

217/785-1705

CONSTRUCTION PERMIT - PSD APPROVAL
NSPS SOURCE - NESHAP SOURCE

PERMITTEE

Cronus Chemicals, LLC
Attn: Donald Gill
150 North Michigan Avenue, Suite 2800
Chicago, Illinois 60601

<u>Application No.:</u> 19110020	<u>I.D. No.:</u> 041804AAF
<u>Applicant's Designation:</u> Ammonia Plant	<u>Date Received:</u> March 6, 2020
<u>Subject:</u> Ammonia Production Facility	
<u>Date Issued:</u> PRELIMINARY DRAFT 10-18-2023	
<u>Location:</u> 785 East Highway 36, Tuscola, Douglas County	

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission units and air pollution control equipment consisting of an ammonia production facility, as described in the above referenced application. This permit is granted based upon and subject to the findings and conditions that follow.

In conjunction with this permit, approval is given with respect to the regulations for Prevention of Significant Deterioration of Air Quality (PSD) for the facility, as described in the application, in that the Illinois EPA finds that the application fulfills all applicable requirements of 35 IAC Part 204. This approval is issued pursuant to the federal Clean Air Act and the PSD rules at 35 IAC Part 204. This approval may be appealed in accordance with provisions of 415 ILCS 5/40.3 and 35 IAC Part 105. This approval is based upon the findings that follow. This approval is subject to the following conditions. This approval is also subject to the general requirement that the facility be developed and operated consistent with the specifications and data included in the application and any significant departure from the terms expressed in the application, if not otherwise authorized by this permit, must receive prior written authorization from the Illinois EPA.

If you have any questions on this permit, please call Justin Cameron at 217/558-3934.

William D. Marr
Manager, Permit Section
Bureau of Air

WDM:JTC:

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FINDINGS

1. Cronus Chemicals, LLC (Cronus) has applied for a permit to construct a facility that would produce ammonia (the "facility"). Natural gas would be used as both feedstock and fuel for the facility. The principal product of the facility would be ammonia and the facility would have a nominal daily production capacity of 3,031 tons.
2. The facility would be located in Douglas County, which is attainment or unclassifiable for all criteria pollutants.
3.
 - a. The proposed facility would be a major source under the rules for Prevention of Significant Deterioration (PSD), 35 IAC Part 204. This is because the facility's potential emissions of nitrogen oxides (NOx) and carbon monoxide (CO) would exceed 100 tons per year, which is the applicable threshold for a major source under the PSD rules.
 - b. The facility would also be a major project under PSD for volatile organic material (VOM), particulate matter₁₀ (PM₁₀), particulate matter_{2.5} (PM_{2.5}) and greenhouse gases (GHG) because the facility's potential emissions of each of these pollutants exceed the applicable significant emission rates under the PSD rules. (Refer to Attachment 1 for a summary of the potential emissions of the facility.)
 - c. The facility would not be a major project under the PSD rules for other pollutants. This is because the potential emissions of these other pollutants would be below the applicable significant emission rates under the PSD rules.
4. The proposed facility would be a major source for emissions of hazardous air pollutants (HAPs), as the potential emissions from the facility would be 10 tons or more of an individual HAP and 25 tons or more in aggregate for total HAPs. A case-by-case determination of Maximum Achievable Control Technology (MACT) under Section 112(g) of the federal Clean Air Act would not be required for the proposed facility, as all units that would emit HAP at the facility would be subject to promulgated MACT standards.
5. After reviewing the materials submitted by Cronus, the Illinois EPA determined that the facility would be designed to: (i) comply with applicable state emission standards, (ii) comply with applicable federal emission standards, and (iii) utilize Best Available Control Technology (BACT) on emission units as required by PSD.

Note: For the pollutants that are subject to PSD, the determinations of BACT made by the Illinois EPA for the various emission units at the proposed facility are generally contained in the permit conditions for specific emission units that are headed by "Control Technology Determination - BACT."
6. The Illinois EPA has determined that the application for the proposed facility complies with the PSD rules, 35 IAC Part 204, and

the requirements of other applicable state and applicable federal air pollution regulations.

7.
 - a. The air quality analyses submitted by Cronus and reviewed by the Illinois EPA shows that the proposed project would not cause or contribute to violations of the National Ambient Air Quality Standards for NO₂, PM₁₀, PM_{2.5}, CO and ozone. The air quality analysis also shows compliance with the applicable allowable increment levels for NO₂, PM₁₀ and PM_{2.5} established under the PSD rules.
 - b. Other impact analyses were also submitted by Cronus, as required by the PSD rules, to address other potential impacts from the emissions of the proposed facility.
8. A copy of the application, the Project Summary prepared by the Illinois EPA for this application, and a draft of this construction permit were made available in a nearby public repository, and the public was given notice and an opportunity to examine this material and to submit comments on the draft permit.

PART 1: SOURCE-WIDE PERMIT CONDITIONS

Condition 1.1: Effect of Permit

- a. This permit does not relieve the Permittee of the responsibility to comply with all local, state and federal regulations that are part of the applicable Illinois' State Implementation Plan, as well as all other applicable federal, state and local requirements.
- b. In particular, this permit does not relieve the Permittee from the responsibility to carry out practices during the construction and operation of the facility, such as application of water or dust suppressant sprays to unpaved traffic areas, as necessary, to reduce fugitive dust and prevent an air pollution nuisance from fugitive dust, as addressed by 35 IAC 201.141.

Condition 1.2: Validity of Permit and Commencement of Construction

- a. This permit shall become invalid if construction is not commenced within 18 months after this permit becomes effective, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time, pursuant to 35 IAC 204.830. The Illinois EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This condition supersedes Standard Condition 1.
- b. For purposes of the above provisions, the definitions of "construction" and "commence" at 35 IAC 204.340 and 204.320 shall apply, which requires that a source must enter into a binding agreement for on-site construction or begin actual on-site construction. (See also the definition of "begin actual construction," 35 IAC 204.270.)

Condition 1.3: Natural Gas Used by the Facility

- a. The natural gas used as fuel in the emission units at the facility shall have a sulfur content of no more than 0.2 grains of total sulfur per 100 standard cubic feet.
- b. If the sulfur content of the natural gas delivered as fuel for the primary reformer, boilers and startup heater is greater than 0.2 grains of total sulfur per 100 standard cubic feet, the Permittee shall install in-line desulfurization equipment designed to reduce the sulfur content of the natural gas fired in the primary reformer, boilers and startup heater to a level no greater than 0.2 grains of total sulfur per 100 standard cubic feet.
- c. The Permittee shall keep copies of fuel receipts from the suppliers of natural gas to the facility or other documentation for the natural gas used in the emission units at the facility that confirms that it meets the required sulfur content and/or shall maintain records demonstrating that the natural gas used in the emission units at the facility has been desulfurized in order to meet this limit.

Condition 1.4-1: Storage Tanks

- a. The emissions of VOM from the storage tanks for diesel and CO₂ absorption solvent (i.e., amine solution MDEA), combined, shall not exceed 0.01 tons/year.
- b. The storage tanks for diesel fuel and CO₂ absorption solvent (i.e., amine solution MDEA) shall be equipped with submerged fill pipes.

Note: Conditions 1.4-1(a) and (b) constitute BACT for VOM emissions of these tanks, as required under the PSD rules.

- c. The Permittee shall maintain the following records for each storage tank:
 - i. Identification of material stored.
 - ii. Tank design specification demonstrating use of submerged fill pipes.
 - iii. Maximum true vapor pressure of material stored, with supporting documentation.
 - iv. VOM emissions (tons/year), with supporting documentation and calculations.

Condition 1.4-2: Process Water Deaerator

- a. The emissions of VOM from the process water deaerator, which is used to remove dissolved gases from the boiler feed water, shall not exceed 0.31 tons/year.

Note: Condition 1.4-2(a) constitutes BACT for VOM emissions of the process water deaerator, as required under the PSD rules.

- b. The Permittee shall maintain a record of the VOM emissions (tons/year) from the process water deaerator, with supporting documentation and calculations.

Condition 1.5: Good Air Pollution Control Practices

The Permittee shall operate and maintain all emission units at this facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice, as follows:

- a. At all times, including periods of startup, shutdown, malfunction or breakdown, operate as practicable to minimize emissions.
- b. Conduct routine inspections and perform appropriate maintenance and repairs to facilitate proper functioning of equipment and minimize or prevent malfunctions and breakdowns.
- c. Install, calibrate and maintain required monitoring devices and instrumentation in accordance with good monitoring practices, following the manufacturer's recommended operating and maintenance

procedures or such other procedures as otherwise necessary to assure reliable operation of such devices.

Condition 1.6: Compliance with Emission Standards and Emission Limits

- a. The emission limits set by this permit, including BACT limits and other permit limits for emissions, apply at all times unless otherwise specified in a particular provision.
- b.
 - i. Unless otherwise provided by applicable rules, emission standards for particulate matter (PM) under applicable regulations that are referenced in the conditions of this permit address only filterable particulate, as would be measured by USEPA Method 5 or 5I or other appropriate USEPA Test Methods.
 - ii. Emissions limits for PM₁₀ and PM_{2.5} set by this permit address both filterable and condensable particulate.
- c. Emission limits for GHG set by this permit address GHG as carbon dioxide equivalents (CO₂e).
- d. Emission limits set by this permit in pounds/million Btu (lbs/mmBtu) are in terms of the higher heating value of the fuel burned in an emission unit.
- e. When emission testing is conducted, compliance with hourly limits set by this permit shall be determined from the average of the test results, commonly three runs, each nominally one hour in duration.
- f. For annual limits set by this permit, unless otherwise specified in a particular provision of this permit, compliance shall be determined as follows:
 - i. Compliance with annual emission limits for emission units and pollutants for which continuous emissions monitoring is required by the permit shall be determined from emission data collected by such monitoring systems and representative emission data for periods when such systems do not provide acceptable data.
 - ii. Compliance with annual emission limits for emission units and pollutants for which continuous emission monitoring is not required shall be determined from emission data calculated as the product of activity or operating data and emission factors that do not understate emissions, as developed from representative source-specific testing or analysis, USEPA methodology or other authoritative source.
 - iii. Compliance with annual limits established by this permit shall be calculated monthly from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12 month total) and shall consider all emissions, including emissions during startup, shutdown, and malfunction and breakdown, provided however, that

for the first year (12 months) of operation compliance shall be calculated for a cumulative total of monthly data, i.e., from the sum of the data for the current month and data for all preceding months. In addition, until emissions data is available from certified continuous emissions monitoring systems or from performance or emission testing, in lieu of such data, appropriate emission factors provided by the manufacturer or other authoritative source may be used to determine emissions.

Condition 1.7: Records for Monitoring Systems and Instrumentation

- a. The Permittee shall keep records of the data measured by required monitoring systems and instrumentation. Unless otherwise provided in a particular condition of this permit, the following requirements shall apply to such recordkeeping:
 - i. For required monitoring systems, data shall be automatically recorded by a central data system, dedicated data logging system, chart recorder or other data recording device. If an electronic data logging system is used, the recorded data shall be the hourly average value of the particular parameter for each hour. During periods when the automatic recording device is out of service, data shall be recorded at least once per shift for periods when the associated emission unit(s) are in service.
 - ii. For required instrumentation, the measured data shall be recorded manually at least once per day, unless otherwise specified, with data and time both recorded, for periods when the associated emission unit(s) are in service, provided however that if data from an instrument is recorded automatically, the provisions in Condition 1.7(a)(i) for recording of data from monitoring systems shall apply and manual recording of data is not required.
- b. The Permittee shall keep records for the operation, calibration maintenance and repair of required monitoring systems and instrumentation. These operating records shall, at a minimum, identify the date and duration of any time when a required monitoring instrument or device was not in operation, with explanation; the performance of manual quality control and quality assurance procedures for the system; and maintenance and repair activities performed for the system.
- c. The Permittee shall maintain a file containing a copy of the specifications for each required monitoring device or instrument and the recommended operating and maintenance procedures for the device as provided by its manufacturer.

Condition 1.8: Records for Opacity Measurements

- a. The Permittee shall keep records for all opacity measurements made in accordance with USEPA Method 9 for emission units at the facility that it conducts or that are conducted on its behalf by individuals

who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to this permit or a request from the Illinois EPA, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the affected operations, the observed opacity, and copies of the raw data sheets for the measurements.

Condition 1.9: Retention and Availability of Records

- a. The Permittee shall retain all records and logs required by this permit for at least five years from the date of entry (unless a longer retention period is specified by a particular provision), keep the records at a location at the facility that is readily accessible to the Illinois EPA and USEPA, and make records available for inspection and copying by the Illinois EPA or USEPA upon request.
- b. The Permittee shall retrieve and print on paper during normal facility office hours any records retained in an electronic format (e.g., computer) in response to an Illinois EPA or USEPA request for records during the course of a facility inspection or provide an electronic copy of such information in a format that is acceptable to the agency making the request.

Condition 1.10: Addresses for the Illinois EPA

- a. Any required reports and notifications shall be sent to the Illinois EPA at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Bureau of Air
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Telephone: 217/782-5811

- b. One electronic copy of reports and notifications concerning emission testing or emissions monitoring shall be sent to EPA.BOA.SMU@Illinois.gov. For large files, the Permittee may request to use the Illinois EPA OneDrive Request File or another approved method. The facility's ID Number shall be included on all correspondence.

Condition 1.11: Authorization to Operate Emission Units

- a. Under this permit, the facility may be operated for a period that ends 180 days after initial startup of the ammonia plant, i.e., when natural gas is first reformed into hydrogen by the reformer furnace, to allow for commissioning, shakedown and required initial emission testing. This period may be extended by Illinois EPA for up to 365 days upon request of the Permittee if additional time is needed to complete commissioning, shakedown and required initial emission testing.

Note: For purposes of this permit, "commissioning" refers to the period of time prior to the operations of the facility being formally transferred from the firm that has designed and/or constructed the ammonia plant to Cronus, and "shakedown" refers to the period of time prior to demonstrating that the ammonia manufacturing process meets the facility design specifications established for the production of ammonia. The period of time during which commissioning and shakedown occur is referred to as the "commissioning and shakedown period."

- b. Upon successful completion of required initial emission testing, the Permittee may continue to operate emission units at the facility provided that the Permittee submits a complete and timely application for Clean Air Act Permit Program (CAAPP) permit for the facility, as provided for by Section 39.5(5) of the Environmental Protection Act.
- c. Conditions 1.11(a) and (b) supersede Standard Condition 6.

Condition 1.12: Standard Conditions

Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply to this project, unless superseded by other conditions in the permit.

PART 2: UNIT-SPECIFIC CONDITIONS FOR PARTICULAR EMISSION UNITS

Section 2.1: Unit-Specific Conditions for the Ammonia Plant

2.1.1 Description

The ammonia plant produces ammonia (NH₃) by the chemical combination of nitrogen from the atmosphere and hydrogen from natural gas and steam. The nitrogen comes from the atmosphere. The hydrogen is made in the ammonia plant from natural gas. The processing steps of the ammonia plant are natural gas pretreatment, reforming, shift conversion, CO₂ removal, regeneration, methanation, purification, ammonia synthesis and ammonia loadout.

The natural gas that is used as the feedstock for the process requires pretreatment prior to being used in the ammonia production process. During pretreatment, in order to prevent degradation of the catalysts used in the process, trace amounts of hydrogen sulfide (H₂S) and organic sulfur compounds are removed from the gas. Organic sulfur compounds are removed through hydrogenation of organic sulfur compounds to H₂S followed by adsorption of the H₂S.

Steam reforming produces the hydrogen used to produce ammonia. In steam reforming, a hydrogen-rich stream of synthesis gas is made from natural gas and steam in a reformer furnace. The amount of hydrogen in this stream is increased in a secondary reformer where air is added to the stream. This is followed by shift-conversion to further increase the hydrogen content of the stream.

In the shift conversion step, carbon monoxide in the process gas reacts with steam to form hydrogen and CO₂. There are two shift reaction stages in this unit, a High Temperature Shift (HTS) Converter, and a Low Temperature Shift (LTS) Converter. Temperature between the HTS and LTS converters is moderated by generating high pressure steam using a series of heat exchangers. Side reactions in the shift reactors create trace quantities of by-products including methanol, the majority of which are removed by means of a methanol absorber upstream of the CO₂ absorber. The scrubbed shift effluent gas then enters the CO₂ Absorber. The shift converters are enclosed processes.

In the CO₂ Absorber, the majority of the CO₂ in the stream of synthesis gas is then removed using an amine absorbent solution. This absorbent solution is then processed in a regenerator system that drives the CO₂ out of the solution to purify the hydrogen stream. The CO₂ that is removed is emitted through the CO₂ vent. This process also removes organic compounds, including methanol, from the gas stream, most of which is sent back to the reformer furnace for use as fuel.

The remaining CO and CO₂ in the stream of synthesis gas are then reacted with some of the hydrogen in this stream to convert the CO and CO₂ into methane and water in a process referred to as methanation. These are removed from the stream while the methane off-gas, which forms during the methanation process, is sent to the reformer furnace to be used as fuel. The stream of synthesis gas, which is now essentially only

hydrogen and nitrogen, is then converted into ammonia in a catalytic converter in a process referred to as ammonia synthesis.

