BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

In the Matter of:	)	
AMENDMENTS TO 35 ILL. ADM. CODE PARTS 201, 202, AND 212	)	R23-018(A) (Rulemaking – Air)

EAST DUBUQUE NITROGEN FERTILIZERS, LLC'S PROPOSAL TO AMEND SECTION 217.381

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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NOTICE OF FILING

To: Attached Service List

PLEASE TAKE NOTICE that today I have electronically filed with the Office of the Clerk of the Illinois Pollution Control Board **EAST DUBUQUE NITROGEN FERTILIZERS, LLC'S PROPOSAL TO AMEND SECTION 217.381** and a **CERTIFICATE OF SERVICE,** which are attached and copies of which are herewith served upon you.

Dated: August 7, 2023

Respectfully submitted,

/s/ Alicia Garten
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EAST DUBUQUE NITROGEN FERTILIZERS, LLC'S PROPOSAL TO AMEND SECTION 217.381

East Dubuque Nitrogen Fertilizers, LLC respectfully moves that the Illinois Pollution Control Board adopt the attached amendment to 35 Ill. Adm. Code 217.381. In summary, the attached amendment would update the nitrogen oxides ("NOx") and opacity emission standards applicable to "new weak nitric acid manufacturing processes" as follows:

- the NOx limitation would: (a) use a 30-day averaging period at half of the current allowable level; and (b) would apply at all times, including during startup and shutdown;
- an alternative, non-numerical standard would apply for opacity during startup and shutdown; and
- definitions would be added that would limit the duration of startups and shutdowns.

Dated: August 7, 2023

Respectfully submitted,

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STATEMENT OF REASONS

I. INTRODUCTION

East Dubuque Nitrogen Fertilizers, LLC ("EDNF"), submits this Statement of Reasons to the Illinois Pollution Control Board ("Board") pursuant to Sections 27 and 28 of the Environmental Protection Act ("Act") (415 ILCS 5/27 and 28) and 35 Ill. Adm. Code 102.202 in support of the attached proposed rule. The proposed rule would update the nitrogen oxides ("NOx") and opacity emission standards in 35 Ill. Adm. Code 217.381 as follows:

- the NOx limitation for new weak nitric acid manufacturing processes would: (a) use a 30-day averaging period at half of the current allowable level; and (b) would apply at all times, including during startup and shutdown;
- an alternative, non-numerical standard would apply for opacity during startup and shutdown; and
- definitions would be added that would limit the duration of startups and shutdowns.

The proposed revisions are needed so that the rule will work consistently with the Board's recent final order in Docket R23-18. Docket R23-18 was in response to the U.S. Environmental Protection Agency's ("U.S. EPA's") "SSM SIP Call." In the SSM SIP call, U.S. EPA required that Illinois remove provisions from its regulations that provided an affirmative

defense from emission standards during periods of startup, shutdown, and malfunction ("SSM").[1] U.S. EPA, *State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA's SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls to Address Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction,* 80 Fed. Reg. 33,840 (June 12, 2015) (attached as **Exhibit 1**). Yet U.S. EPA never required that Illinois refuse to recognize the differing technical considerations that apply during startup and shutdown, and indeed, U.S. EPA has recognized that states may need to provide alternative standards for different operating scenarios, such that one standard might apply during "normal" operation and another during startup and shutdown.

With the Board's having completed the first part of revising its regulations to remove provisions in Parts 201, 202, and 212[2] that reference the affirmative defense for startup and shutdown, EDNF now proposes that the Board complete the complementary and necessary second part of this revision by amending Section 217.381 such that the substantive limitations on NOx and visible emissions from nitric acid production processes reflect all relevant operating scenarios: startup, shutdown, and normal operation.

II. STATEMENT OF FACTS

A. The Board's Adoption of Regulations Governing Weak Nitric Acid Processes

The Board adopted what became Section 217.381 over 50 years ago in April 1972, as part of the Board's adoption of the first regulations on sulfur dioxide, NOx, carbon monoxide, hydrocarbons, and particulate matter to become part of Illinois' State Implementation Plan. *See In re Emission Standards,* R 71-23 (Ill. Pollution Control Board April 13, 1972) ("Board 1972

[1] Although the amendments in Docket R23-18 removed the affirmative defense for periods of malfunction, EDNF does not request any amendments to cover periods of malfunction.
[2] All references to sections or parts of the Illinois Administrative Code are to 35 Ill. Adm. Code unless otherwise noted.

Op."). (The rule later was renumbered into Title 35 of the Illinois Administrative Code in 1978 as Section 217.381.) In this rule, the Board set emission limits for NOx and visible emissions from weak nitric acid manufacturing processes, and these limits remain unaltered in Section 217.381 today.

Two of those emission limits are at issue in this petition. First, the 1972 rule limited NOx emissions from a weak nitric acid manufacturing process to 1.5 kg of NOx (expressed as nitrogen dioxide) per metric tonne of acid produced, on a 100 percent acid basis. 35 Ill. Adm. Code 217.381(a)(1), formerly Rule 207(d)(1)(A). Second, recognizing that the NOx emissions from these processes are visible, the 1972 rule also limited NOx emissions indirectly by setting a visible emissions limit of 5 percent opacity. Section 217.381(a)(2), formerly Rule 207(d)(1)(B).

