

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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In the Matter of:	)	
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	)	
PETITION OF EAST DUBUQUE NITROGEN	)	AS _____
FERTILIZERS, LLC FOR ADJUSTED	)	(Adjusted Standard – Air)
STANDARD	)	
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**NOTICE OF FILING**

To: Don A. Brown, Clerk of the Board	Division of Legal Counsel
Illinois Pollution Control Board	Illinois Environmental Protection Agency
60 E. Van Buren St., Ste 630	1021 North Grand Avenue East
Chicago, Illinois 60605	P.O. Box 19276
	Springfield, Illinois 62794

PLEASE TAKE NOTICE that today I have electronically filed with the Office of the Clerk of the Illinois Pollution Control Board **APPEARANCES, PETITION OF EAST DUBUQUE NITROGEN FERTILIZERS, LLC FOR ADJUSTED STANDARD**, and a **CERTIFICATE OF SERVICE**, which are attached and copies of which are herewith served upon you.

Dated: August 14, 2023

Respectfully submitted,

/s/ Alicia Garten  
East Dubuque Nitrogen Fertilizers, LLC  
By One of Its Attorneys

Byron F. Taylor

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**APPEARANCE OF BYRON F. TAYLOR AND CONSENT TO EMAIL SERVICE**

I, Byron F. Taylor, hereby enter my appearance on behalf of EAST DUBUQUE NITROGEN FERTILIZERS, LLC. I authorize the service of documents on me by email in lieu of receiving paper documents in the above-captioned proceeding. My email address to receive service is as follows: [bftaylor@sidley.com](mailto:bftaylor@sidley.com).

Dated: August 14, 2023

/s/ Byron F. Taylor  
Byron F. Taylor  
**SIDLEY AUSTIN LLP**  
One South Dearborn Street  
Chicago, IL 60603  
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312-853-4717

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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**APPEARANCE OF JOHN M. HEYDE AND CONSENT TO EMAIL SERVICE**

I, John M. Heyde, hereby enter my appearance on behalf of EAST DUBUQUE NITROGEN FERTILIZERS, LLC. I authorize the service of documents on me by email in lieu of receiving paper documents in the above-captioned proceeding. My email address to receive service is as follows: [jheyde@sidley.com](mailto:jheyde@sidley.com).

Dated: August 14, 2023

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**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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**APPEARANCE OF ALICIA GARTEN AND CONSENT TO EMAIL SERVICE**

I, Alicia Garten, hereby enter my appearance on behalf of EAST DUBUQUE NITROGEN FERTILIZERS, LLC. I authorize the service of documents on me by email in lieu of receiving paper documents in the above-captioned proceeding. My email address to receive service is as follows: [agarten@sidley.com](mailto:agarten@sidley.com).

Dated: August 14, 2023

/s/ Alicia Garten  
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**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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**PETITION OF EAST DUBUQUE NITROGEN FERTILIZERS, LLC  
FOR ADJUSTED STANDARD**

**I. Introduction and Summary of Proposed Adjusted Standard**

East Dubuque Nitrogen Fertilizers, LLC (“EDNF”), pursuant to Section 28.1(f) of the Environmental Protection Act (“Act”), 415 ILCS 5/28.1(f), and Section 104.402 of the Board’s regulations, 35 Ill. Adm. Code § 104.402, petitions the Board for an adjusted standard from the requirements imposed by the Board’s recent final order in Docket R23-18. The Board’s order repealed rules in Part 201 that allowed Illinois EPA, in operating permits, to authorize operation during startup and malfunction notwithstanding generally applicable limitations that apply during normal operation (the “SSM Rules”). In EDNF’s case, the generally applicable limitations are found in 35 Ill. Adm. Code § 217.381, governing nitric acid manufacturing processes.

EDNF recently has also proposed a general rulemaking that would amend Section 217.381 so that the rule would work consistently with the Board’s final order in R23-18 during startups and shutdowns. If the Board adopts EDNF’s proposed rule amendment, an adjusted standard is not necessary. EDNF, however, is filing this petition for an adjusted standard as an alternative in the event the Board concludes that it prefers an adjusted standard for EDNF’s

facility (the “Facility”) instead of a general rulemaking. In addition, by requesting an adjusted standard, pursuant to the stay provided by 415 ILCS 5/28.1(f), EDNF will continue to comply with its existing Clean Air Act Permit Program (“CAAPP”) permit and applicable regulations.<sup>1</sup>

Like the rule amendment EDNF has proposed, the proposed adjusted standard would apply to EDNF’s two nitric acid manufacturing processes (the “Nitric Acid Processes”) as follows:

- the limitation on nitrogen oxides (“NO<sub>x</sub>”) 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.