During startup, shutdown and upsets or "malfunctions" of the ammonia plant, process gases from various units in the plant, including the reforming operations, would be flared, where these gases are combusted. The "Front End Flare" handles releases from the reforming operations and shift conversion process. The "Ammonia Flare" handles releases from the later process steps, including regeneration, methanation, purification and ammonia synthesis. The flares are operated in accordance with a flare minimization plan. The flares have emissions from combustion of both process gases and from the fuel needed for operation of the pilot flame for the flares.

For purposes of these unit-specific conditions in Section 2.1, the "affected process gas vents" are the vents that release process gases from the ammonia plant during startup, shutdown and malfunction that are to be ducted to the Front End Flare and Ammonia Flare, i.e., "the affected flares". The "affected CO₂ vent" is the CO₂ vent at the ammonia plant. The "affected units" are the units, processes and any associated control systems that comprise the ammonia plant, which include natural gas pretreatment, natural gas reforming, shift conversion, CO₂ removal, regeneration, methanation, purification, ammonia synthesis, the affected flares and ammonia loadout, as described in this condition. The reformer furnace, as it is a process heater with emissions from combustion of fuel, is addressed in Section 2.2 of this permit. Piping and piping components associated with the ammonia plant are addressed in Section 2.7.

2.1.2-1 Control Technology Determination - BACT:
Affected CO₂ Vent and Ammonia Plant

- a. The ammonia plant, which vents its process emissions through the CO₂ Vent during normal operation, shall be operated and maintained in conformance with good operating practices and shall utilize the following as part of its process and equipment design:
 - i. Energy efficient design that, at a minimum, includes the following elements:
 - A. Use of heat recovery processes for the Reformer Furnace, including heat exchange systems, a combustion air preheater and waste heat recovery boilers; and
 - B. Use of heat recovery steam turbines with a combined total design capacity of at least 8,000 kWh.
 - ii. Use of amine solution as the CO₂ liquid catalyst/activator in the CO₂ removal unit.
 - iii. Use of a low-methanol catalyst for the low temperature CO shift converter; and

- iv. Use of a CO shift converter equipped with a dedicated methanol absorber.
- b.
 - i. The emissions of CO and VOM from the affected CO₂ vent shall not exceed 0.0089 and 0.052 pounds/ton of ammonia produced, respectively, based on a 3-hour rolling average.
 - ii. Notwithstanding the above, until the commissioning and shakedown period of the ammonia plant is complete or 12 months after the initial startup of the ammonia plant, whichever is first, the emissions of CO and VOM shall not exceed 27 pounds/day and 156 pounds/day, respectively.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

2.1.2-2 Control Technology Determination - BACT:
Affected Flares and Ammonia Plant

- a.
 - i. The ammonia plant shall be designed and operated to comply with the following requirements to reduce emissions from the affected process gas vents, i.e., vents other than the affected CO₂ vent and the vents for off-gas streams that are ducted to the reformer furnace:
 - A. Process gas streams shall not be discharged from process gas vents except during startup or shutdown or during malfunction due to either failure of equipment or planning that precludes the safe handling of the stream within the ammonia plant.
 - B. All discharges from affected process gas vents shall be ducted to a flare or other combustion device through a closed vent system, except when a failure of equipment or planning preclude the safe disposal of a gas stream in this manner.
 - C. During periods when the ammonia plant is not operating, the requirements in Conditions 2.1.2-2(a)(i)(A) and 2.1.2-2(a)(i)(B) do not apply to venting of air or nitrogen introduced into equipment in the plant, as may be needed to prepare for maintenance or startup.
 - ii. The operating practices for the ammonia plant shall include:
 - A. Operation in accordance with good operating practices.
 - B. Operation in accordance with written operating procedures that include startup, shutdown and malfunction plan(s), pursuant to Condition 2.1.4-2.

- C. Implementation of practices to minimize flaring, including a Flare Minimization Plan and Root Cause Analysis requirements pursuant to Conditions 2.1.4-3(a), (b), (d) and (d)(i).
 - b. The affected flares shall be designed, operated and maintained to comply with the following requirements:
 - i. The work practice requirements of 40 CFR 63.11(b).
 - ii. The only fuel used in the pilot burners of the flares shall be natural gas. These burners shall be equipped with automatic igniter devices for the pilot flame.
 - iii. The only purge gas used in the flare system shall be nitrogen.
 - iv. The flares shall be steam-assisted flares.
 - c.
 - i. Emissions of the pilot burners in the affected flares shall not exceed the following limits:
 - A. 0.10 lb/mmBtu for NO_x;
 - B. 0.08 lb/mmBtu for CO;
 - C. 0.0054 lb/mmBtu for VOM; and
 - D. 0.0075 lb/mmBtu for PM₁₀/PM_{2.5}.
 - ii. Emissions of the affected flares during flaring events (i.e., startups, shutdowns and/or malfunctions of the ammonia plant) shall not exceed the following:
 - A. 0.068 lb/mmBtu for NO_x;
 - B. 0.31 lb/mmBtu for CO;
 - C. 0.010 and 0.005 lb/mmBtu for VOM from the Front End Flare and the Ammonia Flare, respectively; and
 - D. 0.002 lb/mmBtu for PM₁₀/PM_{2.5}.
 - d. The emissions of NO_x, CO, VOM, PM₁₀/PM_{2.5} and GHG from the affected flares shall not exceed the limits in Condition 2.1.5(a)(i) and (a)(ii)(B) that apply to the flares.
- 2.1.2-3 Control Technology Determination - BACT:
Limits for GHG from the CO₂ Vent in the Ammonia Plant, the Reformer Furnace and the Boilers
- a. The GHG emissions, as carbon dioxide equivalents (CO₂e), of the combination of the affected CO₂ vent in the ammonia plant, the reformer furnace and the boilers, on an annual average basis, rolled monthly, shall not exceed 1.84 tons/ton ammonia produced.

- b. Notwithstanding the above, until the commissioning and shakedown period of the ammonia plant is complete or 12 months after the initial startup of the ammonia plant, whichever is first, the GHG emissions, as carbon dioxide equivalents (CO₂e), shall not exceed the following:
- i. For the affected CO₂ vent in the ammonia plant, 3,894 tons/day;
 - ii. For the reformer furnace, 1,695 tons/day;
 - iii. For the boilers, 277 tons/day, each; and
 - iv. For the combination of the affected CO₂ Vent in the ammonia plant, the Reformer Furnace, and the Boilers, 6,143 tons/day.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

- c. For the purpose of determining compliance with the limit in 2.1.2-3(a) and other limits for GHG emissions set by this permit for the CO₂ vent, the reformer and the boilers, the Permittee shall determine GHG emissions as follows:
- i. For the reformer furnace and boilers, emissions shall be determined in accordance with 40 CFR Part 98 Subpart C, except that emissions of CH₄ and N₂O shall be determined using emission factors developed from testing of these units, if such testing indicates that emissions are higher than the default factors in 40 CFR Part 98 Subpart C.
 - ii. For the CO₂ vent, CO₂ emissions shall be determined in accordance with 40 CFR Part 98 Subpart PP and emissions of methane shall be determined using data from sampling and analysis of the stream(s) that are emitted from these vents.

2.1.3-1 Applicable Federal Emission Standards

The Permittee shall comply with all applicable requirements of 40 CFR 63 Subpart FFFF and 40 CFR 63 Subpart A for the affected units, which include the following:

- a. The emissions from miscellaneous organic chemical manufacturing process units (MCPU) at the facility will be regulated as Group 2 continuous process vent streams with a recovery device because the total resource effectiveness (TRE) index value for the vent stream is greater than 8.0 (the determined TRE is 8.2). During normal operation, there is a single process vent stream from the ammonia production process that exhausts through the CO₂ Vent. Group 2 continuous vent streams with a recovery device are subject to requirements for "final recovery devices" from 40 CFR 63 Subpart SS because the recovery device is used to maintain a

TRE above an applicability threshold in Subpart FFFF (Group 2 v Group 1 classification).

- i. Pursuant to 40 CFR 63.2455(a), the Permittee must:
 - A. Determine the TRE as specified in 40 CFR 63.115(d), except as specified in 40 CFR 63.2455(b) (1) through (3).
 - B. Meet the requirements of 40 CFR 63.982(e) and the requirements referenced therein, except as specified in 40 CFR 63.2450 and 40 CFR 63.2455(c) (1).
 - 1. Pursuant to 40 CFR 63.982(e), owners or operators who use a final recovery device to maintain a TRE above 8.0 shall meet the requirements in 40 CFR 63.993 and the monitoring, recordkeeping, and reporting requirements referenced therein that are applicable to the recovery device being used; the applicable monitoring requirements in 40 CFR 63.996 and the recordkeeping and reporting requirements referenced therein; and the applicable recordkeeping and reporting requirements of 40 CFR 63.998 and 63.999.
- b. The affected flares, which are used during startup, shutdown and malfunction (SSM) events, must meet the compliance assessment requirements of 40 CFR 63.2450(f) and the requirements specified in 40 CFR 63.11(b).

2.1.3-2 Applicable State Emission Standards

- a. The emission of smoke or other PM from the affected units shall not have an opacity greater than 30 percent, 6-minute average, except as allowed by 35 IAC 212.124. [35 IAC 212.109 and 212.123(a)]
- b. The affected units are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emissions of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).
- c. The affected units are subject to 35 IAC 215 Subpart K, which provides that no person shall cause or allow the discharge of more than 3.6 kg/hr (8 lbs/hr) of organic material into the atmosphere from any emission source, except that emissions in excess of 8 lbs/hr of organic material are allowable if such emissions are controlled by flame, thermal or catalytic incineration so as either to reduce such emissions to 10 ppm equivalent methane or less, or to convert 85 percent of the

hydrocarbons to carbon dioxide and water, as provided by 35 IAC 215.302 (a) .

2.1.4-1 Operational Requirements

- a. The total annual production of ammonia by the ammonia plant shall not exceed 1,106,000 tons/year.
- b. The rated heat input capacity of the pilot burners for the affected flares shall not exceed 2.22 mmBtu/hr, each.
- c.
 - i. The maximum heat content of process gases sent to the Front End Flare and to the Ammonia Flare shall not exceed 273,000 mmBtu/yr and 225,000 mmBtu/yr, respectively.
 - ii. Notwithstanding Condition 2.1.4-1(c) (i), until the commissioning and shakedown period of the ammonia plant is complete or 12 months after initial startup of the ammonia plant, whichever occurs first, the limits for the affected flares for the maximum heat content of process gases flared shall apply on a bi-monthly basis (tons/2-month period) rather than on an annual basis.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

2.1.4-2 Startup, Shutdown and Malfunction (SSM) Plan

- a.
 - i. The Permittee shall develop, implement, and maintain a written Startup, Shutdown, and Malfunction Plan (SSM Plan) that describes, in detail, procedures for operating and maintaining the various emission units in the ammonia plant during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning equipment used to comply with the relevant emission standards and emission control requirements. This SSM Plan shall be developed to satisfy the purposes set forth in 40 CFR 63.6(e) (3) (i) (A), (B) and (C). In this regard, with respect to startups, this SSM Plan shall address readily foreseeable startup scenarios. With respect to malfunction, this SSM Plan shall identify and address likely malfunction events with specific programs of corrective actions, and provide that upon occurrence of a malfunction that will result in a deviation, that the Permittee shall, as soon as practicable, repair the affected equipment or reduce the operating rate of the plant so that the deviation ceases.
 - ii. For the purpose of this condition, the definitions of the terms "startup," "shutdown" and "malfunction" under the National Emission Standards for Hazardous Air Pollutants (NESHAP), at 40 CFR 63.2, shall apply and be used. In addition, as related to the scope of the SSM Plan with respect to malfunctions, the plan shall also address and apply to failures of equipment that could reasonably be

preventable and that may be attributable to poor maintenance or careless operation, and shall not be restricted to malfunctions as defined by 40 CFR 63.2. Similarly, requirements for recordkeeping, notification and reporting related to malfunctions shall be applicable for failures of equipment irrespective of the cause of such failure.

Note: Although the ammonia plant only contains Group 2 emission points, this permit refers to provisions of the federal NESHAP to establish appropriate work practices for the startup, shutdown and malfunction of the ammonia plant.

- b. The Permittee shall at all times, including periods of startup, shutdown, and malfunction as defined at 40 CFR 63.2, operate and maintain the ammonia plant, in a manner consistent with safety and good air pollution control practice for minimizing emissions to the levels required by the applicable standards and limits or comply with the applicable SSM Plan, as provided below. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Illinois EPA and USEPA, which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including the SSM Plan), review of operation and maintenance records, and inspection of units. [Reflects 40 CFR 63.6(e) (1) (i)]
 - i. During periods of startup, shutdown, and malfunction of unit(s) in the ammonia plant, the Permittee shall operate and maintain such unit(s), in accordance with the procedures specified in the SSM Plan. The Permittee shall correct malfunctions as soon as practicable after their occurrence in accordance with the SSM Plan. To the extent that an unexpected event arises during a startup, shutdown, or malfunction, the Permittee shall comply by minimizing emissions during such event consistent with safety and good air pollution control practice. [Reflects 40 CFR 63.6(e) (1) (ii)]
 - ii. When actions taken by the Permittee during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) are consistent with the procedures specified in the applicable SSM Plan, the Permittee shall keep records for that event which demonstrate that the procedures specified in the SSM Plan were followed. In addition, the Permittee shall keep records of these events as specified in 40 CFR 63.10(b), including records of the occurrence and duration of each startup, shutdown, or malfunction of operation. Furthermore, the Permittee shall confirm in the periodic compliance report (refer to Condition 2.1.9(b)) that actions taken during periods of startup, shutdown, and malfunction were consistent with the SSM Plan. [Reflects 40 CFR 63.6(e) (3) (iii)]

- iii. If an action taken by the Permittee during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) of unit(s) is not consistent with the procedures specified in the applicable SSM Plan, and the unit(s) exceeds a relevant emission standard or limit, then the Permittee must record the actions taken for that event and must promptly report such actions as specified elsewhere in this permit or when superseded in the Clean Air Act Permit Program (CAAPP) Permit for the plant. [Reflects 40 CFR 63.6(e) (3) (iv)]
 - c.
 - i. The Permittee shall develop its initial SSM Plan prior to the initial startup of the ammonia plant. The Permittee shall make changes to the SSM Plan if required by the Illinois EPA or as necessary to satisfy the requirements of this permit or address other changes to procedures for the ammonia plant. [Reflects 40 CFR 63.6(e) (3) (vii) and (viii)]
 - ii. This SSM Plan is a record required by this permit, which the Permittee must retain in accordance with the general requirements for retention and availability of records. In addition, when the Permittee revises the SSM Plan, the Permittee must also retain and make available the previous (i.e., superseded) versions of the SSM Plan for a period of at least 5 years after such revision. [Reflects 40 CFR 63.6(e) (3) (v) and 63.10(b) (1)]

2.1.4-3 Work Practices to Minimize Flaring

- a. The work practices to minimize flaring conducted by the Permittee for the ammonia plant pursuant to Condition 2.1.2-2(a) (ii) (C) shall include the preparation and maintenance of a Flare Minimization Plan (Plan) for the ammonia plant that includes the following:
 - i. Technical information for the ammonia plant, including a general description of the ammonia plant, including process flow diagram(s) depicting all process units, detailed process flow diagram(s) for the affected flares, including process gas lines, knockout pots, surge drums, seal drums, and other significant components of the flares.
 - ii. A general description of the Permittee's written procedures for the operation of the ammonia plant.
 - iii. A detailed description of the Permittee's procedures for flaring due to the occurrence of malfunctions, as caused by process upsets, equipment failures or other reasons, including the provisions in these procedures that act to minimize flaring.
 - iv. A detailed description of the Permittee's procedures to minimize flaring in conjunction with the startup and shutdown of equipment.

- v. A general description of the Permittee's procedures for preventative maintenance of equipment in the ammonia plant, including the provisions in these procedures that should act to minimize flaring.
 - vi. A description of the established responsibilities of different personnel at the ammonia plant for the operation and maintenance of the plant.
 - vii. A detailed description of the Permittee's procedures for periodic evaluation of flaring activity generally and specific evaluation of flaring incidents, including identification of the causes of flaring, assessment of measures to eliminate or reduce such flaring, and implementation of feasible measures to reduce flaring.
 - viii. An evaluation of preventative measures to reduce the occurrence and magnitude of flaring for the ammonia plant, including a schedule for the expeditious implementation of all feasible prevention measures to address the following, including consideration of past flaring activity as information for actual operation of the plant becomes available:
 - A. Flaring that could reasonably be expected to occur or has occurred during startup or shutdown.
 - B. Flaring that could reasonably be expected to occur or has occurred due to issues of ammonia quality.
 - C. Flaring caused by the recurrent failure of equipment or a process to operate in a normal or usual manner. The evaluation shall consider the adequacy of existing maintenance schedules and protocols for such equipment.
- b. After the commissioning and shakedown period of the ammonia plant is complete, the Plan shall also include a description of additional procedures or other measures that are installed or implemented to reduce flaring from the ammonia plant, which addresses the following:
- i. Measures taken within the last five years to reduce flaring which shall specify the year of installation or implementation of each measure.
 - ii. Measures that are planned, which shall specify the year in which operation or implementation of each planned measure is scheduled.
- c. i. The Permittee shall submit a copy of the initial Plan to the Illinois EPA for review and comment at least 90 days prior to initial startup of the ammonia plant.