In the Board's order adopting Rule 207(d), the Board devoted only a single paragraph of a nearly 50-page opinion to discussing the weak nitrogen acid manufacturing processes. (Board 1972 Op. at p. 4-343.) This paragraph does not mention startup or shutdown. The Board's opinion does not address the existence of startup or shutdown emissions for weak nitrogen acid manufacturing processes specifically or consider the differing technical issues that exist during those periods. The opinion does not consider whether the NOx or opacity limitations being adopted would apply during startup and shutdown or, if so, the technical feasibility or economic reasonableness of applying those limitations to those operating scenarios.

However, the Board's order did address startup as it affects industrial activity generally. The Board observed:

> No machine works perfectly all the time. Further, startup conditions may result in less than optimum emission control. The policy of this Rule is that insofar as is practicable, effort shall be made to reduce the incidence and duration of startups and excessive emissions during startup periods . . . . We cannot resolve the myriad of individual variations in a single rule. The Agency's

> admirable proposal, which we have adopted, places case-by-case discretion in the Agency under its permit powers, providing that . . . if irreducible startup emissions will somewhat exceed the general standards, [Illinois] EPA may grant permission for such emissions upon application and proof.

(*Id.* at p. 4-305.) In discussing the general opacity standards (now contained in Part 202), which were also adopted on April 13, 1972, the Board also recognized that opacity standards may not be met during periods of startup:

> Limited exemptions from the opacity limits are provided in recognition of special conditions that will preclude compliance at certain times. The first is startup, during which the evidence . . . is that excessive emissions may necessarily occur. . . . Considerable variations in alleged startup times preclude our setting any specific time limit in the regulations.

(*Id.* at p. 4-310.)

The "admirable proposal" to which the Board referred was Rule 105 (later codified as Sections 201.149, 201.261, 201.262, 201.263, 201.264, and 201.265) which authorized Illinois EPA to allow continued operation of an emission source during periods of startup or malfunction by so providing in an operating permit. (Rule 105(a), Board 1972 Op. at p. 4-206.) The rule also set out the contents of a source's request to Illinois EPA and the standard that Illinois EPA should apply in reviewing these requests. (Rule 105(b) and (c), Board 1972 Op. at p. 4-206 to 4-207.) This collection of requirements and authorizations formed the "SSM Rules" for Illinois, and for more than 50 years, the combination of Section 217.381 and the SSM Rules governed weak nitric acid manufacturing processes such that the numeric limitations in Section 217.381 applied except to the extent that Illinois EPA, in a permit, gave permission for operation notwithstanding those limitations during periods of startup or malfunction.

B. U.S. EPA SSM SIP Call and Docket R23-18

In 2015, U.S. EPA finalized a "SIP call" requiring changes to the SSM provisions of the state implementation plans for numerous states, including Illinois. (Exhibit 1.) EPA's SIP call found, in general, that "automatic exemptions and director's discretion exemptions from otherwise applicable emission limitations are not consistent with the [Clean Air Act]." (*Id.* at 33,844.) However, U.S. EPA "emphasize[d] that there are other approaches that *would* be consistent with [Clean Air Act] requirements that states can use to address emissions" during startup and shutdown. (*Id.*, emphasis added.)

Illinois EPA did not immediately respond to the SIP call, but instead waited seven years to propose rule amendments to meet the SIP call requirements, acting with little time available for Board consideration before facing potentially onerous federal monetary sanctions. Illinois EPA's proposal did not take up U.S. EPA's invitation to devise "other approaches" to "address emissions" during startup and shutdown. Nor did Illinois EPA offer any analysis of the technical feasibility or economic reasonableness of applying, for the first time, the numerical limitations of Section 217.381 without any exceptions or discretion to the startup and shutdown operating scenarios for weak nitric acid manufacturing processes and without devising any alternative limitations to apply specifically to startup and shutdown.

Instead, Illinois EPA simply proposed to remove the SSM Rules without any other changes to the Board's air pollution control regulations. Illinois EPA justified this stark approach by asserting, as the Board paraphrased, that the repeal of the SSM Rules "do not impose any new or additional obligations . . . on affected sources" and that "the Board would have addressed the technical feasibility or the underlying standards when it adopted them." (Final Order in *In re Amendments to 35 Ill. Adm. Code Parts 201, 202, and 212,* R23-18 (Ill. Pollution Control Board July 20, 2023) at 6.)

Relying on this representation, the Board recently adopted a final order repealing the SSM Rules, following Illinois EPA's proposal. (*Id.*) However, the Board also opened this sub-docket to receive industry proposals for further rule amendments to ensure that the technical differences between normal operation and startup and shutdown can remain considered in the Board's regulations, consistent with the invitation in U.S. EPA's SIP call.

C. EDNF's Weak Nitric Acid Manufacturing Processes

EDNF's facility (the "Facility") overall produces nitrogenous fertilizer products that support agriculture, including in Illinois, and other industrial sectors. The Facility produces anhydrous ammonia using natural gas and nitrogen from the air. Further processes at the Facility – including two nitric acid production processes (the "Nitric Acid Processes") – upgrade anhydrous ammonia to produce nitric acid, urea, ammonium nitrate (85 percent aqueous solution), and urea ammonium nitrate. Beverage grade liquid carbon dioxide, a byproduct of ammonia synthesis, is also sold commercially. To the best of its knowledge, EDNF operates the only nitric acid production processes in Illinois and, therefore, is the only facility subject to Section 217.381. The Nitric Acid Processes are "weak nitric acid manufacturing processes," as that term is used in the current version of Section 217.381(a). Since they were built after 1972, they are "new" as that term is used in the current version of the rule.

