and Toxics, to Permit File, Subject: Calculation of No. 2 Diesel Fuel Usage Restriction for Condition D.4.6 in Draft Permit to Shell for Operation of Conical Drilling Unit Kulluk in Beaufort Sea
B-58	9/2/2011	Statement by the President on the Ozone National Ambient Air Quality Standards, Prepared by The White House Office of the Press Secretary
B-60	9/14/2011	ADEC Modeling Review Procedures Manual
B-63	10/21/2011	"Memorandum, Subject: Revisions to Emission Factors in Tables D.2.1 and D.2.2 of Draft Permit to Shell for Operation of Conical Drilling Unit Kulluk in Beaufort Sea"

Section BB. Other Guidance, Background Information, and Technical Analysis

EPA Exhibit Number	Date	Document Description
BB-1	12/19/1980	Letter from Douglas Costle, EPA, to Jennings Randolph, Committee on Environment and Public Works, RE: Ambient Air Definition
BB-19	10/9/2007	Letter from Steven Riva. EPA, to Leon Sedefian, DEC, RE: Ambient Air for the Offshore LNG Broadwater Project
BB-48	3/23/2010	Memorandum from Stephen D. Page, EPA, RE: Modeling Procedures for Demonstrating Compliance with PM2NAAQS
BB-62	6/28/2010	Memorandum from Tyler Fox, EPA, to Regional Air Division Directors, EPA, RE: Applicability of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard
BB-83	3/1/2011	Memorandum from Tyler Fox, EPA, to Regional Air Division Directors, EPA, RE: Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard

Section C. Correspondence and Communication

EPA Exhibit Number	Date	Document Description
C-406	5/6/2011	Disco Stack Test Reports
C-532	7/21/2011	Letter from Richard Albright, EPA, to Harry Brower, AEWC, RE: Letter requesting that the U.S. Environmental Protection Agency not hold overlapping comment periods as planned for the Outer Continental Shelf exploratory drilling air projects
C-574	9/15/2011	Email from Dave Newsad, to Doug Hardesty, EPA, RE: Mud degassing emissions factor info (Attachment: image6afc46.JPG, API- Table 5-17.pdf)
C-575	9/16/2011	Email from Doug Hardesty, EPA, to Susan Childs, Shell, RE: Information Regarding Methane Emissions (Attachments: Methane calc_20101022, Shell Arctic well gas volumes KC, methane emissions DS R3)
C-577	9/20/2011	Email from Susan Childs, Shell, to EPA Region 10, RE: "ConocoPhillips Jackup Drill Rig - Chukchi Sea Exploration Drilling Program" (Permit No.R10OCS020000)

Section F. Environmental Justice

EPA Exhibit Number	Date	Document Description
F-1	7/19/2011	Environmental Justice Analysis for Proposed Outer Continental Shelf Permit No. R10OCS030000, Kulluk Drilling Unit

Section FF. Other Environmental Justice

EPA Exhibit Number	Date	Document Description
FF-1	2/16/1994	Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 Fed. Reg. 7629
FF-7	12/1/2000	Memorandum from Gary S. Guzy, General Counsel, Office of General Counsel, RE: EPA Statutory and Regulatory Authorities Under Which Environmental Justice Issues May Be Addressed in Permitting

Section GG. Other Government-to-Government Consultation

EPA Exhibit Number	Date	Document Description
GG-4	5/1/2009	North Slope Communication Protocol: Communications Guidelines to Support Meaningful Involvement of the North Slope Communities in EPA Decision-Making, EPA Region 10, May 2009

Section H. Draft Title V Permit

EPA Exhibit Number	Date	Document Description
H-1	7/18/2011	U.S. EPA, Region 10, Technical Support Document, Review of Shell's Ambient Air Quality Impact Analysis for the Kulluk OCS Permit Application, Permit No. R10OCS030000
H-4	7/22/2011	U.S. EPA, Region 10, Statement of Basis for Draft OCS Permit to Construct and Title V Air Quality Operating Permit No.R10OCS030000 Shell Offshore, Inc. Conical Drilling