- ii. The Permittee shall review the Plan on at least an annual basis and revise the Plan so that it is kept current and reflects any changes in the operation of the ammonia plant.
 - iii. The Permittee shall make changes to the Plan if required by the Illinois EPA or USEPA to address an apparent deficiency identified in the Plan or as otherwise needed to address apparent or possible deficiencies in the Plan identified by the Permittee.
 - iv. This Plan is a record required by this permit, which the Permittee must retain and make available in accordance with the general requirements for retention and availability of records. In addition, when the Permittee revises the Plan, the Permittee must also retain and make available the previous versions of the Plan for a period of at least 5 years after such revision.
- d. After the commissioning and shakedown period of the ammonia plant is complete, the Permittee shall also conduct an event-specific investigation or "Root-Cause Analysis" into each "Flaring Incident" (incident) at the ammonia plant to determine the causes of the incident, to take reasonable steps to correct the conditions that caused or contributed to such incident, and to further minimize emissions from flaring, as follows. For this purpose, a "Flaring Incident" is defined as any flaring event (i.e., the flaring of process gas from the ammonia plant) that is not the result of a scheduled plant startup or shutdown.
- i. A Root Cause Analysis for a Flaring Incident shall consist of a systematic investigation of the incident by identifying and assessing corrective measures that are available to prevent or reduce the likelihood of recurrence of a similar incident (including design, operation and maintenance changes), and developing a program of interim and long-term corrective actions, if any, as are consistent with good engineering practice, to minimize the likelihood of a recurrence of the root cause and all contributing causes to the incident, with a schedule for implementation of such measures if not already completed.
 - ii. The Permittee shall submit a report to the Illinois EPA for each Root Cause Analysis, which report shall include the following information:
 - A. Date, time and duration of the incident, and a description of the incident. To the extent that the incident involved multiple releases within a 24-hour period or within subsequent, contiguous non-overlapping periods, the report shall set forth the date, start time and duration of each release.
 - B. The amount of process gas flared during the incident and the estimated actual emissions of NO_x, CO, VOM,

PM, PM₁₀/PM_{2.5}, methane and CO₂ from the incident, with supporting data and calculations.

- C. A detailed analysis that sets forth the root cause and all contributing causes to the incident, to the extent determinable.
- D. An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of an incident resulting from the same root cause or contributing causes in the future, which analysis discusses and evaluates the alternatives, if any, that are available, including possible operation and maintenance changes, the probable effectiveness of various alternatives, and the cost of the various alternatives.
- E. If the analysis concludes that corrective actions are required, a description of those actions and, if not already completed, a schedule for their implementation, with planned commencement and completion dates of various actions.
- F. If the analysis concludes that corrective action is not needed, an explanation of the basis for that conclusion.

iii. A report for each such incident and investigation shall be submitted to the Illinois EPA within 45 days of the date of the incident. If the investigation is still underway on this date, the report shall include information for the investigation to that point and a statement of the anticipated date by which a complete follow-up report will be submitted, with explanation why it is not yet practical to submit a complete report for the incident. Thereafter, the Permittee shall submit follow-up report(s) for the incident at least every 45 days until a complete final report is submitted for the incident.

e. Planning and other activities conducted by the Permittee pursuant to this Condition 2.1.4-3 may be combined with planning and activities conducted by the Permittee as part of the preparation and implementation of SSM Plan pursuant to Condition 2.1.4-2 provided that the requirements of this condition are also met.

2.1.5 Emission Limits

a. i. The emissions from the ammonia plant shall not exceed the following limits:

Pollutant	Limit (tons/year)			
	CO ₂ Vent	Front End Flare*	Ammonia Flare*	Total
NO _x	---	10.57	8.97	19.5
CO	1.70	43.28	35.87	80.9

VOM	28.4	1.48	0.69	30.6
PM ₁₀ /PM _{2.5}	---	0.43	0.36	0.79
GHG, as CO ₂ e	1,292,232	18,603	16,093	1,326,928

* These limits are for the overall emissions from these flares, which includes both pilot burner emissions and emissions from flaring of process gas.

- ii. Notwithstanding Condition 2.1.5(a)(i), until the commissioning and shakedown period of the ammonia plant is complete or 12 months after initial startup of the ammonia plant, whichever occurs first:
 - A. The GHG emissions of the ammonia plant, including both the affected CO₂ vent and the affected flares shall not exceed the limit for total GHG emissions of the ammonia plant and the separate limits for GHG emissions of the affected CO₂ vent and the affected flares shall not apply; and
 - B. The limits for the affected flares for NO_x, CO, VOM, PM₁₀/PM_{2.5} and GHG emissions shall apply on a bi-monthly basis (tons/2-month period) rather than on an annual basis.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

- b. i. The emissions from the ammonia plant shall not exceed the following limits:

Pollutant	Limit (tons/year)		
	Front End Flare*	Ammonia Flare*	Total
PM	0.36	0.30	0.66
SO ₂	0.09	0.07	0.16

* These limits are for the overall emissions from these flares, which includes both pilot burner emissions and emissions from flaring of process gas.

- ii. Notwithstanding Condition 2.1.5(b)(i), until the commissioning and shakedown period of the ammonia plant is complete or 12 months after initial startup of the ammonia plant, whichever occurs first, the limits for the affected flares for PM and SO₂ emissions shall apply on a bi-monthly basis (tons/2-month period) rather than on an annual basis.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

2.1.6-1 Operational Testing for the Affected Flares

- a. Within 30 days of initial startup of the ammonia plant, the Permittee shall:

- i. Conduct observations for visible emissions from the flares in accordance with 40 CFR 63.11(b)(4).
 - ii. Perform sampling and analysis of the heat content of the process gas streams that are sent to each flare in accordance with 40 CFR 63.11(b)(6)(ii) to verify compliance with 40 CFR 63.11(b)(6).
- b. Test notifications and test reports shall be submitted to the Illinois EPA in accordance with the Condition 3.1(b) and (c).

2.1.7-1 Monitoring and Instrumentation for the Ammonia Plant

- a. i. The Permittee shall install, operate and maintain a continuous monitoring system to measure the gas flow through the affected CO₂ vent (scf/minute). The Permittee shall conduct annual performance evaluations of the gas flow monitor according to the requirements in 40 CFR 60.13 and Performance Specification 6 of Appendix B to Part 60. USEPA Reference Method 2, 2A, 2B, 2C or 2D shall be used for conducting the relative accuracy evaluations.
 - ii. The Permittee shall install, calibrate, maintain, and operate continuous monitoring systems to measure the gas flow through the affected flares (scf/minute). These monitoring systems shall be operated as specified by the relevant provisions of the NSPS, 40 CFR 60.107a(f).
- b. The Permittee shall install, operate and maintain continuous monitoring systems for the ammonia plant to measure total production of the ammonia plant (tons/hour).
- c. The Permittee shall operate instrumentation for key operating parameters of the ammonia plant, including:
- i. Temperatures in the ammonia conversion reactor and the methanation reactor.
 - ii. Flow of off-gas to the reformer furnace for use as fuel.
- d. For the affected CO₂ Vent, the Permittee shall install, certify, operate and maintain a CEMS for CO₂ emissions. This CEMS shall be operated in accordance with applicable requirements of 40 CFR 75, including 40 CFR 75.10(a)(3).

2.1.7-2 Operational Monitoring for the Affected Flares

- a. The Permittee shall install, operate and maintain continuous monitoring systems on each affected flare for the total flow of process gas to the flare (scfm). These monitoring systems shall be operated as specified by the relevant provisions of the NSPS, 40 CFR 60.107a(f).

- b. The Permittee shall continuously monitor each affected flare for the presence of a flare pilot flame using a thermocouple or any other equivalent device to detect the presence of a flame, which monitoring shall be conducted as specified by 40 CFR 63.11(b)(5).
- c. The Permittee shall install, operate and maintain instrumentation on each affected flare for the usage of pilot gas, in scfm. If this instrumentation is equipped with an automatic data recorder, measured data shall be recorded on a daily average basis, as well on an hourly average basis.
- d. The Permittee shall monitor the liquid level and pressure of the knockout or seal drum that serves each affected flare.
- e. The Permittee shall develop and maintain written monitoring procedures for each affected flare addressing the required operational monitoring systems for each flare and associated equipment, which shall include the following information. A copy of these procedures shall be submitted to the Illinois EPA for review prior to the initial startup of the ammonia plant.
 - i. A process flow diagram of the affected flare and associated equipment as related to flaring, identifying major components, such as the header, stack, burner(s), purge gas system, pilot gas system, ignition system, assist system, and liquid seal for the flare and the process gas lines.
 - ii. Drawing(s), with dimensions, showing the sampling location(s) at which sampling or monitoring is conducted, accompanied by an explanation of the methods used to select these sampling locations for sampling of flare process gas, flow of flare process gas and pilot gas; on/off flow indicators; operating parameters of the liquid seal; and operating parameters of the ammonia plant that could provide credible information on the occurrence or nature of flaring.
 - iii. The type, make, and model of each monitoring device or instrument used for required monitoring, with a description of manufacturer's specifications for the device, including but not limited to range, precision, accuracy, calibration, and recommended procedures for quality control, quality assurance and maintenance.
 - iv. A description of the data collection and recording device(s) used to store data collected by required monitoring systems.
 - v. A description of the periods when visual observation(s) would be conducted to verify flame stability, as provided for by 40 CFR 63.11(b), and the Permittee's protocols and procedures for these observations.

- vi. A description of the low flow operating conditions for the flare during which flow rates of process gas would be determined by engineering analysis, rather than by monitoring, if any, including an explanation why monitors would not provide reliable data during such conditions and the types of engineering analysis that would be used in place of monitoring.

2.1.7-3 Sampling and Analysis of Process Gas Streams in the Ammonia Plant

- a. The Permittee shall take representative samples of the following:
 - i. The gas stream that is emitted through the affected CO₂ vent. The Permittee shall have these samples analyzed using applicable ASTM methods to determine the concentrations of CO, VOM, and methane in this gas stream. During this sampling, the Permittee shall record the ammonia production rate and the gas flow through the affected CO₂ vent (scf/minute); and
 - ii. The gas streams in the ammonia plant that are or could be vented to the affected flares during SSM events. The Permittee shall have these samples analyzed using applicable ASTM methods to determine the concentrations of CO, VOM, methane, and CO₂ in these gas streams. These gas streams shall also be analyzed for heating value, in accordance with 40 CFR 63.11(b) (6) (ii).
- b. The Permittee shall conduct this activity:
 - i. Within 15 days after achieving the maximum production rate at which the ammonia plant will be operated but not later than 30 days after initial startup of the ammonia plant.
 - ii. Thereafter, until a CAAPP Permit is issued that addresses periodic sampling and analysis of the process gas streams, the Permittee shall perform this sampling as follows:
 - A. For the gas stream that is emitted through the affected CO₂ vent, on at least a monthly basis.
 - B. For the gas streams in the ammonia plant that are or could be vented to the flares, on at least a monthly basis during the first year (12 months) of operation of the ammonia plant and on a quarterly basis thereafter.
 - iii. Within 90 days of a written request from the Illinois EPA, for process streams as specified in the request.
- c. The Permittee shall maintain records for this sampling and analysis activity.

2.1.8-1 Recordkeeping Requirements for the Affected CO₂ Vent

- a. The Permittee shall keep records related to the GHG emissions of the affected CO₂ vent as would be required by 40 CFR 98 Subpart PP, including records for emissions in tons/day, tons/month and tons/year.

2.1.8-2 Recordkeeping Requirements for the Affected Flares

- a. The Permittee shall maintain a file or other record for each affected flare containing the design emission rates of the pilot burners for NO_x and CO, with supporting documentation.
- b. The Permittee shall maintain a file or other record identifying the purge gas used for the affected flares.
- c. The Permittee shall keep the following operating records for each event when process gas was flared:
 - i. Date, time and duration of flaring.
 - ii. Description of the event, including the flare(s) involved in the event and a discussion of the cause(s) and probable cause(s) of the event.
 - iii. Confirmation that established operating procedures were followed.
 - iv. Confirmation that the flare(s) functioned properly, i.e., a flame was present and any visible emissions that occurred were as specified in 40 CFR 63.11(b).
 - v. The amount (mmBtu) and nature of the process gas sent to the flare(s).
 - vi. The amount of CO and VOM contained in the gas sent to the flare(s) and the amount of CO and VOM emitted, pounds/event, with supporting calculations.
 - vii. Actions taken during the event to minimize emissions.
 - viii. A description of any actions taken to prevent or reduce the likelihood of similar future occurrences.
- d. The Permittee shall keep the following records related to emissions of NO_x, CO, VOM, PM, PM₁₀/PM_{2.5}, SO₂ and GHG from each affected flare:
 - i. A file containing the emission factors that the Permittee uses to calculate emissions of each pollutant, with supporting documentation.
 - ii. Total daily, monthly and annual emissions of each pollutant from the flare, based on operating data and

applicable emission factors, with supporting calculations.

- e. The Permittee shall keep records for any deviations from applicable requirements involving the affected flares, which records shall include the information specified by Condition 3.3. These records may be combined with other records required for the ammonia plant by this permit.
- f. The Permittee shall maintain inspection, maintenance and repair log(s) or other similar records for the affected flares that, at a minimum, include the information specified in Condition 3.2(b) and identify any occasion when the Permittee was unable to carry out its established maintenance procedures, with explanation.

2.1.8-3 Recordkeeping Requirements for the Ammonia Manufacturing Process

- a. The Permittee shall maintain an operating log or other similar records for the ammonia plant that includes the information specified in Condition 3.2(a) and the following detailed information:
 - i. For each startup, the nature of the startup, the timing of major steps in the startup, any unusual occurrences during the startup, and any deviations from the established startup procedures, with explanation.
 - ii. For each shutdown, the nature and reason for the shutdown, the timing of major steps in the shutdown, any unusual occurrences during the shutdown, and any deviations from the established shutdown procedures, with explanation.
- b. The Permittee shall maintain the following records for the ammonia plant:
 - i. Beginning upon completion of the commissioning and shakedown period or 12 months after the initial startup of the ammonia plant, whichever occurs first, the emissions of CO and VOM emissions from the CO₂ vent (pounds/ton of ammonia produced, based on a 3-hour rolling average), with supporting calculations and documentation.
 - ii. Total production of ammonia (tons/month and tons/year).
 - iii. Emissions of CO, VOM and GHG (tons/month and tons/year) from the CO₂ vent calculated on a monthly basis, with supporting calculations.
- c. Beginning upon completion of the commissioning and shakedown period or 12 months after the initial startup of the ammonia plant, whichever occurs first, the Permittee shall keep the following records to show compliance with the limit in Condition 2.1.2-3(a) for the ammonia manufacturing process

(i.e., the combination of the affected CO₂ vent, the reformer furnace (Section 2.2) and the boilers (Section 2.3)) for GHG emissions, for each 12 consecutive months of operation in which ammonia is produced:

- i. Total GHG emissions (tons).
- ii. Emission rate (tons per ton of ammonia produced, annual average rolled monthly), with supporting documentation and calculations.

2.1.8-4 Recordkeeping Requirements for the Commissioning and Shakedown Period of the Ammonia Manufacturing Process

- a. The Permittee shall maintain the following records related to the commissioning and shakedown period of the ammonia plant:
 - i. Date that commissioning began;
 - ii. Date that shakedown began;
 - iii. Date that commissioning ended;
 - iv. Date that shakedown ended; and
 - v. The operating and maintenance procedures utilized by the Permittee to minimize emissions during this period.
- b. During the commissioning and shakedown period of the ammonia plant, the Permittee shall maintain a daily record of the CO and VOM emissions (pounds/day) from the CO₂ vent, with supporting documentation and calculations.
- c. During the commissioning and shakedown period of the ammonia plant, the Permittee shall maintain a daily record of the GHG emissions from each of the following units, with supporting documentation and calculations:
 - i. The CO₂ vent (tons/day);
 - ii. The reformer furnace (tons/day); and
 - iii. Each boiler (tons/day).
- d. During the commissioning and shakedown period of the ammonia plant, the Permittee shall maintain a record of the GHG emissions (tons/year) of the ammonia plant, including both the affected CO₂ vent and the affected flares, based on operating data and applicable emission factors, with supporting calculations.
- e. During the commissioning and shakedown period of the ammonia plant, the Permittee shall maintain records related to the bi-monthly emissions (tons/2-month period) of NO_x, CO, VOM, PM, PM₁₀/PM_{2.5}, SO₂, and GHG from each affected flare, based on

operating data and applicable emission factors, with supporting calculations.

2.1.9 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of unit(s) in the ammonia plant with permit requirements as follows. Reports shall include the information specified by Condition 3.4:
 - i. Failure of an affected flare, e.g., loss of combustion, when operation continues for more than 1 hour (60 minutes) shall be reported to the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three days after failure of the affected flare.
 - ii. The deviations addressed above and all other deviations shall be reported in the quarterly compliance reports required by Condition 2.1.9(b).
- b. The Permittee shall submit quarterly compliance reports for the ammonia plant. The reports shall be submitted no later than 30 days after the end of each quarterly reporting period.
 - i. Information related to excess emissions and deviations during the reporting period, if any. When no excess emissions or deviations have occurred or the continuous emissions monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
 - ii. A summary of operation and emissions of the ammonia plant during the reporting period, including the total number of startups of the plant, the amount of ammonia produced by the plant, the amount of ammonia sent to storage, and the emissions of NO_x, CO, PM, PM₁₀/PM_{2.5}, VOM, and GHG during the reporting period (tons).
 - iii. A listing of each flaring event during the reporting period, i.e., each period when process gas was flared, with date and duration, a description of the event, including cause(s), and whether an event-specific Root Cause Analysis was performed for the event pursuant to Condition 2.1.4-3(d).
- c. With its Annual Emission Report, the Permittee shall submit a report to the Illinois EPA for flaring during the previous year, which report shall:
 - i. Provide the information specified in Condition 2.1.9(b)(iii) for flaring events during the previous year.