In addition to engaging various independent contractors, the Facility employs about 154 people and paid $27.3 million in Illinois wages in 2022 alone. The average annual wage is over $155,000, compared to the area median income of $87,500 per year. Since January 1, 2020, EDNF has pledged or provided more than $1.8 million in charitable contributions to the local community. Over the last three years, EDNF sold, on average, nitrogen products equivalent to 143 million pounds of nitrogen per year into Illinois, the equivalent of fertilizing 798,000 acres of corn. The seven counties surrounding the Facility planted an estimated 1.1 million acres of

corn in 2022, with EDNF serving as a source for a significant amount of the nitrogen needs. The Facility sells the nitric acid it produces for multiple industrial uses.

The Nitric Acid Processes convert anhydrous ammonia to nitric acid in three steps. First, ammonia is oxidized over a platinum catalyst gauze to form nitric oxide and water. The nitric oxide is passed through a condenser and cooled. In the second step, the nitric oxide is oxidized further to produce nitrogen dioxide. Finally, in the third step, the nitrogen dioxide is absorbed in water to yield a solution that contains 57 to 65 percent nitric acid. The Nitric Acid Processes are continuous, and they continue in normal operation for as long as several months between one startup and the next shutdown.

One of the byproducts of a weak nitric acid manufacturing process is NOx air emissions, which absent any control device, would be emitted to the atmosphere from the absorption tower in which the final step in nitric acid production occurs. To control the NOx emissions and comply with Section 217.381, both of EDNF's Nitric Acid Processes use selective catalytic reduction ("SCR") systems.[3] An SCR converts NOx to diatomic nitrogen and water, in the presence of a catalyst. In addition to the catalyst, an SCR system also requires a reductant to be added to the flue gas to produce the desired action on the catalyst. EDNF's SCRs use ammonia as the reductant.

The chemical reaction inside the SCR occurs at an elevated temperature during normal operation. The hot flue gas heats the SCR as it passes through, keeping the SCR at the temperature needed for the reduction reaction. However, when the Nitric Acid Processes start up, a brief period of time of up to five hours is needed before the SCR reaches the required temperature. The ammonia cannot be introduced into the SCR until the device reaches a

[3] EDNF refers to the two Nitric Acid Processes as "NAP-1" and "NAP-2," respectively. Each process is equipped with a separate, dedicated SCR.

temperature of at least 350 degrees Fahrenheit. If ammonia were introduced into the SCR below this temperature, ammonium nitrate solids would be produced, presenting both a risk of damage to the SCR and a fire/explosion safety risk. As a result, there is a short period of time during startup of the Nitric Acid Processes in which NOx-containing hot flue gas flows through the SCR but ammonia is not yet introduced, so the SCR is not yet controlling the NOx emissions. Similarly, when a Nitric Acid Process is shut down, there is a short period of time of up to three hours when the SCR temperature has dropped below 350 degrees, and ammonia flow must be cut off. This causes, for a short duration, additional NOx emissions. During both of these startup and shutdown periods, the Nitric Acid Processes inevitably emit more NOx per pound of production than they do during normal operation. In contrast, during normal operations, the processes result in NOx emissions well below the limit in current Section 217.381(a)(1).

NOx from the Nitric Acid Processes, at sufficient concentrations, are visible emissions. They can be seen as a light yellow to brown plume of air (with the color depending on the NOx concentration), and they can be measured as opacity. The NOx constitutes the only visible emissions from the Nitric Acid Processes; particulate matter emissions do not cause opacity at the Nitric Acid Processes. As a result, opacity measurements are essentially just another measure of NOx. (*See* U.S. EPA, *Alternative Control Techniques Document – Nitric and Adipic Acid Manufacturing Plants,* EPA-450/3-91-026 (Dec. 1991) (attached as **Exhibit 2**) at p. 4-5 ("Color and opacity of the tail gas plume are indicators of the presence and concentration of NOx, specifically NO_2 . . ."')) During normal operations, the processes result in opacity measurements that comply with the five percent limitation in current Section 217.381(a)(2) and, in fact, typically are zero. However, during startup and shutdown, the inability to introduce ammonia to

the SCR and the resulting higher concentrations of NOx can also result in visible emissions that can be measured as opacity.

D. Nitrogen Oxide Emissions and Opacity from the Nitric Acid Processes

During periods of normal operation, the Nitric Acid Processes, with their current SCR controls, comfortably meet the NOx and opacity limitations in existing Section 217.381(a) and (b). NOx emissions are less than three pounds per ton of acid produced during periods of normal operations. At this low level, the Nitric Acid Processes also maintain visible emissions at or below 5 percent opacity during normal operations.

Even with startup and shutdown considered, the Nitric Acid Processes can still meet the limitation on NOx per ton of acid produced, as long as a reasonable averaging period is provided. In fact, with a 30-day averaging period (rolled daily), the Nitric Acid Processes can meet a significantly more stringent limitation: 1.5 pounds of NOx per ton of acid produced, averaged over a 30-day period with calculations (rolled daily). This limit is calculated using the averaging method that U.S. EPA prescribes for newer nitric acid processes under the New Source Performance Standards in Title 40, Part 60, Subpart Ga of the Code of Federal Regulations. The 30-day averaging period comes from 40 C.F.R. § 60.73a(a), and the production rate is calculated following the rules in 40 C.F.R. § 60.73a(c)(3).[4] NOx emissions from EDNF's Nitric Acid Processes are already monitored with continuous emissions monitoring systems ("CEMS").