Section HH. Other Draft Title V Permit

EPA Exhibit Number	Date	Document Description
HH-1	5/25/2011	Letter from Doug Hardesty, EPA, to North Slope Borough, RE: Invitation to attend informational meetings on EPA air and water permits for oil and gas exploration
HH-16	7/22/2011	Final Public Notice for Air Permits Proposed for Public Comment: Shell Kulluk Oil and Gas Exploration, Beaufort Sea, Alaska and ConocoPhillips Oil and Gas Exploration, Chukchi Sea, Alaska

Section I. Public Comments on 2011 Revised Draft Permits

EPA Exhibit Number	Date	Document Description
I-53	9/6/2011	Letter, via email, to EPA Region 10, RE: Draft Air Permit No. R10OCS030000 for Shell's Proposed Kulluk Drilling Operations in the Beaufort Sea, Alaska
I-54	9/6/2011	Letter from NSB, AEWC, and ICAS, to Doug Hardesty, EPA, RE: Draft Outer Continental Shelf Title V Clean Air Act Permit for Shell Offshore Inc.' s Exploratory Drilling in the Beaufort Sea with the Kulluk drill rig

Section J. Final Title V Permit

EPA Exhibit Number	Date	Document Description
J-2	10/21/2011	Shell Kulluk Final OCS Title V Air Permit
J-3	10/21/2011	U.S. EPA, Region 10, Response to Comments for OCS Permit to Construct and Title V Air Quality Operating Permit. Conical Drilling Unit Kulluk, Shell Offshore, Inc.

CERTIFICATE OF SERVICE AND CERTIFICATE FOR RESPONSE TO PETITION FOR REVIEW IN PAPER FORMAT

I hereby certify that I caused a copy of the above Region 10's Response to Petitions for Review, OCS Appeal Nos. 11-05, 11-06 & 11-07, to be filed with the Clerk of the Environmental Appeals Board electronically through CDX, and four identical copies of the Response to be delivered to the Board at the hand delivery address below.

I further certify that I have caused to be delivered to the Board at the hand delivery address below four copies of the Exhibits in the Administrative Record that are cited in Region 10's Response to Petitions for Review, OCS Appeal Nos. 11-05, 11-06 & 11-07.

I further certify that an electronic copy of the Response to Petitions for Review, OCS Appeal Nos. 11-05, 11-06 & 11-07, with accompanying Exhibits, was sent to each of the persons identified below via email.

I further certify that copies of all of the documents in the Administrative Record, which include the Exhibits cited in Region 10's Response to Petitions for Review, OCS Appeal Nos. 11-05, 11-06 & 11-07, were caused to be delivered to the Board (four DVDs) and mailed to the persons identified below on December 21, 2011 (one DVD to each address).

Pursuant to the Environmental Appeals Board Order Authorizing Electronic Filing in Proceedings before the Environmental Appeals Board not Governed by 40 C.F.R. Part 22, dated January 28, 2010, I further certify that the paper copies of Region 10's Response to Petitions for Review, OCS Appeal Nos. 11-05, 11-06& 11-07, with accompanying Exhibits, are identical copies of the documents electronically filed with the Board on December 21, 2011.

U.S. Environmental Protection Agency
Clerk of the Board, Environmental Appeals Board
Colorado Building
1341 G Street, N.W., Sixth Floor
Washington, D.C. 20005

Counsel	Service e-mail
Tanya Sanerib Christopher Winter Crag Law Center 917 SW Oak Street, Suite 417 Portland, OR 97205	tanya@crag.org chirs@crag.org
Colin O'Brien Eric Jorgensen Earthjustice 325 Fourth Street Juneau, AK 99801	cobrien@earthjustice.org ejorgensen@earthjustice.org
David Hobstetter Eric Grafe Earthjustice 441 W 5th Avenue, Suite 301 Anchorage, AK 99501	dhobstetter@earthjustice.org egrafe@earthjustice.org
Duane A. Siler Sarah C. Bordelon Tony G. Mendoza Crowell & Moring LLP 1001 Pennsylvania Ave. N.W. Washington, DC 20004	dsiler@crowell.com sbordelon@crowell.com tmendoza@crowell.com
Daniel Lum P.O. Box 70169 Fairbanks, AK 99707	eskimo.whaler@yahoo.com

Date: December 21, 2011

Alexander Fidis
Assistant Regional Counsel
U.S. EPA Region 10
1200 6th Avenue, Suite 900
Seattle, Washington 98101
Telephone: (206) 553-4710
Fax: (206) 553-1762
fidis.alexander@epa.gov