## **II. Petition for Adjusted Standard**

### ***A. Description of Standard from Which Relief Is Sought***

Following the Board’s repeal of the SSM Rules, two limitations in Section 217.831 now govern weak “new” nitric acid manufacturing processes at all times, including startup and shutdown. These provisions apply two related limits to NO<sub>x</sub> emissions. Section 217.381(a)(1) limits those emissions to 1.5 kg (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis), or 3 pounds per ton produced. Section 217.381(a)(2) limits visible emissions to 5 percent opacity. The two provisions are related because the only visible emissions from production of weak nitric acid are the nitrogen oxides themselves, which are

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<sup>1</sup> Because the adjusted standard would apply only to the Facility and not to any other weak nitric acid manufacturing facility that might operate in the future, it seeks different relief than that sought in EDNF’s recent general rulemaking petition, which EDNF filed in Docket R23-18(A). In addition, the timing of relief in the two petitions is different. Due to the stay provided in 415 ILCS 5/28.1(f), the relief in this petition would take effect starting with the effective date of the Board’s repeal of the SSM Rules. In contrast, any amendment to Section 217.381 as a result of the rulemaking petition would not be effective until that rule is final and filed with the Secretary of State. As a result, this petition is not duplicative of the rulemaking petition.

visible at certain concentrations. The manufacturing process has no visible emissions *other* than the nitrogen oxides. 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 1**) at p. 4-5 (“Color and opacity of the tail gas plume are indicators of the presence and concentration of NOx, specifically NO<sub>2</sub> . . .”))

**B. Nature of the Regulation of General Applicability**

**1. The Board’s Original Regulations Governing Weak Nitric Acid Manufacturing Processes and the SSM Rules**

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 Op.”). In this rule, the Board set emission limits for NOx and visible emissions from weak nitric acid manufacturing processes in Rule 207(d), which was renumbered in 1978 into Title 35 of the Illinois Administrative Code as Section 217.381. These limits remain unaltered in Section 217.381 today.

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.

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

In 2015, U.S. EPA finalized an “SSM SIP Call” requiring changes to the SSM provisions of the state implementation plans for numerous states, including Illinois. 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 Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction*, 80 Fed. Reg. 33,840 (June 12, 2015) (attached as **Exhibit 2**). EPA’s SSM 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 SSM 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 of 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.*) The repeal of the SSM rules causes Sections 217.381(a)(1) and (2) to apply to the Nitric Acid Processes at all times, with no discretion for the agency to allow continued operation during periods of startup or malfunction. In the event that the Board declines EDNF's petition to amend Section 217.381 as a general matter, EDNF requires an adjusted standard to set achievable limitations during startup and shutdown.

***C. Level of Justification Required***

Neither Part 201 nor Section 217.381 state a level of justification required for an adjusted standard, other than the standard factors set out in Section 28.1(c) of the Act (415 ILCS 5/28.1(c)). Therefore, the Board must consider the factors at Section 28.1(c) of the Act (415 ILCS 5/28.1(c)). *See* Section II(H), *infra*.

***D. Facility and Process Description***

EDNF's Facility overall produces nitrogenous fertilizer products that support agriculture and other industrial sectors in Illinois and surrounding states. The Facility produces anhydrous ammonia using natural gas and nitrogen from the air. Further processes at the Facility –

including the two 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 NO<sub>x</sub> 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 NO<sub>x</sub> emissions and comply with Section 217.381, both of EDNF's Nitric Acid Processes use selective catalytic reduction ("SCR") systems.<sup>2</sup> An SCR converts NO<sub>x</sub> 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 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 NO<sub>x</sub>-containing hot flue gas flows through the SCR but ammonia is not yet introduced, so the SCR is not yet controlling the NO<sub>x</sub> 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

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<sup>2</sup> EDNF refers to the two Nitric Acid Processes as "NAP-1" and "NAP-2," respectively. Each process is equipped with a separate, dedicated SCR.

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. 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.