In addition to the requirements in Section 217.381, the Nitric Acid Processes are also subject to a number of overlapping NOx and opacity limits based on New Source Performance Standards, construction permit requirements, or other sources, as presented in EDNF's CAAPP

[4] EDNF proposes to use this calculation method even though the Facility is not required to comply with Subpart Ga because neither of its Nitric Acid Processes commenced construction or modification after October 14, 2011. (*See* 40 C.F.R. § 60.70a(b).)

permit. These additional permit limits are not at issue here: the federal limits, discussed immediately above, explicitly address startup and shutdown, and the remaining state permit limits do not derive from Board rules. EDNF plans to work with Illinois EPA to address other permit limits, presumably during renewal of the CAAPP permit. As a result, the only Board rules that EDNF proposes to revise are the limits in Section 217.381(a)(1) and (2).

E. U.S. EPA's Recognition of Startup and Shutdown of Weak Nitric Acid Manufacturing Processes

U.S. EPA has issued new source performance standards for weak nitric acid manufacturing processes twice. These rules address startup, shutdown, and malfunction directly and either do not apply numeric limits during startup, shutdown, and malfunction or contain an averaging time to account for these operational periods.

U.S. EPA's first NSPS for this source category, Subpart G, was adopted in 1974 and applies to facilities that commenced construction or modification after August 17, 1971 but on or before October 14, 2011. 40 C.F.R. § 60.70(b). Subpart G applies to both of EDNF's Nitric Acid Processes. Subpart G limits NOx emissions to 3.0 pounds per ton of acid production, the same as the Illinois rule in Section 217.381(a)(1). (40 C.F.R. § 60.72(a)(1).) Subpart G also sets a 10 percent opacity limit (40 C.F.R. § 60.72(a)(2)), which is less stringent than the equivalent Illinois requirement in Section 217.381(a)(2) and which U.S. EPA has described as "an additional method of demonstrating compliance with the NOx limit." U.S. EPA, *New Source Performance Standards Review for Nitric Acid Plants,* Final Rule, 77 Fed. Reg. 48,433, 48,435 (Aug. 14, 2012) (attached as **Exhibit 3**). Although Subpart G does not state an averaging period for these requirements, the general NSPS requirements in Subpart A provide that opacity standards do not apply during periods of startup, shutdown, or malfunction. 40 C.F.R. § 60.11(c). The general requirements also provide that periods of startup, shutdown, and malfunction are not

"representative conditions" for the purpose of a performance test nor are emissions in excess of the applicable limit during those periods a violation of the limit unless otherwise specified in the applicable standard. 40 C.F.R. § 60.8(c). And, of course, nothing in Subpart G suggests that the limits apply during startup, shutdown, or malfunction.

In 2012, U.S. EPA updated its NSPS for nitric acid plants, adopting Subpart Ga. (40 C.F.R. Part 60 Subpart Ga.) Subpart Ga states a new NOx emission limit, also based on pounds per ton of acid produced. (40 C.F.R. § 60.72a.) This limit explicitly applies "at all times," but is based on an average hourly rate further averaged over the 30 prior consecutive operating days. (*Id.*)

In adopting the final Subpart Ga rule, EPA acknowledged that "NOx emissions during startup and shutdown are higher than during normal operation for some nitric acid plants. However, due to the relatively short duration of startup and shutdown events (generally a few hours per month) compared to normal steady-state operations, we conclude that a 30-day emission rate calculated based on 30 operating days will allow affected facilities" to meet the standard at all times, including during startup and shutdown. (Exhibit 3 at 48,435.)

U.S. EPA also decided against including an opacity standard in Subpart Ga rule, reasoning that it was no longer needed as a surrogate for the NOx limit. U.S. EPA, *New Source Performance Standards Review for Nitric Acid Plants,* Proposed Rule, 76 Fed. Reg. 63,878, 63,885 (Oct. 14, 2011) (attached as **Exhibit 4**). U.S. EPA reasoned that, by using continuous information including NOx concentration data from CEMS, "the NOx emission rate in units of the standard (lb NOx/ton acid) can be determined at any point in time. Therefore, an opacity standard is not required as an additional method of demonstrating compliance with a NOx emission limit." (*Id.*)

Finally, U.S. EPA also has given a site-specific acknowledgement of the differing conditions present during startup and shutdown in a consent decree that it entered into with EDNF in 2011. *United States v. Rentech Nitrogen, LLC, as successor to Rentech Energy Midwest Corp.,* No. 3:11-cv-50358 (N.D. Ill. Feb. 10, 2012) (attached as **Exhibit 5**). This consent decree addressed one of the two Nitric Acid Processes (NAP-1), and it resolved certain allegations made by the United States. (*Id.* at 3.) The consent decree required that NAP-1 comply with two separate NOx limits. One is a "short-term" limit, which specifically does *not* apply during periods of startup, shutdown or malfunction. (*Id.* at 9.) The other is a "long-term" limit, averaged over 365-days, which applies at all times, including during startup, shutdown, and malfunction. (*Id.* at 7.) As with U.S. EPA's adoption of Subpart Ga, the use of two limits on the emission of NOx shows U.S. EPA's recognition that startup and shutdown periods involve greater emissions than during normal operation, but those startup and shutdown periods are not frequent and are limited in duration. In fact, U.S. EPA ensured that the duration of startup and shutdown would be limited by defining those terms in the consent decree to include duration limits of five hours for startup and three hours for shutdown. (*Id.* at 9.) These consent decree requirements are already included in EDNF's CAAPP permit. In this proposal, EDNF now proposes to use the same language to define "startup" and "shutdown" in Section 217.381 as was used in the consent decree.

III. PURPOSE AND EFFECT OF PROPOSAL

A. Character of Area Involved

The proposal would apply statewide to any weak nitric acid manufacturing process. However, to the best of EDNF's knowledge, it operates the only weak nitric acid manufacturing processes in Illinois.