- ii. Summarize flaring activity and emissions during the previous year, including an assessment of the cause(s) for such flaring as related to the number of events and share of the total emissions from the ammonia plant attributed to flaring, a summary of each event-specific Root Cause Analysis that was performed, and emissions of the flares as compared to the limits in Condition 2.1.5(a).
 - iii. Include copies of the summaries for flaring activity for the preceding two years as required by Condition 2.1.9(c)(ii), as reported in earlier reports, as these summaries become available.
 - iv. Summarize actions or measures implemented during the previous year to reduce flaring pursuant to the Root Cause Analyses required by Condition 2.1.4-3(d), and the observed effect of these actions, and the actions or measures planned for implementation during the current year to reduce flaring pursuant to Root Cause Analyses, and the expected effect of these actions.
 - v. Summarize other actions or measures implemented during the previous year to reduce flaring, not related to the required Root Cause Analyses, and the reason for and observed effect of these actions, and other actions or measures planned for implementation during the current year to reduce flaring, and the reason for and expected effect of these actions.
 - vi. Include a listing of changes, if any, made to the Flare Minimization Plan, as provided for by Conditions 2.1.4-3(c)(ii) and (iii), with a brief description.
 - vii. Include a listing of significant changes, if any, made to the monitoring procedures required by Condition 2.1.7-2(e), with brief description.
 - viii. Provide confirmation that the required annual verification of the accuracy of the flow monitoring system was conducted, with a summary of results.
- d. The Permittee shall submit the following additional reports for the ammonia plant during the commissioning and shakedown period and the 12-month period following this period to the Illinois EPA:
- i. The Permittee shall provide the Illinois EPA with notice at least 15 days prior to initial startup of the ammonia plant.
 - ii. During the commissioning and shakedown period for the ammonia plant, the Permittee shall promptly notify the Illinois EPA of any event(s) that disrupts the orderly shakedown and commissioning of the facility.

- iii. During the commissioning and shakedown period for the ammonia plant, the periodic compliance reports required by Condition 2.1.9(b) shall also include the following information:
 - A. Operating data for the ammonia plant, i.e., total operating hours and ammonia production during the reporting period.
 - B. Activities accomplished during the commissioning and shakedown period of the ammonia plant.
 - C. Current schedule for emission testing.
 - D. A summary of any required emissions testing that was conducted or notice that all such testing has been completed.
 - E. When applicable, notice that the commissioning and shakedown period of the ammonia plant is considered complete.

- e. The Permittee shall notify the Illinois EPA within 30 days of the date that commissioning of the ammonia plant is complete, if this date is different than the date that shakedown of the ammonia plant is complete, with explanation for the different date.

Section 2.2: Unit-Specific Conditions for the Reformer Furnace

2.2.1 Description

The reformer furnace (the "affected reformer") is a process heater used in the production of hydrogen for the manufacture of ammonia. In the reformer furnace, steam from the boilers (see Section 2.3) and pre-treated natural gas are catalytically converted to an intermediate stream that is composed primarily of hydrogen and carbon monoxide. The fuel fired in the reformer furnace is a combination of natural gas and process off-gases from the ammonia plant (see Section 2.1). The reformer will be equipped with a selective catalytic reduction (SCR) system for control of its emissions of nitrogen oxide (NOx).

2.2.2 Control Technology Determination - BACT

- a. i. The affected reformer shall be operated and maintained in conformance with the manufacturer's design, which shall include the following features:
 - A. Selective catalytic reduction;
 - B. Low NOx Burners;
 - C. Automated combustion management, with an oxygen trim system and inlet combustion air controls; and
 - D. Energy efficient design with good operating practices, including preheating of the feed mixture of natural gas and steam, preheating the inlet air stream for the secondary reforming unit (i.e., use of an air preheater), and producing high-pressure steam for use elsewhere at the facility.
 - ii. The affected reformer shall be operated and maintained in accordance with good combustion practices.
 - iii. For the affected reformer, the Permittee shall implement good air pollution control practices to minimize emissions during startup and shutdown, which shall include operation of the affected reformer and associated air pollution control equipment in accordance with written operating procedures that includes startup and shutdown.
- b. The emissions of the affected reformer shall not exceed the following limits, in lbs/mmBtu:

Pollutant	Limit
NOx	0.0109, 30-day average, rolled daily
CO	0.0194, 3-hour average
PM ₁₀ /PM _{2.5}	0.0024, 3-hour average
VOM	0.0014, 3-hour average

Note: The GHG emissions of the affected reformer are addressed by the BACT limit for GHG in Condition 2.1.2-3.

2.2.3-1 Applicable Federal Emission Standards

The Permittee shall comply with all applicable requirements of 40 CFR 63 Subpart DDDDD and 40 CFR 63 Subpart A for the affected reformer, which include the following:

- a. Pursuant to 63.7500(a)(3), at all times, the Permittee must operate and maintain the affected reformer, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Illinois EPA that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.
- b. Pursuant to 40 CFR 63.7530(g), for the process off gas streams sent to the affected reformer as fuel, using the methods specified in 40 CFR 63 Subpart DDDDD Table 6, Item 3, if the Permittee elects to demonstrate that a gaseous fuel meets the specifications of another gas 1 fuel as defined in 40 CFR 63.7575, the Permittee must conduct an initial fuel specification analyses according to 40 CFR 63.7521(f) through (i) and according to the frequency listed in 40 CFR 63.7540(c) and maintain records of the results of the testing as outlined in 40 CFR 63.7555(g). For samples where the initial mercury specification has not been exceeded, the Permittee must include a signed certification with the Notification of Compliance Status that the initial fuel specification test meets the gas specification outlined in the definition of other gas 1 fuels.
- c. Pursuant to 40 CFR 63.7540(a)(10) and 40 CFR 63 Subpart DDDDD Table 3, Item 3, the Permittee must conduct an annual tune-up of the affected reformer to demonstrate continuous compliance as specified 40 CFR 63.7540(a)(10)(i) through (vi), as applicable. The Permittee must conduct the tune-up while burning the type of fuel (or fuels in case of units that routinely burn a mixture) that provided the majority of the heat input to the affected reformer over the 12 months prior to the tune-up.
 - i. Pursuant to 40 CFR 63.7540(a)(13), if the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.
 - ii. Pursuant to 63.7515(d), each annual tune-up specified in 40 CFR 63.7540(a)(10) must be no more than 13 months after the previous tune-up. For a new source, the first annual tune-up must be no later than 13 months after the initial startup of the source.

2.2.3-2 Applicable State Emission Standards

- a. The emission of smoke or other particulate matter from the affected reformer shall not have an opacity greater than 20 percent, 6-minute average, except as allowed by 35 IAC 212.122(b) or 212.124. [35 IAC 212.109 and 212.122(a)]
- b. CO emissions from the affected reformer shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

2.2.4 Non-Applicability Provisions

- a. The affected reformer is not subject to the NSPS, 40 CFR 60 Subpart Db, because it is a "process heater" and not a "steam generating unit" as defined by 40 CFR 60.41b.
- b. The affected reformer is not subject to the emission limits in 40 CFR 63 Subpart DDDDD Tables 1 and 2 or 11 through 13, or the operating limits in 40 CFR 63 Subpart DDDDD Table 4, as provided by 40 CFR 63.7500(e). This is because the affected reformer will be a unit designed to burn gas 1 fuels, as specified by 40 CFR 63.7499(l).

2.2.5 Operational Requirements, Work Practices and Production Limits

- a. The nominal rated heat input capacity of the affected reformer shall not exceed 1,096 mmBtu/hour.
- b. The only fuels combusted in the affected reformer shall be natural gas and process off-gas from the ammonia plant.
- c. For purposes of Condition 1.5, which generally requires implementation of good air pollution control practice, the Permittee shall operate and maintain the affected reformer and associated SCR system in accordance with written procedures developed and maintained by the Permittee. These procedures may incorporate the manufacturer's recommendations for operation and maintenance of the SCR system.

2.2.6 Emission Limits

- a. The emissions of the affected reformer shall not exceed the following limits.

Pollutant	Limit	
	Pounds/Hour	Tons/Year
NOx	11.95	52.3
CO	21.27	93.1
PM/PM ₁₀ /PM _{2.5}	2.63	11.5
VOM	1.53	6.7
SO ₂	0.64	2.8
GHG	---	562,317

2.2.7 Emission Testing Requirements

- a. The Permittee shall have emissions testing performed for the affected reformer as follows at its expense by a qualified testing service while the affected reformer is operating under representative operating conditions:
 - i. Emissions testing shall be conducted for emissions of filterable PM, filterable PM₁₀ and PM_{2.5}, condensable PM, VOM, methane, and N₂O as specified below, provided, however, that if the Permittee considers all filterable PM₁₀ emissions to be emissions of filterable PM_{2.5}, testing for emissions of filterable PM_{2.5} need not be performed unless specifically requested by the Illinois EPA.
 - ii. This testing shall be conducted as follows:
 - A. Within one year after initial startup of the affected reformer or 120 days after achieving the maximum production rate at which the reformer will be operated, whichever occurs first.
 - B. Thereafter, until a CAAPP Permit is issued that addresses periodic testing of the affected reformer, testing shall be conducted within five years from the date of the previous test.
 - C. In addition, the Permittee shall perform emission tests as provided below as requested by the Illinois EPA within 90 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.
 - iii. Appropriate USEPA test methods, including the following methods, shall be used for testing, unless other methods adopted by or being developed by USEPA or other alternative test methods are approved by the Illinois EPA.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
Filterable PM	Method 5 or 5I
Filterable PM ₁₀ & PM _{2.5}	Method 201A*
Condensable PM	Method 202
VOM	Method 25A
N ₂ O and Methane	Method 320

* Method 5/202 may be used if all PM is assumed to be PM₁₀/PM_{2.5}
- c. i. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with Condition 3.1.

- ii. In addition to other information required in a test report, test reports shall include detailed information on the operating conditions of the affected reformer during testing, including:
 - A. Actual firing rate, total and for natural gas, (mmBtu/hour).
 - B. Oxygen content in the flue gas and other significant operating parameters of the affected reformer.
 - C. Opacity of the exhaust, 6-minute averages, as determined by Method 9, if visible emissions, as determined by Method 22, are typically present during the operation of the affected reformer.

2.2.8-1 Operational Monitoring and Instrumentation Requirements

- a. The Permittee shall install, calibrate, operate and maintain a continuous operational monitoring system for the affected reformer for fuel consumption (scf/hour).
- b.
 - i. The Permittee shall equip, operate, and maintain instrumentation on the SCR system for the affected reformer for the SCR reagent injection rate, flue gas temperature at the inlet of the SCR catalyst and other operating parameters of the SCR system that are relevant to effective control of emissions.
 - ii. The Permittee shall maintain the records of the data from this instrumentation at least once per shift.

2.2.8-2 Emission Monitoring Requirements

- a. For the affected reformer, the Permittee shall install, calibrate, operate and maintain CEMS for NO_x and CO emissions and the concentration of CO₂ or O₂ in the exhaust.
 - i. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of these CEMS. This CEMS shall be operated during all periods of operation of the affected reformer except for CEMS breakdowns and repairs.
 - ii. The relevant provisions for monitoring NO_x emissions in the NSPS, 40 CFR 60.48b shall be followed for the NO_x CEMS. The relevant provisions of 40 CFR 60.48b(j)(4) shall be followed for the CO CEMS until and unless USEPA adopts procedures that would be directly applicable for continuous monitoring of CO emissions from the affected reformer.
 - iii. The 1-hour average NO_x and CO emission rates measured by the CEMS shall be expressed in lbs/mmBtu heat input and

shall be used to calculate average emission rates. The 1-hour averages shall be calculated using data points as provided for by 40 CFR 60.13(h) (2), except as provided by 40 CFR 60.48b(b) (2).

- iv. These CEMS shall also be used to determine compliance with the NO_x and CO limits in Conditions 2.2.2(b), 2.2.3-2(b) and 2.2.6.
- b. For the affected reformer, the Permittee shall install, certify, operate and maintain a CEMS for CO₂ emissions. This CEMS shall be operated in accordance with applicable requirements of 40 CFR 75, including 40 CFR 75.10(a) (3).

2.2.8-3 Opacity and Visible Emissions Observations

The Permittee shall perform annual observations in accordance with USEPA Method 22 for visible emissions from the affected reformer, until a CAAPP Permit is issued that addresses periodic observations of the affected reformer. If visible emissions are observed, then measurements of opacity in accordance with USEPA Method 9 shall be conducted within 7 days.

2.2.9 Recordkeeping Requirements

- a. The Permittee shall maintain a written file that contains the following information for the affected reformer:
 - i. A record of the maximum design heat input capacity of the reformer, in mmBtu/hour, with supporting documentation.
 - ii. The operating and maintenance procedures for the affected reformer.
 - iii. Records for all visible emission observation made in accordance with USEPA Method 22 for the affected reformer.
 - iv. Records for all opacity measurements made in accordance with USEPA Method 9 for the affected reformer that it conducts or that are conducted on its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to Condition 2.2.8-3, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the affected reformer, the observed opacity, and copies of the raw data sheets for the measurements.
- b. The Permittee shall maintain records for the amount of off-gas fired in the affected reformer (scf/month).

- c. The Permittee shall maintain an operating log or other similar records for the affected reformer that include the information specified in Condition 3.2(a) and the following information:
 - i. For each startup of the affected reformer, identification or any deviations from the normal startup procedures, as set forth in the Permittee's written operating procedures, with explanation.
 - ii. For each shutdown of the affected reformer, the nature and reason for the shutdown, any unusual occurrences during the shutdown, and any deviations from the normal shutdown procedures, as set forth in the Permittee's written operating procedures, with explanation.
- d. The Permittee shall keep the following records for the SCR system:
 - i. A file containing the design NOx emission rates of the SCR system with supporting documentation, and manufacturer, vendor or source-specific operating and maintenance procedures, including a catalyst management plan.
 - ii. Usage of SCR reagent on a monthly basis.
- e. The Permittee shall keep inspection, maintenance and repair logs or other similar records for the affected reformer and associated SCR system that contain the information specified in Condition 3.2(b), including information related to management of catalyst in the SCR system (e.g., replacement of catalyst).
- f. The Permittee shall maintain records of the following information for NOx and CO emissions from the affected reformer for each operating day:
 - i. Calendar date.
 - ii. The measured average hourly emission rates (expressed in lbs/mmBtu and lbs/hour).
 - iii. For NOx, the 30-day average emission rates (lbs/mmBtu and lbs/hour) calculated at the end of each operating day from the measured hourly emission rates for the preceding 30-unit operating days.
 - iv. For NOx, identification of the operating days when the calculated 30-day average emission rates are in excess of an applicable standard or limit, with the reasons for such excess emissions as well as a description of corrective actions taken.
 - v. Identification of the operating days in which NOx emission data have not been obtained, including a description of corrective actions taken.

- vi. Identification of the times when NOx or CO emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
 - vii. Identification of "F" factor used for calculations and the method of determination.
 - viii. Identification of the times when the concentration of NOx or CO exceeded full span of the CEMS.
 - ix. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3.
 - x. Results of daily CEMS drift tests and quarterly accuracy assessments as required by 40 CFR Part 60 Appendix F, Procedure 1.
- g. The Permittee shall keep the following records related to the emissions of NOx, CO, PM, PM₁₀/PM_{2.5}, VOM, SO₂, and GHG, from the affected reformer:
- i. If continuous monitoring is performed for a pollutant, the emissions of the pollutant from the affected reformer based on continuous emissions monitoring data, in tons/month and tons/year.
 - ii. If continuous monitoring is not performed for a pollutant:
 - A. A file containing the emission factors that the Permittee uses to calculate emissions, with supporting documentation; and
 - B. The emissions of the affected reformer based on operating data and applicable emission factors (tons/month and tons/year), with supporting calculations.
- h. NESHAP Records:
- i. Pursuant to 40 CFR 63.7555(a), the Permittee must keep records in accordance with 40 CFR 63.7555(a)(1) and (2).

2.2.10 Notification and Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of any deviations from the requirements of this permit for the affected reformer as follows. These notifications shall include the information specified by Condition 3.4.
 - i. Deviations from the NOx and CO limits in Conditions 2.2.2, 2.2.3 and 2.2.6 shall be reported with the reports required by Condition 2.2.10(b).