***E. Description of the Efforts Necessary for the Facility to Comply with Section 217.381***

During periods of normal operation, the Nitric Acid Processes, with their current SCR controls, comfortably meet the NOx and opacity limitations in 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 with calculations rolled daily, the Nitric Acid Processes can meet a significantly more stringent limitation: 1.5 pounds of NOx per ton of acid produced.

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).<sup>3</sup> NOx emissions from EDNF's Nitric Acid Processes are already monitored with continuous emissions monitoring systems ("CEMS").

***F. Proposed Adjusted Standard***

EDNF proposes to adjust the standards in Section 217.381(a)(1) and (a)(2) so that the rule will work consistently with the Board's final order in Docket R23-18. In general, the proposed adjusted standard would:

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

The proposed single standard for NOx emissions would apply at all times, including during startup and shutdown, and it would be calculated using a 30-day averaging period that would be 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.

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<sup>3</sup> 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).)

§ 60.73a(c)(3).<sup>4</sup> NO<sub>x</sub> emissions from EDNF's Nitric Acid Processes are already monitored with continuous emissions monitoring systems ("CEMS").

The adjusted 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. *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 3**).

Specifically, EDNF proposes that the Board adopt the following adjusted standard:

1. The adjusted standard applies to the emission of nitrogen oxides into the atmosphere and related visible emissions from the nitric acid manufacturing processes ("Nitric Acid Processes") at the EDNF facility located at 16675 US Highway 20 West in East Dubuque, Illinois (the "Facility"). The Nitric Acid Processes produce nitric acid using anhydrous ammonia produced in another process at the Facility.
2. During all Operating Periods, including during Startup and Shutdown (all as defined below), the emissions of nitrogen oxides from the Nitric Acid Processes shall not exceed 0.75 kg of nitrogen oxides (expressed as nitrogen dioxide) per metric tonne of acid produced (100 percent acid basis) (1.5 lbs/T), 30-day rolling average, rolled daily. This standard applies in lieu of the general standard stated in Section 217.381(a)(1).
3. During periods of Startup and Shutdown, 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

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<sup>4</sup> 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).)

- (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.

This standard applies in lieu of the general standards stated in Sections 217.381(a)(2) and 212.123. During all Operating Periods other than Startup and Shutdown, the general standards shall apply.

- 4. In determining compliance with Paragraph 2, above, during Operating Periods when there is little or no acid production (e.g., Startup and Shutdown), the average hourly acid production rate shall be determined from the data collected over the previous 30 days of normal acid production periods.
- 5. The following definitions apply to this Adjusted Standard:
  - (a) "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.
  - (b) "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.
  - (c) "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.

***G. Quantitative and Qualitative Description of Impact on the Environment Before and After the Adjusted Standard***

Adoption of the adjusted standard will not have a quantitative or qualitative impact on the environment, because the standard will not result in any increase in emissions. The adjusted standard reflects explicit consideration of the startup and shutdown of the processes, replacing the previous approach that existed in the Board's SSM Rules and ENDF's permit. Even with startup and shutdown considered, the Nitric Acid Processes can still meet the limitation on NO<sub>x</sub> 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 NO<sub>x</sub> per ton of acid produced, averaged over a 30-day period

with calculations rolled daily, instead of the 3 pound per ton limit set out in Section 217.381(a)(1).

The Facility for years has monitored and recorded its NOx emissions continuously using CEMS. The CEMS record 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 impact of the Facility's emissions are already incorporated into Illinois EPA's attainment demonstrations and any air modeling it performs.

***H. Justification***

The Board should grant EDNF's proposed adjusted standard to fulfill the Board's expectation, when repealing the SSM Rules, that doing so would not "impose any new or additional obligations . . . on affected sources." (*In re Amendments to 35 Ill. Adm. Code Parts 201, 202, and 212*, R23-18 (Ill. Pollution Control Board July 20, 2023) at 6.) While EDNF's Nitric Acid Processes can comfortably meet the NOx limitations in 217.381(a)(1) and (2) during normal operations, an SCR cannot control NOx until it reaches a minimum temperature. All SCRs that rely on heat from process gasses – including the SCRs that serve the Nitric Acid Processes – will have higher emissions during brief startup and shutdown periods. This is a substantially and significantly different factor, and it supports an adjusted standard. In addition, the proposed adjusted standard will actually *increase* the stringency of the limitation on NOx per unit of production. As a result, there will be no adverse effect on the environment. Finally, the proposed adjusted standard is consistent with federal law and uses concepts that U.S. EPA previously has applied to nitric acid plants in general and EDNF's facility, in particular.