EDNF's Facility is located in Jo Daviess County, about five miles outside of East Dubuque, Illinois, about 6.5 miles west of Galena, Illinois, and about one mile south of U.S. Highway 20 on a private road. The Facility is located in an area of low population density, and it is not in an identified environmental justice area, as defined by Illinois EPA's "EJ Start" mapping tool.[5] In addition, the Statement of Basis for the most recent renewal of the Facility's CAAPP permit states that Illinois EPA had not identified the Facility's location as a potential concern for environmental justice consideration. Illinois EPA, *Statement of Basis for Draft CAAPP Permit for East Dubuque Nitrogen Fertilizers, LLC* (Nov. 28, 2016) at 12 (attached as **Exhibit 6**). The Facility is located in an area designated attainment or unclassifiable for all criteria air pollutants. 40 C.F.R. § 81.314.

B. Existing Conditions

The only area in Illinois that is known to contain a weak nitric acid manufacturing process is in attainment with all of the National Ambient Air Quality Standards, including for ozone and nitrogen dioxide. As a result, there is no need for any additional control of NOx or opacity from this type of manufacturing process. The Facility already employs SCRs, which are highly effective at reducing NOx and opacity from the Nitric Acid Processes. In addition, the Facility, for years, has used NOx CEMS to monitor and record emissions continuously. Accordingly, NOx from startup and shutdown of the Nitric Acid Processes is included in the data routinely reported to Illinois EPA, and the agency has already accounted for those emissions in any evaluation or modeling of NOx or ozone levels in Illinois.

[5] Illinois EPA EJ Start, available at https://illinois-epa.maps.arcgis.com/apps/webappviewer/index.html?id=f154845da68a4a3f837cd3b880b0233c (last accessed Aug. 4, 2023).

C. Technical Feasibility and Economic Reasonableness

As discussed above, this proposal seeks to maintain an appropriate and reasonable balance. Any set of rules that would make starting up and shutting down a fully-permitted, well-controlled manufacturing operation a violation of law would be arbitrary and capricious. The repeal of Illinois' SSM Rules, in effect, worked as a substantive and material change to the suite of Illinois regulations governing weak nitric acid manufacturing processes. In order to complete the work that the Board began in responding to U.S. EPA's SIP Call while continuing to recognize the differing technical conditions that exist during startup and shutdown, an update to Section 217.381 is a necessity. Adoption of the proposal would not result in any change to existing facilities or existing operations of any weak nitric acid manufacturing process, including EDNF's Nitric Acid Processes. Because no change in facilities or operation would be needed to comply with the proposed rule amendment, the proposal is technically feasible and economically reasonable.

In fact, we are not able to find any evidence that the technical feasibility or economic reasonableness of extending the existing NOx and opacity limits to periods of startup and shutdown was ever considered. As discussed above, the Board adopted the current limits on NOx and opacity from weak nitric acid manufacturing plants in April 1972 as Rule 207(d), as part of the Board's adoption of the first regulations on sulfur dioxide, NOx, carbon monoxide, hydrocarbons, and particulate matter to become part of Illinois' State Implementation Plan. (*See* Board 1972 Op.) (The rule later was renumbered into Title 35 of the Illinois Administrative Code in 1978 as Section 217.381.) The Board's discussion of Rule 207(d) is one paragraph out of a nearly 50-page opinion, and the paragraph never mentions startup or shutdown, much less the technical feasibility or economic reasonableness of complying during startup and shutdown with the NOx and opacity limits being adopted. (*Id.* at p. 4-343.)

The Board's 1972 opinion, however, did address startups in general:

> No machine works perfectly all the time. Further, startup conditions may result in less than optimum emission control. The policy of this Rule is that insofar as is practicable, effort shall be made to reduce the incidence and duration of startups and excessive emissions during startup periods . . . . We cannot resolve the myriad of individual variations in a single rule. The Agency's admirable proposal, which we have adopted, places case-by-case discretion in the Agency under its permit powers, providing that . . . if irreducible startup emissions will somewhat exceed the general standards, [Illinois] EPA may grant permission for such emissions upon application and proof.

(*Id.* at p. 4-305.) The Board also explained that its analysis of the general opacity standards (now contained in Part 202) also recognized that opacity standards may not be met during periods of startup:

> Limited exemptions from the opacity limits are provided in recognition of special conditions that will preclude compliance at certain times. The first is startup, during which the evidence . . . is that excessive emissions may necessarily occur. . . . Considerable variations in alleged startup times preclude our setting any specific time limit in the regulations.

(*Id.* at p. 4-310.) As the Board's discussion makes clear, the adoption of what became Section 217.381 in 1972 did not include an analysis of the technical feasibility or economic reasonableness of complying with the standards during startup and shutdown, and in fact, the Board specifically relied on the existence of the SSM rules as a reason why these analysis did not need to be – and could not be – performed.

Nor did the recent repeal of the SSM rules in Docket R23-18 contain an analysis of the technical feasibility or economic reasonableness. In discussing technical feasibility, the Board relied on Illinois EPA's assertions that the repeal of the SSM rules "do not impose any new or additional obligations . . . on affected sources" and that "the Board would have addressed the technical feasibility or the underlying standards when it adopted them." (*In re Amendments to 35*

Ill. Adm. Code Parts 201, 202, and 212, R23-18 (Ill. Pollution Control Board July 20, 2023) at 6.) The Board also relied on substantively the same assertions in discussing economic reasonableness. (*Id.*) The above discussion shows that these assertions are not true for NOx emissions and related opacity from weak nitric acid manufacturing plants. We have found no evidence that the Board has ever analyzed the technical feasibility or economic reasonableness of requiring compliance with the standards in existing Section 217.381 during startup or shutdown.