- ii. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.
- b. The Permittee shall submit periodic compliance reports to the Illinois EPA for the affected reformer, which reports shall include the following information. These reports shall be submitted on a semi-annual basis, with each report submitted no later than 30 days following the end of the reporting period:
 - i. Information related to excess emissions and deviations:
 - A. As related to the limits for NO_x and CO emission, the information required for reporting of exceedances under 40 CFR 60.7(c) or (d) and 60.49b(h) and (j). If there are no such exceedances during the reporting period, the report shall state that no exceedances occurred during the reporting period.
 - B. Information for other deviations during the reporting period, if any.
 - C. When no excess emissions or deviations have occurred or the CEMS have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
- c. NESHAP Notification and Reporting Requirements:
 - i. Pursuant to 40 CFR 63.7545(a), the Permittee must submit to the Illinois EPA all of the notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f) (4) and (6), and 63.9(b) through (h) that apply by the dates specified.
 - ii. Pursuant to 40 CFR 63.7545(c), as specified in 40 CFR 63.9(b) (4) and (5), the Permittee must submit an Initial Notification not later than 15 days after the actual date of startup of the source.
 - iii. Pursuant to 40 CFR 63.7545(e), if the Permittee is required to conduct an initial compliance demonstration as specified in 40 CFR 63.7530, the Permittee must submit a Notification of Compliance Status according to 40 CFR 63.9(h) (2) (ii). For the initial compliance demonstration, the Permittee must submit the Notification of Compliance Status, including all fuel analyses, before the close of business on the 60th day following the completion of the initial compliance demonstration according to 40 CFR 63.10(d) (2). The Notification of Compliance Status report must contain all the information specified in 40 CFR 63.7545(e) (1) through (8), as applicable. If the Permittee is not required to conduct an initial compliance

demonstration as specified in 40 CFR 63.7530(a), the Notification of Compliance Status must only contain the information specified in 40 CFR 63.7545(e)(1) and (8) and must be submitted within 60 days of the compliance date specified at 40 CFR 63.7495(b).

- iv. Pursuant to 40 CFR 63.7550(a), the Permittee must submit each report in 40 CFR 63 Subpart DDDDD Table 9 that applies.
- v. Pursuant to 40 CFR 63.7550(b), the Permittee must submit each report, according to 40 CFR 63.7550(h), by the date in 40 CFR 63 Subpart DDDDD Table 9 and according to the requirements in 40 CFR 63.7550(b)(1) through (4), as applicable. For units that are subject only to a requirement to conduct subsequent annual tune-ups according to 40 CFR 63.7540(a)(10) and not subject to emission limits or 40 CFR 63 Subpart DDDDD Table 4 operating limits, the Permittee may submit only an annual compliance report, as applicable, as specified in 40 CFR 63.7550(b)(1) through (4), instead of a semi-annual compliance report.
 - A. Pursuant to 40 CFR 63.7550(h), the Permittee must submit the reports according to the procedures specified in 40 CFR 63.7550(h)(1) through (3), as applicable.

Section 2.3: Unit-Specific Conditions for the Boilers

2.3.1 Description

The two boilers (the "affected boilers") would supply steam to the reformer for production of hydrogen. The boilers will fire natural gas.

2.3.2 Control Technology Determination - BACT

- a. i. The affected boilers shall be operated and maintained in conformance with the manufacturer's design, which shall include the following features:
 - A. Low-NOx burners (LNB) with good burner design;
 - B. Selective catalytic reduction (SCR);
 - C. Oxidation catalysts;
 - D. Energy efficient design with good operating practices, including an air preheater, economizer, condensate recovery and boiler blowdown heater recovery; and
 - E. Automated combustion management system with oxygen trim system.
- ii. Each affected boiler shall be operated and maintained in accordance with good combustion practices.
- iii. For the affected boilers, the Permittee shall implement good air pollution control practices to minimize emissions during startup and shutdown, which shall include operation of the affected boilers and associated air pollution control equipment in accordance with written operating procedures that include startup and shutdown.
- b. i. Except as provided in Condition 2.3.2(b) (ii), the emissions of each affected boiler shall not exceed the following limits, in lbs/mmBtu:

Pollutant	Limit
NOx	0.010, 3-hour average
CO	0.0013, 3-hour average
PM ₁₀	0.0019, 3-hour average
PM _{2.5}	0.0010, 3-hour average
VOM	0.0014, 3-hour average

Note: The BACT limit for GHG in Condition 2.1.2-3 addresses the GHG emissions of the affected boilers.

- ii. Notwithstanding the above, during an hour that includes a startup or shutdown of an affected boiler, the emissions

of NOx and CO shall not exceed the alternative hourly (pounds/hour) limits for NOx and CO in Condition 2.3.6(a).

2.3.3-1 Applicable NSPS Requirements

- a. Each affected boiler is an affected facility under the federal NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db. For each affected boiler, the Permittee must comply with applicable requirements of this NSPS and applicable requirements of 40 CFR 60 Subpart A, General Provisions.
- b. The NOx emissions of each affected boiler shall not exceed 86 ng/J (0.20 lb/million Btu) on a 30-day rolling average, pursuant to 40 CFR 60.44b(a), on and after the date on which the initial performance test is completed or is required to be completed under 40 CFR 60.8, whichever date comes first.
- c. Pursuant to the NSPS, 40 CFR 60.11(d), at all times the Permittee shall, to the extent practicable, maintain and operate each affected boiler in a manner consistent with good air pollution control practice for minimizing emissions.

2.3.3-2 Applicable NESHAP Requirements

- a. The Permittee shall comply with all applicable requirements of 40 CFR 63 Subpart DDDDD and 40 CFR 63 Subpart A for the affected boilers, which include the following:
 - i. Pursuant to 63.7500(a)(3), at all times, the Permittee must operate and maintain the affected boilers, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Illinois EPA that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.
 - ii. Pursuant to 40 CFR 63.7540(a)(10) and 40 CFR 63 Subpart DDDDD Table 3, Item 3, the Permittee must conduct an annual tune-up of each affected boiler to demonstrate continuous compliance as specified 40 CFR 63.7540(a)(10)(i) through (vi), as applicable. The Permittee must conduct the tune-up while burning the type of fuel (or fuels in case of units that routinely burn a mixture) that provided the majority of the heat input to each affected boiler over the 12 months prior to the tune-up.
 - A. Pursuant to 40 CFR 63.7540(a)(13), if the unit is not operating on the required date for a tune-up,

the tune-up must be conducted within 30 calendar days of startup.

- B. Pursuant to 40 CFR 63.7515(d), each annual tune-up specified in 40 CFR 63.7540(a)(10) must be no more than 13 months after the previous tune-up. For a new source, the first annual tune-up must be no later than 13 months after the initial startup of the source.

2.3.3-3 Applicable State Emission Standards

- a. No person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit, except as allowed by 35 IAC 212.123(b) or 212.124. [35 IAC 212.109 and 212.123(a)]
- b. No person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from any fuel combustion emission source with actual heat input greater than 2.9 MW (10 mmbtu/hr) to exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

2.3.4 Non-Applicability Provisions

- a. This permit is issued based on certain provisions of the NSPS, 40 CFR 60 Subpart Db, as follows, not being applicable to each affected boiler:
 - i. The limits of this NSPS for PM and opacity because the boiler only burns natural gas.
 - ii. The SO₂ standards of this NSPS because the boiler only fires fuel with a potential SO₂ emission rate of 0.32 lb/mmBtu heat input or less. [40 CFR 60.42b(k)(2), 60.47b(f) and 60.49b(r)]
 - iii. The opacity monitoring requirements of this NSPS, 40 CFR 60.48b, because the boiler only burns gaseous fuels, without post-combustion technology to reduce SO₂ or PM emissions. [40 CFR 60.48b(j)(2)]
- b. Each affected boiler is not subject to any requirements of the NSPS, 40 CFR 60 Subpart D, because it is subject to the NSPS, 40 CFR 60 Subpart Db. [40 CFR 60.40b(j)]
- c. Each affected boiler is not subject to the emission limits in 40 CFR 63 Subpart DDDDD Tables 1 and 2 or 11 through 13, or the operating limits in 40 CFR 63 Subpart DDDDD Table 4, as provided by 40 CFR 63.7500(e). This is because each affected boiler will be a unit designed to burn gas 1 fuels, as specified by 40 CFR 63.7499(l).

- d. Each affected boiler is not subject to the NESHAP for Industrial, Commercial, and Institutional Boilers at Area Sources, 40 CFR 63 Subpart JJJJJJ, because the source is not a minor source of HAP emissions.

2.3.5 Operational Requirements, Work Practices and Production Limits

- a. The nominal rated heat input capacity of each affected boiler shall not exceed 179.4 mmBtu/hour.
- b. The only fuel fired in the affected boilers shall be natural gas.
- c. The steam from the affected boilers shall not be used to produce electricity for commercial sale to the grid.
- d. The Permittee shall operate and maintain the affected boiler and associated SCR system in accordance with written procedures developed and maintained by the Permittee. These procedures may incorporate the manufacturer's recommendations for operation and maintenance of the SCR system.

2.3.6 Emission Limits

- a. The individual and combined annual emissions of the affected boilers shall not exceed the following limits.

Pollutant	Limits	
	Each Pounds/Hour	Combined Tons/Year
NOx	1.79	15.7
CO	0.23	2.0
PM	0.34	3.0
PM ₁₀	0.34	3.0
PM _{2.5}	0.18	1.6
VOM	0.25	2.2
SO ₂	0.11	0.9
GHG, as CO ₂ e	---	184,038

2.3.7 Emission Testing Requirements

- a. The Permittee shall conduct performance testing for each affected boiler for emissions of NOx as required under the NSPS, including 40 CFR 60.8 and 60.46b(e).
- b. The Permittee shall have emissions testing conducted for each affected boiler as follows, at its expense by a qualified testing service under representative operating conditions, for emissions of PM, PM₁₀, PM_{2.5}, VOM, methane and N₂O.
 - i. The timing of testing shall be as follows:
 - A. Within one year after initial startup of each affected boiler or 120 days after achieving the

maximum production rate at which a boiler will be operated, whichever occurs first.

- B. Thereafter, until a CAAPP Permit is issued that addresses periodic testing of the affected boilers, unless the initial testing of the affected boilers shows emissions that are 80 percent or less of the applicable permit limits for PM, PM₁₀, PM_{2.5}, and VOM in pounds per mmBtu and in pounds per hour, follow up testing of the affected boilers for these pollutants, shall be conducted within five years from the date of the initial testing.
 - C. In addition, the Permittee shall perform emission tests as provided below as requested by the Illinois EPA within 90 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.
- ii. Appropriate USEPA test methods, including the following methods, shall be used for testing, unless other methods adopted by or being developed by USEPA or other alternative test methods are approved by the Illinois EPA.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM	Method 5 or 5I
PM ₁₀ /PM _{2.5}	Method 201A* and 202
VOM	Method 18 or 25A
N ₂ O and methane	Method 320

* Method 5/202 may be used if all PM is assumed to be PM₁₀/PM_{2.5}

- c. i. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with the Condition 3.1.
- ii. In addition to other information required in a test report, test reports shall include detailed information on the operating conditions of each affected boiler during testing, including:
 - A. Fuel consumption (scf);
 - B. Firing rate (mmBtu/hour) and other significant operating parameters of the affected boiler;
 - C. Opacity of the exhaust, 6-minute averages, as determined by USEPA Method 9, if visible emissions are normally present, as determined by Method 22.

2.3.8-1 Emissions Monitoring Requirements

- a. Pursuant to 40 CFR 60.48b, for each affected boiler, the Permittee shall install, calibrate, operate and maintain a CEMS for NOx emissions discharged from each affected boiler and the concentration of CO₂ or O₂ in the exhaust.
 - i. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of these CEMS. This CEMS shall be operated during all periods of operation of each affected boiler except for CEMS breakdowns and repairs. This CEMS shall obtain emission data for at least 75 percent of the operating hours in at least 22 out of 30 successive units operating days as specified and pursuant to 40 CFR 60.48b(f). Data is to be obtained in the scheduling and course of performing calibration checks, and zero and span adjustments as specified in the NSPS.*
 - * Fulfillment of the above criteria for availability of emission data from the CEMS does not shield the Permittee from potential enforcement for failure to properly maintain and operate the CEMS.
 - ii. The 1-hour average NOx emission rates measured by the CEMS shall be expressed in lbs/mmBtu heat input and shall be used to calculate average emission rates pursuant to the NSPS. The 1-hour averages shall be calculated using the data points required under 40 CFR 60.13(h)(2), except as allowed under 60.48b(b)(2).
 - iii. These CEMS shall also be used to determine compliance with the NOx limits in Conditions 2.3.3-1(b), 2.3.2(b) and 2.3.6(a).
- b. The Permittee shall install, calibrate, operate and maintain CEMS for measuring CO emissions from each affected boiler.
 - i. The relevant monitoring procedures in 40 CFR 60.48b(j)(4) shall be followed for these CEMS until and unless USEPA adopts procedures that would be directly applicable for continuous monitoring of CO emissions from each boiler.
 - ii. These CEMS shall be used to determine compliance with the CO limitations in Conditions in 2.3.2(b) and 2.3.6(a).

2.3.8-2 Operational Monitoring and Instrumentation Requirements

- a. The Permittee shall install, calibrate, operate and maintain continuous operational monitoring systems for each affected boiler for fuel usage, scf/hour.
- b. i. The Permittee shall equip, operate, and maintain instrumentation on the SCR system for each affected boiler for the SCR reagent injection rate, flue gas

temperature at the inlet of the SCR catalyst and other operating parameters of the SCR system that are relevant for the effective control of emissions.

- ii. The Permittee shall maintain the records of the data from this instrumentation at least once per shift.

2.3.8-3 Opacity Observations

The Permittee shall perform annual observations in accordance with USEPA Method 22 for visible emissions from the affected boilers, until a CAAPP Permit is issued that addresses periodic observations of the affected boilers. If visible emissions are observed, then measurements of opacity in accordance with USEPA Method 9 shall be conducted within 7 days.

2.3.9 Recordkeeping Requirements

- a. The Permittee shall maintain a written file or other record containing the following information for the affected boilers:
 - i. The maximum design heat input capacity of each affected boiler, mmBtu/hour, with supporting documentation.
 - ii. The operating and maintenance procedures for each affected boiler.
 - iii. Records for all visible emission observation made in accordance with USEPA Method 22 for the affected boilers.
 - iv. Records for all opacity measurements made in accordance with USEPA Method 9 for the affected boilers that it conducts or that are conducted on its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to Condition 2.3.8-3, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the affected boilers, the observed opacity, and copies of the raw data sheets for the measurements.
- b. An operating log or other records for each affected boiler that, at a minimum, shall include the information specified in Condition 3.2 and the following information:
 - i. Information for each startup and shutdown, including date, time and duration, as required by 40 CFR 60.7(b).
 - ii. Information for any incident in which the operation of the affected boiler continued during malfunction or breakdown, including: date, time, and duration; a description of the incident; whether emissions exceeded or may have exceeded any applicable standard; a description of the corrective actions taken to reduce

emissions and the duration of the incident; and a description of the preventative actions taken, as addressed by 40 CFR 60.7(b).

- c. The Permittee shall maintain the following operating records for each affected boiler:
 - i. Amount of fuel combusted each day and calculated annual capacity factor that is determined on a 12-month rolling basis with a new annual capacity factor calculated for each month pursuant to 40 CFR 60.49b(d);
 - ii. For the affected boilers, pursuant to 40 CFR 60.49b(r), the fuel receipts from the fuel supplier that certify that the gaseous fuel meets the definition of natural gas as defined in 40 CFR 60.41b and the applicable sulfur limit.
- d. The Permittee shall maintain records of the following information for the NO_x emissions of each affected boiler for each operating day, pursuant to 40 CFR 60.49b(g) unless alternative recordkeeping requirements are approved for the boiler in conjunction with USEPA approval of alternative monitoring procedures under the NSPS:
 - i. Calendar date.
 - ii. The measured average hourly emission rates (expressed in lbs/mmBtu heat input).
 - iii. The 30-day average emission rate (lbs/mmBtu heat input and lbs/hour) calculated at the end of each operating day from the measured hourly emission rates for the preceding 30-unit operating days.
 - iv. Identification of the operating days when the calculated 30-day average emission rates are in excess of an applicable standard or limit, with the reasons for such excess emissions as well as a description of corrective actions taken.
 - v. Identification of the operating days for which emission data have not been obtained, including a description of corrective actions taken.
 - vi. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
 - vii. Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.
 - viii. Identification of the times when the pollutant concentration exceeded the full span of the CEMS.

- ix. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3.
 - x. Results of daily CEMS drift tests and quarterly accuracy assessments as required by 40 CFR Part 60 Appendix F, Procedure 1.
- e. The Permittee shall keep the following records for the CO emissions of each affected boiler:
- i. All measurements needed to demonstrate compliance with the applicable standards and limits for CO including, but not limited to, 15-minute averages of CEMS data and raw performance evaluation measurements that support data that the Permittee is required to report.
 - ii. Records of CO emissions as compared to applicable limits and standards and the date, start time and duration of any deviation from an applicable standard or limitation, and whether the deviation occurred during startup, shutdown or malfunction.
 - iii. Each period during which the CEMS is malfunctioning or inoperative.
 - iv. All results of CEMS performance evaluations.
 - v. All CEMS calibration checks and all adjustments and maintenance performed on the CEMS.
 - vi. All measurements as may be necessary to determine the conditions of performance tests and performance evaluations.
- f. The Permittee shall keep inspection, maintenance and repair logs or other similar records for each affected boiler that contain the information specified in Condition 3.2(b).
- g. The Permittee shall keep the following records related to the emissions of NO_x, CO, VOM, SO₂, PM, PM₁₀/PM_{2.5}, and GHG from each affected boiler:
- i. If continuous monitoring is performed for a pollutant, the emissions of the pollutant from the affected boiler based on continuous emissions monitoring data, in tons/month and tons/year.
 - ii. If continuous monitoring is not performed for a pollutant:
 - A. A file containing the emission factors that are used to calculate emissions, with supporting documentation; and

B. The emissions of the affected boiler based on operating data and applicable emission factors, in tons/month and tons/year, with supporting calculations.