**1. Factors Related to Facility Are Substantially and Significantly Different**

The factors related to EDNF's facility are substantially and significantly different than those relied upon by the Board in adopting the general regulation. In fact, the Board did not consider startup and shutdown in adopting Section 217.381, except to conclude that the existence of the SSM Rules was an appropriate approach to addressing startup and malfunction periods. The startup and shutdown of SCRs present substantially and significantly different factors than the operation of SCRs during normal operation. These differing factors make it more difficult and certainly more costly to comply, during startup and shutdown, than the Board contemplated when setting standards for periods of normal operation.

*a. The Board Has Not Previously Considered the Feasibility of Complying with Section 217.381(a)(1) and (2) During Startup and Shutdown*

We are not able to find any evidence that the technical feasibility or economic reasonableness of extending the NO<sub>x</sub> and opacity limits to periods of startup or shutdown was ever considered in the Board's 1972 adoption of those limits. The Board's discussion of Rule 207(d) (now Section 217.381) is limited to one paragraph, and that paragraph does not mention startup or shutdown at all. (Board 1972 Op. at p. 4-343.) And as discussed above, the Board's general discussion of startups came in the context of recognizing that "startup conditions may result in less than optimum emission control," with the Board adopting a proposal to give Illinois EPA "case-by-case discretion . . . under its permit powers" to grant permission for emissions above the general limitations during startup. (*Id.* at p. 4-305.)

This regime applied for decades until the Board repealed the SSM Rules in Docket R23-18. That rulemaking also did not contain an analysis of the technical feasibility or economic reasonableness of applying the general NO<sub>x</sub> limitations in Section 217.381(a)(1) and (2) to

periods of startup and shutdown. 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 discussion in Section II.D of this petition, above, shows that these assertions are not true for NO<sub>x</sub> emissions and related opacity from weak nitric acid manufacturing plants. As a result, 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.

*b. Startup and Shutdown of SCRs Present Substantially and Significantly Different Factors Than Normal Operation*

Although these factors were not considered when adopting Section 217.381(a)(1) and (2) or when repealing the SSM Rules, startup and shutdown of the Nitric Acid Processes do, in fact, present different factors than normal operation for the purpose of controlling NO<sub>x</sub> emissions. As described above, the chemical reaction inside the SCRs requires ammonia to be added to the flue gas and reacted, with the flue gas, on the catalyst. But the ammonia cannot be added into the SCR unless the device is at a temperature of at least 350 degrees Fahrenheit. Because the SCR is heated by the flue gas entering it, this means that there is a short period of time during startup in which NO<sub>x</sub>-containing flue gas flows through the SCR but ammonia has not yet been introduced, so the SCR is not yet controlling the NO<sub>x</sub> emissions. Similarly, when the Nitric Acid Processes are being shut down, there is a short period of time 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).

*c. Cost of Achieving Compliance with Section 217.381(a)(1) and (2) During Startup and Shutdown Exceeds Any Cost the Board Considered in Repealing the SSM Rules*

Because the Board relied on Illinois EPA's assurance that the repeal of the SSM Rules would not "impose any new or additional obligations . . . on affected sources," it did not consider any cost associated with the repeal of those rules. (*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 existing controls on the Nitric Acid Processes do not allow EDNF to meet the limitations in Section 217.381(a)(1) and (2) during startup and shutdown. As a result, if meeting those limitations is possible at all, EDNF would be required to investigate additional control alternatives, design a selected alternative, and purchase and install the alternative. Doing so necessarily would exceed the cost that the Board considered in repealing the SSM Rules, since the Board assumed that there would be no such cost.

**2. The Existence of These Factors Justifies an Adjusted Standard**

For the reasons described above, an adjusted standard is justified. The adjusted standard ensures that the substantive limitations on NOx emissions from weak nitric acid production processes reflect all relevant operating scenarios: startup, shutdown, and normal operation.