IV. Statement Regarding Hearings and Synopsis of Testimony

In response to the Board's July 7, 2023 order in R23-18, EDNF states that the proposed rule amendment would apply statewide to any weak nitric acid manufacturing process. However, to the best of EDNF's knowledge, it operates the only weak nitric acid manufacturing processes in Illinois. As a result, Section 28(a) of the Act requires hearings to be held in at least two areas. 415 ILCS 5/28(a). The hearings held in R23-18 would not satisfy this requirement nor the public notice requirements under the Illinois Environmental Protection Act and the Clean Air Act.

EDNF anticipates calling Philip Crnkovich, EDNF's environmental and security manager, as a witness at hearing. Mr. Crnkovich will testify and answer questions regarding the proposed rule. Written testimony will be submitted prior to hearing in accordance with the Board's procedural rules.

V. The Proposal

EDNF proposes to adjust the standard of general applicability in Part 217, Subpart O, Section 217.381 to reflect explicit consideration of the startup and shutdown of the processes, replacing the previous affirmative defense for startup, shutdown, and malfunction that existed in the Board regulations and EDNF's permit. The revised standard would set a single standard for NOx emissions at a mass per unit of production that is lower than in Section 217.381 but that defines an appropriate averaging period (including any startups or shutdowns) for compliance.

The averaging period and method of calculating the average are drawn from U.S. EPA's NSPS for newer nitric acid production processes, in Subpart Ga. The revised standard also would provide for an alternative, work practice standard for opacity that would apply during startup and shutdown, with the numerical standard continuing to apply during other periods. Finally, the revised standard includes definitions of "startup" and "shutdown," which serve primarily to limit the duration of startups and shutdowns. These definitions are drawn from a 2011 federal consent decree between EDNF and the United States and are already included in EDNF's CAAPP permit.

The full text of the proposed rule is below, following this Statement of Reasons.

VI. Consistency with U.S. EPA's SIP Call

Because the Board's recent action in repealing Illinois' SSM Rules resulted from U.S. EPA's 2015 SSM SIP Call, we analyze the proposal for consistency with the SIP call. In its Federal Register notice, U.S. EPA emphasized that a state may "develop special, alternative emission limitations that apply during startup or shutdown if the source cannot meet the otherwise applicable emission limitation in the SIP." (Exhibit 1 at 33,980.) U.S. EPA also clarified that these alternative emission limitations may, if emissions measurement during startup or shutdown is not reasonably feasible, include non-numeric emissions limitations. (*Id.*) To guide states in developing these alternative limitations, U.S. EPA suggested seven criteria for consideration. (*Id.*) The proposed amendment to Section 217.381 is fully consistent with these seven criteria and U.S. EPA's overall advice in the SSM SIP Call.

As a threshold matter, only the proposed amendment to the opacity limitation in Section 217.381(a)(2) is subject to the seven criteria. The proposed opacity limitation is a "special, alternative emission limitation" that would apply during startup and shutdown, and it is non-

numerical. In contrast, the proposed amendment to the NOx limitation in Section 217.381(a)(1) is not subject to the seven criteria, as it would set a single NOx limitation that applies at all times, including during startup and shutdown. Because proposed Section 217.381(a)(1) sets a single NOx limit that applies at all times, the seven criteria U.S. EPA recommended in the SSM SIP call are not applicable to that limit.

The seven criteria that U.S. EPA recommends are as follows:

- The revision is limited to specific, narrowly-defined source categories using specific control strategies;
- Use of the control strategy for this source category is technically infeasible during startup or shutdown periods;
- The alternative emission limitation requires that the frequency and duration of operation in startup or shutdown mode are minimized to the greatest extent practicable;
- As part of its justification of the SIP revision, the state analyzes the worst-case emissions that could occur during startup and shutdown based on the applicable alternative emission limitation;
- The alternative emission limitation requires that all possible steps are taken to minimize the impact of emissions during startup and shutdown on ambient air quality;
- The alternative emission limitation requires that, at all times, the facility is operated in a manner consistent with good practice for minimizing emissions, and the source uses best efforts regarding planning, design, and operating procedures; and
- The alternative emission limitation requires that the owner or operator's actions during startup and shutdown periods are documented by properly signed, contemporaneous operating logs or other relevant evidence.

(Exhibit 1 at 33,980.)

A. The Proposal Is Limited to a Single Source Category That Uses a Single Control Strategy

The proposal is limited to the single source category of weak nitric acid production. EDNF's Facility, to EDNF's knowledge, is the only weak nitric acid production facility in Illinois. Both of EDNF's Nitric Acid Processes are controlled through selective catalytic

reduction. As a result, the proposal will affect a single source category that uses a single control strategy.

B. Use of the Control Strategy Is Infeasible During Startup and Shutdown

As described above, the SCRs can only control NOx when their temperature is above 350 degrees Fahrenheit. Because the SCRs are heated by the flue gas entering the SCRs, it takes a short period of time during startup before the SCRs reach the required temperature and the ammonia can be injected into the SCRs to start NOx control. Conversely, during shutdown, the temperature of the SCRs naturally drops below 350 degrees Fahrenheit before the nitric acid production process is completely stopped. Once this happens, ammonia no longer can be injected into the SCRs. During these startup and shutdown periods, use of the SCRs as a control strategy is infeasible.