- h. NESHAP Records:
 - i. Pursuant to 40 CFR 63.7555(a), the Permittee must keep records in accordance with 40 CFR 63.7555(a)(1) and (2).
 - i. The Permittee shall maintain a file demonstrating the maximum hourly emissions (pounds/hour) of NO_x, CO, VOM, SO₂, PM, PM₁₀/PM_{2.5}, and GHG from each affected boiler, with supporting documentation and calculations.

2.3.10 Notification and Reporting Requirements

- a. The Permittee shall fulfill applicable notification and reporting requirements of the NSPS, 40 CFR 60.7 and 60.49b, for each affected boiler by sending required notifications and reports to the Illinois EPA, including the following reports:
 - i. Reports containing the information recorded under 40 CFR 60.49b(g) and (j).
 - ii. Periodic reports for excess emissions, as further addressed by Condition 2.3.10(c).
 - iii. With the periodic compliance reports, reports certifying that only natural gas that is known to contain insignificant amounts of sulfur were combusted in the affected boiler during the reporting period, pursuant to 40 CFR 60.49b(r).
- b. The Permittee shall promptly notify the Illinois EPA of any deviations from the requirements of this permit for the affected boilers as follows. These notifications shall include the information specified by Condition 3.4.
 - i. Deviations from the NO_x limits in Conditions 2.3.2(b), 2.3.3-1(b) and 2.3.6(a) shall be reported with the periodic compliance reports required by the NSPS.
 - ii. Deviations from the CO limits in Conditions 2.3.2(b) and 2.3.6(a) shall also be reported with the periodic compliance reports required by the NSPS.
 - iii. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.
- c. The Permittee shall submit periodic compliance reports to the Illinois EPA for the affected boilers, which reports shall

include the following information related to excess emissions and deviations. These reports shall be submitted on a semi-annual basis, with each report submitted no later than 30 days following the end of the reporting period:

- i. As related to the NSPS standard for NO_x (Condition 2.3.3-1(b)) or the NO_x limits in Conditions 2.3.2(b) and 2.3.6(a), the information required for reporting of exceedances under 40 CFR 60.7(c) or (d) and 60.49b(h) and (j). If there are no such exceedances during the reporting period, the report shall state that no exceedances occurred during the reporting period.
 - ii. Information for other deviations during the reporting period, if any, which shall include the information specified by Condition 3.4.
 - iii. When no excess emissions or deviations have occurred or the CEMS have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
- d. NESHAP Notification and Reporting Requirements:
- i. Pursuant to 40 CFR 63.7545(a), the Permittee must submit to the Illinois EPA all of the notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f) (4) and (6), and 63.9(b) through (h) that apply by the dates specified.
 - ii. Pursuant to 40 CFR 63.7545(c), as specified in 40 CFR 63.9(b) (4) and (5), the Permittee must submit an Initial Notification not later than 15 days after the actual date of startup of the source.
 - iii. Pursuant to 40 CFR 63.7550(a), the Permittee must submit each report of 40 CFR 63 Subpart DDDDD Table 9 that applies.
 - iv. Pursuant to 40 CFR 63.7550(b), the Permittee must submit each report, according to 40 CFR 63.7550(h), by the date in 40 CFR 63 Subpart DDDDD Table 9 and according to the requirements in 40 CFR 63.7550(b) (1) through (4), as applicable. For units that are subject only to a requirement to conduct subsequent annual tune-ups according to 40 CFR 63.7540(a) (10) and not subject to emission limits or 40 CFR 63 Subpart DDDDD Table 4 operating limits, the Permittee may submit only an annual compliance report, as applicable, as specified in 40 CFR 63.7550(b) (1) through (4), instead of a semi-annual compliance report.
 - A. Pursuant to 40 CFR 63.7550(h), the Permittee must submit the reports according to the procedures specified in 40 CFR 63.7550(h) (1) through (3), as applicable.

Section 2.4: Unit-Specific Conditions for the Startup Heater

2.4.1 Description

The startup heater is a natural gas-fired process heater (the "affected heater") for the ammonia plant. The startup heater is used during startup of the ammonia plant to heat a process stream (i.e., a recycle stream going to the catalyst beds in the ammonia converter) until the temperature of the catalyst is high enough that this reaction is self-sustaining.

2.4.2 Control Technology Determination - BACT

- a.
 - i. The affected heater shall utilize good burner design including an energy efficient design and shall be equipped with low-NOx burners (LNB).
 - ii. The affected heater shall be operated and maintained in accordance with good combustion practices, including the use of automated combustion management system with inlet air controls.
- b.
 - i. Emissions of the affected heater shall not exceed 0.07, 0.0194, 0.0014 and 0.0024 lb/mmBtu for NOx, CO, VOM and PM₁₀/PM_{2.5}, respectively (3-hour average).
 - ii. The annual emissions of GHG from the affected heater shall not exceed the limits in Condition 2.4.6.

2.4.3-1 Applicable NESHAP Requirements

- a. The Permittee shall comply with all applicable requirements of the NESHAP for Institutional, Commercial, and Industrial Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD, and the General Provisions for NESHAP sources, 40 CFR 63 Subpart A, for the affected heater, which include the following:
 - i. Pursuant to 40 CFR 63.7500(a)(3), at all times, the Permittee must operate and maintain the affected heater, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Illinois EPA that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.
 - ii. Pursuant to 40 CFR 63.7540(a)(12) and 40 CFR 63 Subpart DDDDD Table 3, Item 1, as the affected unit will meet the definition of a limited-use process heater, the Permittee must conduct a tune-up of the affected heater at least once every 5 years to demonstrate continuous compliance

as specified 40 CFR 63.7540(a)(10)(i) through (vi), as applicable. The Permittee may delay the burner inspection specified in 40 CFR 63.7540(a)(10)(i) until the next scheduled or unscheduled unit shutdown, but the Permittee must inspect each burner at least once every 72 months.

- A. Pursuant to 40 CFR 63.7540(a)(13), if the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.
- B. Pursuant to 63.7515(d), each tune-up specified in 40 CFR 63.7540(a)(12) must be no more than 61 months after the previous tune-up. For a new source, the first annual tune-up must be no later than 61 months after the initial startup of the source.

2.4.3-2 Applicable State Emission Standards

The affected heater is subject to the following state standards:

- a. The emission of smoke or other particulate matter shall not have an opacity greater than 30 percent, 6-minute average, except as allowed by 35 IAC 212.123(b) or 212.124. [35 IAC 212.109 and 212.122(a)]
- b. CO emissions shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

2.4.4 Non-Applicability Provisions

- a. The affected heater is not subject to the NSPS for Small Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Dc. This is because the affected heater is a process heater and does not meet the definition of a steam generating unit provided in 40 CFR 60.41c.
- b. The affected heater is not subject to the NESHAP, 40 CFR 63 Subpart JJJJJJ, Industrial, Commercial, and Institutional Boilers at Area Sources because the affected heater is a process heater, as defined by 40 CFR 63.11237.

2.4.5 Operational Production Limits and Work Practices

- a. The rated heat input capacity of the affected heater shall not exceed 47.7 mmBtu/hr.
- b. The only fuel fired in the affected heater shall be natural gas.
- c. i. After the completion of the commissioning and shakedown period of the ammonia plant or 12 months after the initial startup of the ammonia plant, whichever occurs

first, the fuel usage of the affected heater shall not exceed 10.11 million scf per year.

- ii. Until completion of the commissioning and shakedown period of the ammonia plant or up until 12 months after the initial startup of the ammonia plant, whichever occurs first, the fuel usage of the affected heater shall not exceed 40.64 million scf per year.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

2.4.6 Emission Limits

- a. The emissions of the affected heater shall not exceed the following limits.

Pollutant	Hourly Limits (Pounds/Hour)	Annual Limits (Tons/Year)
NOx	3.34	0.36
CO	0.93	0.10
PM	---	0.01
PM ₁₀ /PM _{2.5}	---	0.01
VOM	---	0.01
SO ₂	---	0.01
GHG	---	604

- b. Notwithstanding the above, until the commissioning and shakedown period of the ammonia plant is complete or 12 months after initial startup of the ammonia plant, whichever occurs first, the above limits for annual emissions of the affected heater shall apply on a bi-monthly basis (tons/2-month period) rather than on an annual basis.

Note: For purposes of this Condition, initial startup of the ammonia plant is defined in Condition 1.11.

- c. Compliance with the applicable GHG limits for the affected heater shall be determined using the relevant procedures for quantification of GHG emissions in 40 CFR Part 98 Subpart D.

2.4.7-1 Opacity Observations

The Permittee shall perform annual observations in accordance with USEPA Method 22 for visible emissions from the affected heater, until a CAAPP Permit is issued that addresses periodic observations of the affected heater. If visible emissions are observed, as determined by Method 22, then measurements of opacity in accordance with USEPA Method 9 shall be conducted within 7 days.

2.4.7-2 Emission Testing Requirements

- a. The Permittee shall have emissions testing conducted for the affected heater as follows, at its expense by a qualified

testing service under representative operating conditions, for emissions of NO_x, CO, PM, PM₁₀, PM_{2.5}, and VOM.

- i. Testing shall be conducted in accordance with the following:
 - A. Within one year after initial startup of the affected heater or 120 days after achieving the maximum production rate at which the heater will be operated, whichever occurs first.
 - B. In addition, the Permittee shall perform emission tests as provided below as requested by the Illinois EPA within 90 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.
- ii. Appropriate USEPA test methods, including the following methods, shall be used for testing, unless other methods adopted by or being developed by USEPA or other alternative test methods are approved by the Illinois EPA.

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
NO _x	Method 7E
CO	Method 10
PM	Method 5 or 5I
PM ₁₀ /PM _{2.5}	Method 201A* and 202
VOM	Method 18 or 25A

* Method 5/202 may be used if all PM is assumed to be PM₁₀/PM_{2.5}

- b. i. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with the Condition 3.1.
- ii. In addition to other information required in a test report, test reports shall include detailed information on the operating conditions of the affected heater during testing, including:
 - A. Fuel consumption (scf);
 - B. Firing rate (mmBtu/hour) and other significant operating parameters of the affected heater;
 - C. Opacity of the exhaust, 6-minute averages, as determined by USEPA Method 9, if visible emissions are normally present, as determined by Method 22.

2.4.8 Recordkeeping Requirements

- a. For the affected heater, the Permittee shall maintain a file containing information for the heat input capacity and design emission rates, with supporting documentation as provided by manufacturer of the burner.
- b. The Permittee shall maintain records of the fuel usage of the affected heater (scf/month and scf/year).
- c. The Permittee shall maintain an operating log or other similar records for the affected heater that include the information specified in Condition 3.2(a).
- d. The Permittee shall keep inspection, maintenance and repair logs or other similar records for the affected heater that contain the information specified in Condition 3.2(b).
- e. The Permittee shall keep records for any deviations from applicable requirements involving the affected heater, which records shall include the information specified by Condition 3.3. These records may be combined with other records required for the affected heater.
- f. The Permittee shall maintain records of the emissions of NO_x, CO, PM, PM₁₀/PM_{2.5}, VOM, SO₂, and GHG from the affected heater (tons/month and tons/year), with supporting documentation and calculations.
- g.
 - i. The Permittee shall maintain records for all visible emission observation made in accordance with USEPA Method 22 for the affected heater.
 - ii. The Permittee shall maintain records for all opacity measurements made in accordance with USEPA Method 9 for the affected heater that it conducts or that are conducted on its behalf by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to Condition 2.4.7, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the affected heater, the observed opacity, and copies of the raw data sheets for the measurements.
- h. NESHAP Records:
 - i. Pursuant to 40 CFR 63.7555(a), the Permittee must keep records in accordance with 40 CFR 63.7555(a)(1), (2) and (3).

2.4.9 Notification and Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected heater with the permit requirements with the periodic compliance reports required by Condition 2.1.9(b). These notifications shall include the information specified in Condition 3.4.

- b. NESHAP Notification and Reporting Requirements:
 - i. Pursuant to 40 CFR 63.7545(a), the Permittee must submit to the Illinois EPA all of the notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f) (4) and (6), and 63.9(b) through (h) that apply by the dates specified.
 - ii. Pursuant to 40 CFR 63.7545(c), as specified in 40 CFR 63.9(b) (4) and (5), the Permittee must submit an Initial Notification not later than 15 days after the actual date of startup of the source.
 - iii. Pursuant to 40 CFR 63.7550(a), the Permittee must submit each report of 40 CFR 63 Subpart DDDDD Table 9 that applies.
 - iv. Pursuant to 40 CFR 63.7550(b), the Permittee must submit each report, according to 40 CFR 63.7550(h), by the date in 40 CFR 63 Subpart DDDDD Table 9 and according to the requirements in 40 CFR 63.7550(b) (1) through (4), as applicable. For units that are subject only to a requirement to conduct subsequent annual tune-ups according to 40 CFR 63.7540(a) (10) and not subject to emission limits or 40 CFR 63 Subpart DDDDD Table 4 operating limits, the Permittee may submit only an annual compliance report, as applicable, as specified in 40 CFR 63.7550(b) (1) through (4), instead of a semi-annual compliance report.
 - A. Pursuant to 40 CFR 63.7550(h), the Permittee must submit the reports according to the procedures specified in 40 CFR 63.7550(h) (1) through (3), as applicable.

Section 2.5: Unit-Specific Conditions for the Ammonia Storage Flare

2.5.1 Description

The ammonia storage flare (the "affected flare") combusts ammonia at times when the amount of ammonia in the refrigerated pressure tanks in which it is stored must be lowered. This is necessary in certain circumstances to keep the pressure in the tanks within safe levels. The process of releasing ammonia from the tanks to lower the pressure within the tank is referred to as "boil-off." The ammonia that is released is ducted to the ammonia storage flare, where it is combusted, resulting in emissions of NO_x. The events that commonly lead to increased pressure in the tanks, with the need to flare ammonia, include loss of electrical power or mechanical failures of the refrigeration system for the storage tanks and sudden drops in atmospheric pressure.

2.5.2 Control Technology Determination - BACT

- a. The affected flare shall be designed, operated and maintained with proper flare design including:
 - i. A steam-assist design;
 - ii. Only use of nitrogen as the purge gas;
 - iii. Automatic igniter devices for the pilot flame; and
 - iv. Only use of natural gas for the pilot burner.
- b. The affected flare shall meet the work practice requirements of 40 CFR 60.18(b) through (f).
- c. The Permittee shall implement the following practices to minimize flaring:
 - i. A Flare Minimization Plan pursuant to Conditions 2.5.4(c) (i) and (c) (ii); and
 - ii. Root Cause Analysis requirements pursuant to Condition 2.5.4(d).
- d.
 - i. The emission rates of the pilot burner in the affected flare shall not exceed the following limits:
 - A. 0.10 lb/mmBtu for NO_x;
 - B. 0.08 lb/mmBtu for CO;
 - C. 0.0054 lb/mmBtu for VOM; and
 - D. 0.0075 lb/mmBtu for PM₁₀/PM_{2.5}.

- ii. The emission rates of the affected flare during malfunction events resulting in boil-off shall not exceed 0.068 and 0.31 lb/mmBtu for NO_x and CO, respectively.
- e. The emissions of NO_x, CO, VOM, PM₁₀/PM_{2.5} and GHG from the affected flare shall not exceed the limits in Conditions 2.5.5-2(a) and (b).

2.5.3 Applicable State Emission Standards

- a. The emission of smoke or other particulate matter from the affected flare shall not have an opacity greater than 30 percent, 6-minute average, except as allowed by 35 IAC 212.122(b) or 212.124. [35 IAC 212.109 and 212.122(a)]

2.5.4 Operational and Work Practice Requirements

- a. Ammonia releases from the primary pressure relief valves on the ammonia storage tanks shall be ducted through a closed vent system to the affected flare.
- b. The affected flare shall be operated with a flame present when ammonia is being vented to it.
- c. i. The work practices to minimize flaring conducted by the Permittee for the affected flare pursuant to Condition 2.5.2(a) shall include the preparation and maintenance of a Flare Minimization Plan (Plan) for the ammonia plant that includes the following:
 - A. A general description of the Permittee's written procedures for the storage of ammonia.
 - B. A general description of the Permittee's procedures for preventative maintenance of equipment for ammonia storage, including the provisions in these procedures that should act to minimize flaring.
 - C. A description of the established responsibilities of different personnel at the facility for the operation and maintenance of ammonia storage equipment.
- ii. After the commissioning and shakedown period of the ammonia plant is complete, the Plan shall also include a description of additional procedures or other measures that are installed or implemented to reduce flaring from the affected flare.
- iii. A. The Permittee shall review the Plan on at least an annual basis and revise the Plan so that it is kept current and reflects any changes in the operation of the ammonia plant.