**3. The Requested Standard Will Not Result in Adverse Environmental or Health Effects**

Adoption of the adjusted standard will not result in adverse environmental or health effects, because the standard will not result in any emissions increase. The adjusted standard

reflects explicit consideration of the startup and shutdown of the processes, replacing the previous approach that existed in the Board's SSM Rules and ENDF's permit. As described above, by complying with the adjusted standard, EDNF expects to be able to meet a NO<sub>x</sub> limitation that is *more* stringent than the current standard in Section 217.381. EDNF will continue to report its emissions to Illinois EPA as it has done for many years, and the agency can continue to incorporate these data into all of the air quality planning that it performs in the State.

**4. U.S. EPA and Illinois EPA Have Recognized the Special Factors Applicable to Startup and Shutdown**

The different conditions that apply during startup and shutdown of the Nitric Acid Processes are not new to U.S. EPA or Illinois EPA. U.S. EPA has issued two new source performance standards for nitric acid manufacturing processes, and both standards have their requirements crafted with startup and shutdown in mind. In addition, U.S. EPA has given a site-specific acknowledgement of the differing conditions present during startup and shutdown in a consent decree that contains specific provisions for startup and shutdown, provisions that Illinois EPA has incorporated into the Facility's CAAPP permit.

U.S. EPA, in issuing new source performance standards for weak acid manufacturing processes, consistently has recognized that its numerical limitations on NO<sub>x</sub> emissions are intended to apply only during normal operation. 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 NO<sub>x</sub> 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 NO<sub>x</sub> 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 4**). 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 NO<sub>x</sub> 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 “NO<sub>x</sub> 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 4 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 NO<sub>x</sub> 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 5**). U.S. EPA reasoned that, by using continuous information including NO<sub>x</sub> concentration data from CEMS, “the NO<sub>x</sub> emission rate in units of the standard (lb NO<sub>x</sub>/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 NO<sub>x</sub> emission limit.” (*Id.*)

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. (Exhibit 3.) 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 NO<sub>x</sub> 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 NO<sub>x</sub> 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.) Illinois EPA, in turn, has included these requirements in EDNF’s CAAPP permit. (*See* Illinois EPA, *Clean Air Act Permit Program (CAAPP) Permit*, issued to EDNF, No. 96010003 (revision issued Dec. 15, 2020) (attached as **Exhibit 6**.) EDNF now proposes to use the same language to define “startup” and “shutdown” in the adjusted standard as was used in the consent decree.

## 5. Conclusion

Because startup and shutdown of the Nitric Acid Processes involve substantially and significantly different factors than the Board considered in setting the general NO<sub>x</sub> and opacity standards in Section 217.381(a)(1) and (2), or than the Board considered in repealing the SSM Rules as part of Docket R23-18, the Board should grant EDNF's proposed adjusted standard. The proposed adjusted standard is necessary to address those different factors. In addition, the proposed adjusted standard will increase the overall stringency of the NO<sub>x</sub> limitations of Section 217.381(a)(1), so it will not have an adverse effect on the environment. Finally, the proposed adjusted standard is consistent with federal law, using concepts from new source performance standards and a U.S. EPA-negotiated consent decree. And as described further below, in the required section on "Consistency with Federal Law," the approach is also consistent with the criteria for alternate standards that U.S. EPA recommended in its 2015 SSM SIP Call.

### *I. Consistency with Federal Law*

The proposed adjusted standard is consistent with federal law. In fact, such a standard was contemplated by U.S. EPA, which said in the SSM SIP Call that, while the Clean Air Act does not allow "automatic exemptions and director's discretion exemptions from otherwise applicable emission limitations," there are "other approaches that would be consistent with [Clean Air Act] requirements that states can use," instead. (Exhibit 2 at 33,844.) In addition, the proposed adjusted standard also draws concepts from, and therefore is consistent with, U.S. EPA's new source performance standards for weak nitric acid manufacturing processes and provisions U.S. EPA agreed to in a consent decree, provisions which have also been incorporated into EDNF's CAAPP permit.

### **1. Consistency with the 2015 SSM 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 2 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 adjusted standard 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 portion of the adjusted standard that addresses opacity 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 portion of the adjusted standard that addresses NO<sub>x</sub> directly is not subject to the seven criteria, as it would set a single NO<sub>x</sub> limitation that applies at all times, including during startup and shutdown.

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 2 at 33,980.)