C. The Proposal Minimizes Startup and Shutdown to the Greatest Extent Practicable

The proposal limits the duration of startup to no more than five hours after ammonia is first fed into the nitric acid production process. (The feeding of ammonia into the nitric acid production process is distinct from the injection of ammonia into an SCR.) The proposal also limits the duration of shutdown to no more than three hours. These time limitations – and, indeed the text of the definitions of "startup" and "shutdown" in the proposal – are derived from a consent decree between EDNF and the United States. As a result, U.S. EPA has had an opportunity to review the stringency of these time periods, and the time periods met with U.S. EPA's approval.

D. Illinois EPA Already Analyzes the Full Effect of the Proposal

As discussed above, the Facility for years has monitored and recorded its NOx emissions continuously using CEMS. The CEMS records NOx emissions during all operational periods,

including during startup and shutdown, and the data from all operational periods is routinely reported to Illinois EPA, allowing Illinois EPA to account for all emissions in its evaluations and modeling of NOx and ozone levels in Illinois. Since the proposal would not result in any change in operation, the agency already has evaluated the "worst case" effect of the proposal.

E. The Proposal Requires All Possible Steps to Minimize Emissions During Startup and Shutdown

The non-narrative limitation on opacity in the proposal requires that the Nitric Acid Processes operate in accordance with written startup and shutdown procedures that "are specifically developed to minimize Startup emissions, duration of individual starts, and frequency of Startups." (Proposed Section 217.381(a)(3)(C).) The Facility's plan also includes procedures to minimize emissions during shutdowns. As a result, the proposal directly meets U.S. EPA's criterion.

F. The Proposal Requires Operation Consistent with Good Practices for Minimizing Emissions

The same requirement to operate in accordance with written startup and shutdown procedures also ensures that the Nitric Acid Processes will operate, even during startup and shutdown, consistently with good practices for minimizing emissions. In addition, the proposal also includes a specific statement to this effect: "[d]uring Startup and Shutdown . . . visible emissions shall be controlled through: A) [o]perating in a manner consistent with good air pollution control practices for minimizing emissions." (Proposed Section 217.381(a)(3).) All of the requirements in proposed Section 217.381(a)(3) are derived from EDNF's consent decree with the United States, meaning that these provisions have met with U.S. EPA's approval.

G. The Proposal Requires Contemporaneous Documentation

Finally, the proposal requires that the Facility maintain a log of startup and shutdown events. (Proposed Section 217.381(a)(3)(B).) This requirement meets U.S. EPA's final

recommended criterion for developing alternative emission limitations. Moreover, this requirement, too, is derived from EDNF's consent decree with the United States and, like the other requirements in proposed Section 217.381(a)(3), has met with U.S. EPA's approval.

VII. Material to Be Incorporated by Reference

EDNF does not propose to incorporate any material by reference into the rule.

VIII. List of Published Studies or Research Reports

EDNF does not reference any published studies or research reports in this proposal other than any exhibits that may qualify as "published studies."

IX. Statements Regarding Procedural Requirements

A. Documentation of Service

EDNF hereby certifies that the parties have been served contemporaneously with the filing of this proposal, as stated in the certificate of service.

B. Board's Waiver of Requirement for Petition

In its July 6, 2023 order, the Board waived the 200-person signature requirement of Section 102.202(g). *In re Amendments to 35 Ill. Adm. Code Parts 201, 202, and 212,* R23-18(A) (Ill. Pollution Control Board July 6, 2023) at 4, referencing 35 Ill. Adm. Code 102.202(g).

C. Statement Regarding Revision to Existing Board Rule

EDNF certifies that this proposal amends the most recent version of the rule as published on the Board's website.

D. Statement Regarding Electronic Version of Proposed Rule Language

Attached to this proposal is an electronic version of the proposed rule language required under Section 102.202(a). *See* 35 Ill. Adm. Code 102.202(a).

X. Conclusion

For the foregoing reasons, EDNF submits this regulatory proposal and requests that the Board grant the proposal and adopt the following rules.

Dated: August 7, 2023

Respectfully submitted,

/s/ Byron F. Taylor
East Dubuque Nitrogen Fertilizers, LLC
By One of Its Attorneys

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TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE B: AIR POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER C: EMISSION STANDARDS AND LIMITATIONS FOR STATIONARY SOURCES

PART 217
NITROGEN OXIDES EMISSIONS

SUBPART A: GENERAL PROVISIONS

SUBPART B: NEW FUEL COMBUSTION EMISSION SOURCES

SUBPART C: EXISTING FUEL COMBUSTION EMISSION UNITS

SUBPART D: NOx GENERAL REQUIREMENTS

SUBPART E: INDUSTRIAL BOILERS

SUBPART F: PROCESS HEATERS

SUBPART G: GLASS MELTING FURNACES

SUBPART H: CEMENT AND LIME KILNS

SUBPART I: IRON AND STEEL AND ALUMINUM MANUFACTURING

SUBPART K: PROCESS EMISSION SOURCES

SUBPART M: ELECTRICAL GENERATING UNITS

SUBPART O: CHEMICAL MANUFACTURE

SUBPART Q: STATIONARY RECIPROCATING
INTERNAL COMBUSTION ENGINES AND TURBINES

SUBPART T: CEMENT KILNS

SUBPART U: NOx CONTROL AND TRADING PROGRAM FOR
SPECIFIED NOx GENERATING UNITS

SUBPART V: ELECTRIC POWER GENERATION

SUBPART W: NOx TRADING PROGRAM FOR ELECTRICAL GENERATING UNITS

SUBPART X: VOLUNTARY NOx EMISSIONS REDUCTION PROGRAM

217.855 Reporting
217.860 Recordkeeping
217.865 Enforcement

217.APPENDIX A Rule into Section Table
217.APPENDIX B Section into Rule Table
217.APPENDIX C Compliance Dates
217.APPENDIX D Non-Electrical Generating Units
217.APPENDIX E Large Non-Electrical Generating Units
217.APPENDIX F Allowances for Electrical Generating Units
217.APPENDIX G Existing Reciprocating Internal Combustion Engines Affected by the NOx SIP Call
217.APPENDIX H Compliance Dates for Certain Emissions Units at Petroleum Refineries

Authority: Implementing Sections 9.9 and 10 and authorized by Sections 27 and 28.5 of the Environmental Protection Act [415 ILCS 5/9.9, 10, 27 and 28.5 (2004)].