- B. The Permittee shall submit a copy of the Plan to the Illinois EPA for review and comments upon written request.
- C. This Plan is a record required by this permit, which the Permittee must retain and make available to the Illinois EPA and USEPA in accordance with the general requirements for retention and availability of records. In addition, when the Permittee revises the Plan, the Permittee must also retain and make available the previous version of the Plan for a period of at least 5 years after such revision.
- d. After the commissioning and shakedown period of the ammonia plant is complete, the Permittee shall also conduct an event-specific investigation or "Root-Cause Analysis" into each "Flaring Incident" associated with ammonia storage to determine the causes of the incident, to take reasonable steps to correct the conditions that caused or contributed to such incident, and to further minimize emissions from flaring, consistent with the requirements of Condition 2.1.4-3(d). For this purpose, a "Flaring Incident" is defined as any flaring event that ammonia is flared.
- e. The Permittee shall operate and maintain the affected flare in accordance with written procedures developed and maintained by the Permittee. These procedures may incorporate procedures provided by the supplier of equipment.

2.5.5-1 Operational Limits

- a. The rated heat input capacity of the affected flare pilot burner shall not exceed 0.4 mmBtu/hr.
- b. The amount of ammonia sent to the affected flare shall not exceed 460,000 pounds/year.

2.5.5-2 Emission Limits

- a. The NOx emissions of the affected flare during malfunction events resulting in a boil-off shall not exceed 13.7 tons per calendar year, total.
- b. The emissions from the affected flare shall not exceed the following limits:

Pollutant	Tons/Year*
NOx	15.68
CO	8.36
VOM	0.15
PM ₁₀ /PM _{2.5}	0.01
GHG, as CO ₂ e	3305

- * These limits are for the overall emissions from the flare, which includes both pilot burner emissions and emissions from malfunction events resulting in a boil off.

2.5.6 Operational Monitoring and Instrumentation Requirements

- a. The Permittee shall install, calibrate, maintain, and operate a continuous monitoring system to measure the flow of ammonia to the affected flare (scfm).
- b. The Permittee shall install, maintain, and operate instrumentation on the affected flare for:
 - i. The presence of a pilot flame, as identified by a thermocouple or other device capable of continuously detecting a flame, in accordance with 40 CFR 60.18(f)(2).
 - ii. The usage of fuel by the pilot burner (scf).

2.5.7 Recordkeeping Requirements

- a. The Permittee shall maintain a file or other record for the affected flare containing the design destruction efficiency of the flare for ammonia and the design emission rates of the pilot burner for NO_x, CO, VOM, PM₁₀/PM_{2.5} and GHG, with supporting documentation.
- b. The Permittee shall keep an inspection, maintenance and repair log for the affected flare, which lists activities that are performed, with date and identification of the individual(s) responsible for each inspection and/or maintenance and repair activity.
- c. The Permittee shall keep a log or other records that includes information that confirms that the affected flare functions properly, i.e., a flame was present, that the affected flare only operated with nitrogen as the purge gas and that the affected flare only operated with natural gas as the fuel for the pilot burner.
- d. The Permittee shall keep the following records related to emissions of NO_x, CO, PM, PM₁₀/PM_{2.5}, VOM, SO₂ and GHG from the affected flare:
 - i. A file containing the factors used by the Permittee to determine emissions of the affected flare (lbs/hour), with supporting documentation, including the emissions of each pollutant from combustion of fuel (lbs/million Btu).
 - ii. Records of the emissions of each pollutant attributable to both the pilot burner and malfunction events resulting in boil-off (tons/month and tons/year), with supporting calculations.

- e. The Permittee shall maintain a record for each malfunction event resulting in a boil-off that contains the following information:
 - i. Date and time of the start of the event;
 - ii. Duration of event;
 - iii. Cause of event;
 - iv. Amount (lbs) of ammonia released to the affected flare during the event; and
 - v. Emissions of NO_x from the affected flare attributable to malfunction events resulting in a boil-off (tons/month and tons/calendar year).

2.5.8 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected flare with the permit requirements with the periodic compliance reports required by Condition 2.1.9(b). These notifications shall include the information specified in Condition 3.4.

Section 2.6: Unit-Specific Conditions for the Cooling Tower

2.6.1 Description

A multi-cell cooling tower will supply the cooling water needed by various units in the ammonia plant. The cooling tower (the "affected cooling tower") emits particulate from mineral material present in the water supply. This material is emitted with water droplets that escape from the cooling tower or completely evaporate. These particulate emissions are controlled by drift eliminators, which collect water droplets entrained in the air in the tower.

2.6.2 Control Technology Determination - BACT

- a. The affected cooling tower shall be a wet cooling tower equipped, operated, and maintained with high efficiency drift eliminators designed to limit the loss of water droplets from the unit to no more than 0.0005 percent of the circulating water flow.
- b. The TDS content of the water used in the affected cooling tower shall not exceed 2000 mg/l, monthly average.
- c. The Permittee shall implement a water quality management system for managing the total dissolved solids (TDS) content of the water used in the affected cooling tower. Fresh makeup water shall be added to ensure compliance with the TDS limit in Condition 2.6.2(b).

2.6.3 Applicable Emission Standards

- a. The affected cooling tower is subject to 35 IAC 212.123(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit, except as provided by 35 IAC 212.123(b) and 35 IAC 212.124.
- b. The affected cooling tower is subject to 35 IAC 212.301, which provides that no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source, except as provided by 35 IAC 212.314.
- c. The affected cooling tower is subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

2.6.4 Non-Applicability Provisions

This permit is issued based on the affected cooling tower not being subject to the NESHAP for Industrial Process Cooling Towers (40 CFR 63, Subpart Q) because chromium-based water treatment chemicals will not be used.

2.6.5 Operating Requirements

- a. The capacity of the affected cooling tower, expressed in terms of maximum design circulation rate, shall not exceed 145,310 gallons/minute, hourly average.
- b. Chromium-based water treatment chemicals, as defined in 40 CFR 63.401, shall not be used in the affected cooling tower.
- c.
 - i. Only non-VOM additives shall be used in the affected cooling tower.
 - ii. Plant process wastewater shall not be introduced into cooling water.
- d. The Permittee shall operate and maintain the affected cooling tower, including the drift eliminators, in accordance with written procedures. These procedures shall address the practices that will be followed as good air pollution control practice and the actions that will be implemented if needed to prevent a significant contribution to icing and fogging on offsite roadways.

2.6.6 Emission Limits

- a. The particulate emissions of the affected cooling tower shall not exceed the following limits. Compliance with these limits shall be determined from relevant operating data for the affected cooling tower and the efficiency of the drift eliminators, using engineering calculations for emissions.
 - i. For total particulate (filterable and condensable): 1.01 pounds/hour, 24-hour average basis, and 4.42 tons/year.
 - ii. For PM₁₀/PM_{2.5}: 0.65 pounds/hour, 24-hour average basis, and 2.85 tons/year.

2.6.7 Operational Measurements

- a. Within one year after initial startup of the ammonia plant and at least once every 5 years thereafter, the Permittee shall test the drift loss (percent) from the affected cooling tower in accordance with the Cooling Technology Institute's Acceptance Test Code No. 140. This test shall be performed by a licensed performance testing service.

2.6.8 Sampling and Analysis of Cooling Water

- a. The Permittee shall sample and analyze the water being circulated in the affected cooling tower on at least a monthly basis for the total dissolved solids content, until a CAAPP Permit is issued that addresses periodic sampling of the water being circulated in the affected cooling tower. Measurements of the total dissolved solids content in the wastewater discharge associated with the affected cooling tower, as required by a National Pollution Discharge Elimination System permit, may be used to satisfy this requirement if the effluent has not been diluted or otherwise treated in a manner that would significantly reduce its total dissolved solids content.
- b. Upon written request by the Illinois EPA, the Permittee shall promptly have the water circulating in the affected cooling tower sampled and analyzed for the presence of hexavalent chromium in accordance with the procedures of 40 CFR 63.404(a) and (b).
- c. The Permittee shall keep records for this sampling and analysis activity, including documentation for sampling and analysis as well as the resulting data that is collected.

2.6.9 Recordkeeping Requirements

- a. The Permittee shall keep a file that contains the following information for the affected cooling tower:
 - i. The design loss specification for the drift eliminators installed in the affected cooling tower.
 - ii. The supplier's recommended procedures for inspection and maintenance of the drift eliminators.
 - iii. The operating factors, if any, used to determine the amount of water circulated in the unit or the PM, PM₁₀, PM_{2.5} from the unit, with supporting documentation.
 - iv. Copies of the Material Safety Data Sheets or other comparable information from the suppliers of the various water treatment chemicals that are added to the water circulated in the unit.
 - v. Calculations for the maximum PM, PM₁₀ and PM_{2.5} emissions from the affected cooling tower (pounds/hour on a 24-hour average basis for PM, PM₁₀ and PM_{2.5}), based on the maximum operating rate of the affected cooling tower and other factors that result in greatest emissions.
- b. The Permittee shall keep the records for the amount of water circulated in the affected cooling tower, gallons/month. As an alternative to direct data for water flow, these records may contain other relevant operating data for the affected cooling tower (e.g., water flow to the affected cooling tower) from

which the amount of water circulated in the affected cooling tower may be reasonably determined.

- c. The Permittee shall maintain an operating log or other similar records for the affected cooling tower that include the information specified in Condition 3.2(a).
- d. The Permittee shall keep inspection and maintenance logs for the affected cooling tower, including the drift eliminators installed in the affected cooling tower, which shall include the information specified in Condition 3.2(b).
- e. The Permittee shall maintain records for the PM, PM₁₀ and PM_{2.5} emissions (tons/month and tons/year) of the affected cooling tower based on the above records, the measurements and sampling required by Conditions 2.6.7 and 2.6.8, and appropriate USEPA emission estimation methodology and emission factors, with supporting calculations.

2.6.10 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected unit with permit requirements. These notifications shall include the information specified by Condition 3.4.
 - i. If the affected cooling tower is damaged so there is a deviation from an applicable requirement that is not repaired or otherwise corrected within 24 hours, the Permittee shall notify the Illinois EPA as soon as possible during normal working hours, but no later than three days after the event occurred.
 - ii. All other deviations shall be reported with the periodic compliance reports required by Condition 2.6.10(b).
- b. The Permittee shall submit periodic compliance reports to the Illinois EPA for the affected cooling tower, which reports shall include information for deviations during the reporting period, if any. These reports shall be submitted with the periodic reports required by Condition 2.1.9(b).

Section 2.7: Unit-Specific Conditions for Piping Components

2.7.1 Description

Piping equipment and ductwork at the facility include components such as valves, flanges and other connectors, pump seals, compressor seals, and pressure relief valves, that handle: (i) off-gases from the ammonia plant that would be transported to the reformer for use as fuel, (ii) process gases from the ammonia plant that would be flared, (iii) natural gas, (iv) the CO₂ absorption solvent (aMDEA) that would be used in the ammonia plant, and (v) methanol that would be created in the ammonia plant. Components would be a source of VOM and methane emissions as they would have the potential for leaks.

For purposes of these unit-specific conditions, the "affected components" are all components with the potential to emit VOM and/or methane.

2.7.2 Control Technology Determination - BACT

- a. The Permittee shall install and operate "leakless" valves and pumps, to the extent that "leakless" valves and pumps are available. If "leakless" valves and pumps are not available, use of high-quality components that are designed for the specific service in which they are employed, shall be installed and operated;
- b. The Permittee shall implement a noninstrumental LDAR program, including the completion of auditory, visual and olfactory (AVO) inspections on a monthly basis to identify any components that are leaking.
- c. The Permittee shall implement an instrument-based LDAR program, including use of Optical Gas Imaging and USEPA Method 21, as follows:
 - i. For the affected components, emissions from leaks shall be controlled by meeting requirements of the NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, 40 CFR 60 Subpart VVa, including relevant portions of the NSPS for work practices, testing, recordkeeping and reporting. In particular, the Permittee must:
 - A. Monitor all affected components in accordance with 40 CFR 60.482-1a through 60.482-11a, with the following exceptions:
 1. The Permittee must use an optical gas imaging instrument as an alternative to inspecting for leaks in accordance with USEPA Method 21, unless the Permittee demonstrates to the

Illinois EPA that optical gas imaging would not be equally or more effective in the identification of leaks than USEPA Method 21; and

2. For all affected components, a leak is defined as any visible emissions from an affected component observed using optical gas imaging or an instrument reading of 500 parts per million (ppm) or greater of either methane or VOC using Method 21 of 40 CFR 60 Appendix A-7.
- B. Meet the requirements for optical gas imaging in 40 CFR 60.18(g), (h) and (i), including the requirement to conduct inspections for leaks in accordance with USEPA Method 21 at least once per year;
 - C. Keep records identified in 40 CFR 60.486a; and
 - D. Submit reports identified in 40 CFR 60.487a.

2.7.3 Applicable Federal Emission Standards

- a. The affected components are subject to the requirements of the equipment leak provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing, 40 CFR 63, Subpart FFFF, including the following requirements:
 - i. Pursuant to 40 CFR 63.2480(a), the Permittee shall comply with the requirements of Table 6, Items 1 and 2 of 40 CFR 63, Subpart FFFF, and the requirements of 40 CFR 63 Subpart UU referenced therein.
 - ii. The Permittee shall monitor the affected components in organic HAP service according to the requirements of 40 CFR 63.1023, except as specified in 40 CFR 63.2480(b) and (d) through (f), including the following:
 - A. Valves in gas and vapor service and in light liquid service shall be monitored pursuant to 40 CFR 63.1025(b).
 - B. Pumps in light liquid service shall be monitored pursuant to 40 CFR 63.1026(b).
 - C. Connectors in gas and vapor service and in light liquid service shall be monitored pursuant to 40 CFR 63.1027(b).
 - D. Pressure relief devices in gas and vapor service shall be monitored pursuant to 40 CFR 63.1030(c).

- E. Compressors designated to operate with an instrument reading less than 500 parts per million above background, as described in 40 CFR 63.1022(e), shall be monitored pursuant to 40 CFR 63.1031(f).
 - F. Sampling connection systems shall be equipped, designed, and operated pursuant to 40 CFR 63.1032(b) and (c).
 - G. Open-ended lines shall be equipped and operated pursuant to 40 CFR 63.1033(b).
- iii. The Permittee shall comply with the requirements for pressure relief devices, such as relief valves or rupture disks, pursuant to 40 CFR 63.2480(e) by operating each pressure relief device in organic HAP gas or vapor service with an instrument reading of less than 500 ppm above background as measured by USEPA Method 21.
 - iv. All pressure relief devices in organic HAP service must be equipped with a device or monitoring system that meets the work practices requirements of 40 CFR 63.2480(e)(3)(i) through (v).
 - v. The Permittee shall conduct a root cause analysis for any pressure relief device in organic HAP service that releases to atmosphere as specified in 40 CFR 63.2480(e)(3)(iii) and (e)(6). Corrective action must be implemented pursuant to 40 CFR 63.2480(e)(7) following the root cause analysis.

2.7.4 Non-Applicability Provisions

- a. This permit is issued based on the affected components at the facility not being subject to the requirements of the NSPS, 40 CFR 60 Subpart VVa. This is because they are not located at a synthetic chemical manufacturing facility for purposes of this NSPS because they do not produce as an intermediate or final product any chemical listed in 40 CFR 60.489. Note, however, the plant must meet requirements of this NSPS as a requirement of BACT (See Condition 2.7.2(c)(i)).
- b. This permit is issued based on pumps and compressors at the facility not being subject to the control requirement of 35 IAC 215.142 because none of these components will handle a volatile organic liquid with a vapor pressure of 2.5 psia or greater at 70°F.

2.7.5 Operating Requirements

- a. The CO₂ absorption solvent used in the ammonia plant shall be such that the affected absorption solvent components (i.e., the components that handle this material) are "in heavy liquid service" as defined by 40 CFR 60.481a.

2.7.6 Emission Limits

- a. Emissions of VOM from the affected components shall not exceed 4.6 tons/year, as determined by use of appropriate USEPA methodology for estimating emissions from leaking components.
- b. Emissions of GHGs from the affected components shall not exceed 994 tons/year CO₂e, as determined by use of appropriate USEPA methodology for estimating emissions from leaking components.

2.7.7 Recordkeeping Requirements

- a. The Permittee shall maintain a log of each instance where a high-quality component was installed rather than a leakless component, with justification for why a leakless component was not available. This documentation shall be retained until the particular component is no longer present at the source:
 - i. A description of the technical specifications for the particular component, including information for: component type; component service and operating conditions, e.g., liquid temperature and pressure; service life of component or packing; manner of valve operation, e.g., manual or automatic; and speed of valve operation.
 - ii. A list of select component manufacturers that make products that generally satisfy the technical specifications, quality standards, and safety standards established for components to be installed at the source.
 - iii. The manufacturers or vendors contacted for the availability of the leakless component and a copy of their response.
 - iv. An explanation of why a leakless component was not installed if one was available.
- b. In addition to the records required by Condition 2.7.2(c) (i), the Permittee shall also maintain a log or other records for each monthly noninstrumental inspection, including:
 - i. Name of person performing the inspection;
 - ii. Equipment identification;
 - iii. Date of inspection;
 - iv. Observations made during the inspection; and
 - v. Any corrective actions taken as a result of the inspection.
- c. For affected components, the Permittee shall maintain a log or other records that identify leaking components and a compilation of leaking components by month by type of component, the nature of the leaks, and the duration of the leaks.