*a. The Adjusted Standard Is Limited to a Single Source Category That Uses a Specific Control Strategy*

The adjusted standard is limited, of course, to EDNF's Facility. Both of EDNF's Nitric Acid Processes currently are controlled through selective catalytic reduction. As a result, the proposal will affect a single source category that uses a specific control strategy.

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

As described above, the SCRs can only control NO<sub>x</sub> 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 NO<sub>x</sub> 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 Adjusted Standard Minimizes Startup and Shutdown to the Greatest Extent Practicable*

The proposed adjusted standard 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 record 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 adjusted standard would not result in any change in operation, the agency already has evaluated the “worst case” effect of the proposal.

*e. The Adjusted Standard Requires All Possible Steps to Minimize Emissions During Startup and Shutdown*

The non-narrative limitation on opacity in the adjusted standard 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 Paragraph (3)(c), above.) The Facility’s plan also includes procedures to minimize emissions during shutdowns. As a result, the adjusted standard directly meets U.S. EPA’s criterion.

*f. The Adjusted Standard 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 adjusted

standard 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 Paragraph 3.) All of the requirements in proposed Paragraph 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 Adjusted Standard Requires Contemporaneous Documentation*

Finally, the adjusted standard requires that the Facility maintain a log of startup and shutdown events. (Proposed Paragraph 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 Paragraph 3, has met with U.S. EPA’s approval.

**2. Consistency with New Source Performance Standards, Consent Decree, and CAAPP Permit**

As described more fully above, the proposed adjusted standard draws on concepts from U.S. EPA’s new source performance standard for newer weak nitric acid manufacturing processes in Subpart Ga. The proposed adjusted standard also uses concepts that U.S. EPA negotiated in the Facility’s consent decree and that Illinois EPA then incorporated into the Facility’s CAAPP permit. As a result, the proposed adjusted standard is fully consistent with federal law.

***J. Hearing***

EDNF requests that the Board hold a hearing on this petition for an adjusted standard.

***K. Supporting Documentation***

In support of this petition, EDNF has submitted the following exhibits as a separate document in the docket:

- Exhibit 1: U.S. EPA, *Alternative Control Techniques Document – Nitric and Adipic Acid Manufacturing Plants*, EPA-450/3-91-026 (Dec. 1991)
- Exhibit 2: 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 Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction*, 80 Fed. Reg. 33,840 (June 12, 2015)
- Exhibit 3: *United States v. Rentech Nitrogen, LLC, as successor to Rentech Energy Midwest Corp.*, No. 3:11-cv-50358 (N.D. Ill. Feb. 10, 2012)
- Exhibit 4: U.S. EPA, *New Source Performance Standards Review for Nitric Acid Plants*, Final Rule, 77 Fed. Reg. 48,433, 48,435 (Aug. 14, 2012)
- Exhibit 5: U.S. EPA, *New Source Performance Standards Review for Nitric Acid Plants*, Proposed Rule, 76 Fed. Reg. 63,878, 63,885 (Oct. 14, 2011)
- Exhibit 6: Illinois EPA, *Clean Air Act Permit Program (CAAPP) Permit*, issued to EDNF, No. 96010003 (revision issued Dec. 15, 2020)

***L. Additional Information Requested in the Regulation of General Applicability***

Neither the repealed SSM Rules in Part 201 nor Section 217.381 requires any additional information to support a petition for an adjusted standard. (35 Ill. Adm. Code 217.381.)

\* \* \*

For the reasons set forth above, EDNF respectfully requests that the Board grant an adjusted standard for EDNF's Nitric Acid Processes as set forth above.

Dated: August 14, 2023

Respectfully submitted,

/s/ Byron F. Taylor  
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**CERTIFICATE OF SERVICE**

I, the undersigned, hereby certify that on August 14, 2023, I have served the attached **Appearances and Petition of East Dubuque Nitrogen Fertilizers LLC for Adjusted Standard** upon the following persons by the means listed for each person below.

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 32, and that the email transmission took place before 4:30 p.m. on August 14, 2023.

***Served by email at [don.brown@illinois.gov](mailto:don.brown@illinois.gov) and by first-class mail:***

Don A. Brown, Clerk of the Board  
Illinois Pollution Control Board  
60 E. Van Buren St., Ste 630  
Chicago, Illinois 60605

***Served by first-class mail:***

Division of Legal Counsel  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, Illinois 62794

Dated: August 14, 2023

*/s/ Alicia Garten*

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