Source: Adopted as Chapter 2: Air Pollution, Rule 207: Nitrogen Oxides Emissions, R71-23, 4 PCB 191, April 13, 1972, filed and effective April 14, 1972; amended at 2 Ill. Reg. 17, p. 101, effective April 13, 1978; codified at 7 Ill. Reg. 13609; amended in R01-9 at 25 Ill. Reg. 128, effective December 26, 2000; amended in R01-11 at 25 Ill. Reg. 4597, effective March 15, 2001; amended in R01-16 and R01-17 at 25 Ill. Reg. 5914, effective April 17, 2001; amended in R07-18 at 31 Ill. Reg. 14254, effective September 25, 2007; amended in R07-19 at 33 Ill. Reg. 11999, effective August 6, 2009; amended in R08-19 at 33 Ill. Reg. 13345, effective August 31, 2009; amended in R09-20 at 33 Ill. Reg. 15754, effective November 2, 2009; amended in R11-17 at 35 Ill. Reg. 7391, effective April 22, 2011; amended in R11-24 at 35 Ill. Reg. 14627, effective August 22, 2011; amended in R11-08 at 35 Ill. Reg. 16600, effective September 27, 2011; amended in R09-19 at 35 Ill. Reg. 18801, effective October 25, 2011; amended in R15-21 at 39 Ill. Reg. 16213, effective December 7, 2015.

SUBPART O: CHEMICAL MANUFACTURE

Section 217.381 Nitric Acid Manufacturing Processes

a) New Weak Nitric Acid Processes. No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any new weak nitric acid manufacturing process to exceed the following standards and limitations:

1) 0.75 ~~1.5~~ kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (1.5 ~~3.0~~ lbs/T), 30-day rolling average, rolled daily, during all Operating Periods (including during Startup and Shutdown);

2) Visible emissions in excess of 5 percent opacity, during all Operating Periods except during Startup and Shutdown;

3) During Startup and Shutdown, as defined in subsection (e) below, visible emissions shall be controlled through:

A) Operating in a manner consistent with good air pollution control practices for minimizing emissions;

B) Maintaining a log of Startup and Shutdown events; and

C) Operating in accordance with written Startup and Shutdown procedures that are specifically developed to minimize Startup emissions, duration of individual starts, and frequency of Startups.

4) The limitations on visible emissions in this section are in lieu of the limitations in 35 Ill. Admin. Code 212.123.

5~~3~~) 0.05 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) from any acid storage tank vents (0.1 lbs/T).

6) In determining compliance with paragraph (a)(1), during process operating periods where there is little or no acid production (e.g., Startup or Shutdown), the average hourly acid production rate shall be determined from the data collected over the previous 30 days of normal acid production periods.

b) Existing Weak Nitric Acid Processes. No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any existing weak nitric acid manufacturing process to exceed the following standards and limitations:

1) 2.75 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (5.5 lbs/T);

2) Visible emissions in excess of 5 percent opacity;

3) 0.1 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) from any acid storage tank vents (0.2 lbs/T).

c) Concentrated Nitric Acid Processes. No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any concentrated nitric acid manufacturing process to exceed the following standards and limitations:

1) 1.5 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis)(3.0 lbs/T);

2) 225 ppm of nitrogen oxides (expressed as nitrogen dioxide) in any effluent gas stream emitted into the atmosphere;

3) Visible emissions in excess of 5 percent opacity.

d) Nitric Acid Concentrating Processes. No person shall cause or allow the emission of nitrogen oxides into the atmosphere from any nitric acid concentrating process to exceed the following limitations:

1) 1.5 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (3.0 lbs/T);

2) Visible emissions in excess of 5 percent opacity.

e) Definitions:

1) "Operating Periods" shall mean periods during which a process is producing nitric acid and nitrogen oxides are emitted. Operating Periods begin at the initiation of Startup, end at the completion of Shutdown, and include all periods of malfunction.

2) "Shutdown" shall mean the cessation of nitric acid production operations of the process for any reason. Shutdown begins at the time the feed of ammonia to the process ceases and ends the earlier of three hours later or the cessation of feed of compressed air to the process.

3) "Startup" shall mean the process of initiating nitric acid production operations at a process. Startup begins one hour prior to the initiation of the feed of ammonia to the process and ends no more than five hours after such initiation of the feed of ammonia.

CERTIFICATE OF SERVICE

I, the undersigned, on affirmation, state that I have served the attached **East Dubuque Nitrogen Fertilizers, LLC's Proposal to Amend Section 217.381** by email on the following:

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I further state that my email address is as stated in the signature block below, that the number of pages in this email transmission is 36 and that the email transmission took place before 5 p.m. on August 7, 2023.

Dated: August 7, 2023

Respectfully submitted,

/s/ Alicia Garten
East Dubuque Nitrogen Fertilizers, LLC
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