- d. For the affected components, the Permittee shall maintain the following records related to emissions of GHGs and VOM:
 - i. A file containing the number of components by type and service, and emission factors used by the Permittee to determine the emissions from leaks in different types of components, with supporting documentation and calculations. These calculations shall be updated, as appropriate, following completion of construction or upon subsequent changes to the piping systems at the plant.
 - ii. Records of the emissions of GHGs and VOM (tons/month and tons/year), with supporting data and calculations.
- e. NESHAP Records
 - i. Pursuant to 40 CFR 63.2525(a), the Permittee must keep each applicable records required by 40 CFR 63, Subpart A, and in referenced 40 CFR 63, Subpart UU.
 - ii. Pursuant to Table 6 of 40 CFR 63.2480 and 40 CFR 63, Subpart UU, the Permittee shall maintain equipment identifications and designations in accordance with 40 CFR 63.1022. The Permittee shall include the type of component, number of components, and type of service for each component.
 - iii. Pursuant to 40 CFR 63.1024, 40 CFR 63.1035, and 40 CFR 63.1038, the Permittee shall maintain records for leak repair schedule, quality improvement program for pumps, and leak records.
 - iv. Pursuant to 40 CFR 63.2525(q), the Permittee shall keep the records specified for each pressure relief device subject to the work practice standards in 40 CFR 63.2480(e).

2.7.8 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations from the requirements of this permit for affected components, as follows. Reports shall include the information specified in Condition 3.4.
 - i. Deviations from requirements that must be reported in reports pursuant to the NSPS, as required by Condition 2.7.2(a) and (b), shall be reported in such reports.
 - ii. Other deviations shall be reported with the periodic compliance reports required by Condition 2.1.9(b).
- b. NESHAP Reporting

- i. For the components, the Permittee shall submit notifications and reports as required in 40 CFR 63.2515 and 40 CFR 63.2520, respectively.
- ii. Pursuant to 40 CFR 63.1039, the Permittee shall submit initial compliance status reports and periodic reports, as required.

Section 2.8: Unit-Specific Conditions for Roadways and Parking Areas

2.8.1 Description

For purposes of these unit-specific conditions, the "affected roadways" are roadways and parking areas at the facility, which may be sources of fugitive particulate matter due to vehicle traffic or windblown dust. All affected roadways at the source would be paved to reduce the generation of emissions. In addition, vacuum sweeping and other appropriate mitigative measures would be used, as needed, in accordance with a formal dust control plan.

2.8.2 Control Technology Determination - BACT

- a. The opacity of fugitive particulate matter emissions from affected roadways shall not exceed 10 percent. For this purpose, opacity shall be determined in accordance with 35 IAC 212.109.
- b. All affected roadways shall be paved.
- c. The Permittee shall implement a Fugitive Dust Control Plan, as described by Condition 2.8.4.

2.8.3 Applicable State Emission Standards

- a. For the affected roadways, the Permittee shall comply with 35 IAC 212.301 and 212.314, which provides that emissions of fugitive particulate matter shall not be visible from any process, including material handling and storage activities, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed is greater than 25 miles per hour.

2.8.4 Fugitive Dust Control Plan

- a. The Permittee shall carry out control of fugitive particulate emissions from the affected roadways in accordance with a Fugitive Dust Control Plan describing the measures being implemented in accordance with Condition 2.8.2(c) to control emissions from these roadways, which Plan shall be kept current.
- b. This Plan shall address:
 - i. Mitigative measures for control of fugitive dust on affected roadways, including but not limited to, vacuum sweeping, broom sweeping, water or surface spray, and prompt cleanup of spillage onto roadways.
 - ii. Preventative measures. The handling of material collected from the affected roadways by vacuum sweeping shall be enclosed or shall utilize spraying, pelletizing, screw conveying or other equivalent methods to control PM₁₀/PM_{2.5} emissions.

- c. The Plan shall include:
 - i. Maps or diagrams indicating the location of affected roadways, with description of the roadway (length, width, surface material, etc.) and volume and nature of expected vehicle traffic, or other activity on such roadway.
 - ii. A detailed description of the emissions control technique(s) (e.g., sweeping) for the affected roadways, including: typical application rate; type and concentration of additives; normal frequency with which measures would be implemented; circumstances in which the measure would not be implemented, e.g., recent precipitation; triggers for additional control (e.g., observation of 8 percent opacity); and calculated control efficiency for PM, PM₁₀ and PM_{2.5} emissions.
 - iii. A detailed description of the preventative measures to address control of fugitive dust on affected roadways, including: verification that truck loads are appropriately covered; methods used to control the handling of material collected from the affected roadways (e.g., by vacuum sweeping); and explanation of how speed limits are adhered to at the facility.
- d. The Permittee shall submit copies of the Plan to the Illinois EPA for review as follows:
 - i. A Plan addressing affected roadways during the construction of the facility shall be submitted within 30 days of beginning actual construction of the ammonia plant.
 - ii. A Plan addressing affected roadways shall be submitted within 90 days of initial startup of the ammonia plant.
 - iii. Significant amendments to the Plan by the Permittee shall be submitted within 30 days of the date that the amendment is made.
- e. A revised Plan shall be submitted to the Illinois EPA for review within 90 days of a request from the Illinois EPA for revision to address observed deficiencies in control of fugitive particulate emissions.

2.8.5 Emission Limits

Emissions of PM, PM₁₀, and PM_{2.5} from the affected roadways shall not exceed 1.54, 0.08, and 0.02 tons/year, respectively. Compliance with these limits shall be determined from the amount and nature of vehicle traffic associated with the operation of the ammonia plant, specific operating information for affected roadways, and appropriate emission factors published by USEPA.

2.8.6-1 Opacity Observations

- a. The Permittee shall conduct observations, which include a series of observations of the opacity of fugitive emissions from the affected roadways as follows, to determine the range of opacity from affected roadways and the change in opacity as related to the amount and nature of vehicle traffic and implementation of the operating program.
- b. "Performance observations" for the opacity of emissions shall be conducted as follows. For performance observations, the Permittee shall submit test plans, test notifications and test reports, as specified by Condition 3.1.
 - i. In conjunction with the measurements of silt loading on the affected roadways required by Condition 2.8.7, performance observations shall first be completed no later than 30 days after the date that construction of process units in the ammonia plant are completed, provided, however, that observation may be deferred as long as heavy construction equipment is on site preventing paving of roadways.
 - ii. Performance observations shall be repeated within 30 days in the event of changes involving affected roadways that would act to increase opacity (so that observations that are representative of the current circumstances of the affected units have not been conducted), including changes in the amount or type of traffic on affected roadways, changes in the standard operating practices for affected roadways, such as application of salt or traction material during cold weather, and changes in the operating program for affected roadways.
- c. "Compliance observations" shall be conducted for affected roadways on at least a quarterly basis to verify opacity levels and confirm the effectiveness of the Fugitive Dust Control Plan in controlling emissions.
- d. Upon written request by the Illinois EPA, the Permittee shall conduct performance or compliance observations, as specified in the request. Unless another date is agreed to by the Illinois EPA, performance observations shall be completed within 30 days and compliance observations shall be completed within 5 days of the Illinois EPA's request.

2.8.6-2 Inspections

- a.
 - i. The Permittee shall conduct inspections of affected roadways for the specific purpose of verifying that the Fugitive Dust Control Plan required by Condition 2.8.4 for the affected roadways is being implemented. These inspections shall be conducted by supervisory or management personnel or shall be overseen by such personnel.

- ii. The Permittee shall conduct these inspections of affected roadways on at least a weekly basis during construction of the facility and on a monthly basis thereafter with personnel not directly responsible for the day-to-day implementation of the Fugitive Dust Control Plan.
- b. The Permittee shall keep records for these inspections, which shall include the following information, at a minimum:
 - i. Date and time the inspection was performed and the name(s) and position(s) of inspection personnel.
 - ii. The observed condition of the control practices for the affected roadways.
 - iii. A description of any changes to control practices that are recommended as a result of the inspection.
 - iv. A summary of the observed implementation or status of the Fugitive Dust Control Plan.
 - v. If the inspection was not performed by supervisory or management personnel, the name(s) and position(s) of the supervisory or management personnel who oversaw the inspection.
 - vi. The condition of the pavement on roadways.

2.8.7 Operational Measurements

- a. The Permittee shall conduct measurements of the silt loading on various affected roadways as follows. This sampling and analysis shall be conducted using the "Procedures for Sampling Surface/Bulk Dust Loading," Appendix C.1 in Compilation of Air Pollutant Emission Factors, USEPA, AP-42. A series of samples shall be taken to determine the average silt loading and address the change in silt loadings as related to the amount and nature of vehicle traffic and implementation of the Fugitive Dust Control Plan.
- b. Measurements shall be performed by the following dates:
 - i. Measurements shall first be completed no later than 30 days after construction is completed.
 - ii. Measurements shall be repeated within 30 days in the event of changes involving affected roadways that would act to increase silt loading (so that data that is representative of the current circumstances of the affected units has not been collected), including changes in the amount or type of traffic on affected roadways, changes in the standard operating practices for affected roadways, such as application of salt or traction

material during cold weather, and changes in the operating program for affected roadways.

- iii. Upon written request by the Illinois EPA, the Permittee shall conduct measurements, as specified in the request, which shall be completed within 75 days of the Illinois EPA's request.
- c. The Permittee shall submit test plans, test notifications and test reports for these measurements as specified by Condition 3.1, provided, however, that once a test plan has been accepted by the Illinois EPA, a new test plan need not be submitted if the accepted plan will be followed unless a new test plan is requested by the Illinois EPA.
- d. The Permittee shall keep records for the measurements conducted for affected roadways pursuant to Condition 2.8.7, including records for the sampling and analysis activities and results.

2.8.8 Recordkeeping Requirements

- a. The Permittee shall keep a file that contains:
 - i. The emission factors used to determine the particulate emissions from the affected roadways, with supporting documentation.
 - ii. The maximum PM, PM₁₀ and PM_{2.5} emissions of the affected roadways, in tons/year, considering the maximum amounts of vehicle traffic needed for the operation of the facility, with supporting calculations and documentation, and confirmation that the control measures in the Fugitive Dust Control Plan are sufficient to ensure compliance with the emission limits in Condition 2.8.5.
- b. The Permittee shall maintain records documenting implementation of the Fugitive Dust Control Plan required by Condition 2.8.4, including:
 - i. Records for each treatment of an affected roadway(s):
 - A. The identity of the affected roadway(s), the date and time, and the identification of the truck(s) or treatment equipment used;
 - B. For application of dust suppressant by truck: target application rate or truck speed during application, total quantity of water or chemical used and, for application of a chemical or chemical solution, the identity of the chemical and concentration, if applicable;
 - C. For sweeping or cleaning: identity of equipment used and identification of any deficiencies in the condition of equipment; and

- D. For other type of treatment: a description of the action that was taken.
- ii. Records for each incident when control measures were not implemented and each incident when additional control measures were implemented due to particular activities, including description, date, a statement of explanation, and expected duration of such circumstances.
- c. The Permittee shall keep records for any periods during which affected roadway(s) were not properly controlled as required by this permit, which records shall include the information specified by Condition 3.3, including the following, and an estimate of the additional emissions of PM, PM₁₀ and PM_{2.5} that resulted, if any, with supporting calculations.
 - i. The dates that control measures were not implemented with a listing of those control measures.
 - ii. The reasons that the control measures were not implemented.
 - iii. The dates when controls measures were not implemented based on a belief that implementation of such control measures would have been unreasonable given prevailing weather conditions.
- d. The Permittee shall maintain records of the PM, PM₁₀, and PM_{2.5} emissions (tons/month and tons/year) of the affected roadways, based on data for shipments of ammonia and other activities at the plant, the above records for the affected roadways including data for implementation of the Fugitive Dust Control Plan, and appropriate USEPA emission estimation methodology and emission factors, with supporting calculations.

2.8.9 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of affected roadways with permit requirements with the periodic reports required by Condition 2.1.9 (b). These notifications shall include the information specified by Condition 3.4.

Section 2.9: Unit-Specific Conditions for Engines

2.9.1 Description

The facility would have one diesel-fired emergency engine generator (the "affected emergency generator") and one smaller diesel-fired firewater pump engine (the "affected firewater pump engine"). The affected emergency generator would supply electricity to critical equipment during power outages. The affected firewater pump engine would be used in the event of fire. Other than during power outages or fires, these engines (collectively, the "affected engines") would only be operated for purposes of maintenance checks and readiness testing, normally for less than an hour per week.

2.9.2 Control Technology Determination - BACT

- a.
 - i. The affected emergency generator shall be designed and operated to comply with the applicable limits of the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart I IIII, for emergency engines other than fire pump engines. (See Condition 2.9.3-1(a)(ii)).
 - ii. The affected firewater pump engine shall be designed and operated to comply with the applicable limits of the NSPS, 40 CFR 60 Subpart I IIII, for fire pump engines. (See Condition 2.9.3-1(a)(iv)).

Note: For subject engines, 40 CFR 60 Subpart I IIII sets limits for the combined emission of NO_x and nonmethane hydrocarbons (NMHC), the emissions of CO and the emissions of PM. The emission limit for NO_x + NMHC serve as BACT for NO_x and VOM; the emission limit for CO serves as BACT for CO; and the emission limit for PM serves as BACT for PM₁₀ and PM_{2.5}.

- b. The GHG emissions of the affected emergency generator and the affected firewater pump engine shall not exceed 160 tons/year and 25 tons/year, respectively.
- c. The affected engines shall not exceed the operational limits in Condition 2.9.4(a).
- d. The affected engines shall be operated and maintained in accordance with good combustion practices.

2.9.3-1 Applicable Federal Emission Standards

- a.
 - i. The affected engines are subject to the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart I IIII, and related provisions in the General Provisions of the NSPS, 40 CFR 60 Subpart A.
 - ii. The affected emergency generator, as a new emergency stationary compression ignition internal combustion

engine with a displacement of less than 10 liters per cylinder that is not a fire pump engine, must comply with the NSPS standards for new emergency stationary internal combustion engines with maximum engine power greater than 2,237 kW (3,000 hp), as follows. The Permittee shall comply with these standards by purchasing an engine certified to these standards for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications. [40 CFR 60.4205(b), 60.4202(b) and 60.4211(c) and 40 CFR 1039, Appendix I]

A. NO_x + NMHC: 6.4 g/kW-hr.

B. CO: 3.5 g/kW-hr.

C. PM: 0.20 g/kW-hr.

iii. Smoke from the affected emergency generator shall not exceed the following smoke standards, pursuant to 40 CFR 60.4205(b) and 60.4202(b) and 40 CFR 1039.105(b).

A. 20 percent during acceleration.

B. 15 percent during lugging mode.

C. 50 percent during the peaks in either acceleration or lugging modes.

iv. The affected firewater pump engine, as a new firewater pump engine with a displacement of less than 30 liters per cylinder, must comply with the emission standards in Table 4 of 40 CFR 60 Subpart IIII applicable to units with a maximum engine power greater than 225 kW but less than 450 kW, as follows. The Permittee shall comply with these standards by purchasing an engine certified to these standards for the same model year and maximum (i.e., NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications. [40 CFR 60.4205(c) and 60.4211(c)]

A. NO_x + NMHC: 4.0 g/kW-hr.

B. CO: 3.5 g/kW-hr.

C. PM: 0.20 g/kW-hr.

v. The diesel fuel used in the affected engines shall meet the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. [40 CFR 60.4207(b)].

b. The affected emergency generator is subject to 40 CFR 63 Subpart ZZZZ. As a new stationary engine located at a major source for HAPs with a rating of more than 500 brake hp that does not operate or is not contractually obligated to be

available for more than 15 hours per calendar year for the purposes specified in 40 CFR 63.6640(f)(2)(ii) and (iii), the affected emergency generator does not have to meet the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ, or the NESHAP General Provisions, 40 CFR 63 Subpart A, except for the initial notification requirements of 40 CFR 63.6645(f). [40 CFR 63.6590(b)(1)(i)]

- c. The affected firewater pump engine is subject to 40 CFR 63 Subpart ZZZZ. However, as a new stationary engine located at a major source for HAPs with a rating of less than or equal to 500 brake hp, the affected firewater pump engine must meet the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ, by meeting the requirements of the NSPS, 40 CFR 60 Subpart IIII, for compression ignition engines. No further requirements apply for the affected firewater pump engine under 40 CFR 63 Subpart ZZZZ. [40 CFR 63.6590(c)(6)]

2.9.3-2 Applicable State Emission Standards

- a. The affected engines are subject to 35 IAC 212.123(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, 6-minute average, from any emission unit, except as allowed by 35 IAC 212.123(b) and 212.124.
- b. The affected engines are subject to 35 IAC 214.301, which provides that no person shall cause or allow the emissions of SO₂ into the atmosphere from any process emission source to exceed 2000 ppm.
- c. The affected engines are subject to 35 IAC 214.305(a)(2), which provides that the sulfur content of all distillate oil used by the engines must not exceed 15 ppm.

2.9.4 Operational Limits and Work Practices

- a.
 - i. The affected emergency generator shall not operate for more than 75 hours/year.
 - ii. The affected firewater pump engine shall not operate for more than 100 hours/year.
- b. The rated capacity of the affected engines shall not exceed the following:
 - i. 3,985 hp for the affected emergency generator; and
 - ii. 369 hp for the affected firewater pump engine.

- c. Except as provided by 40 CFR 60.4211(g), the Permittee shall operate and maintain the affected engines according to the manufacturer's written instructions related to emissions. In addition, the Permittee may only change those emission-related settings that are permitted by the manufacturer. The Permittee must also meet the requirements of 40 CFR Part 1068, as applicable. [40 CFR 60.4211(a)]
- d. Pursuant to the NSPS, 40 CFR 60.4211(f), and this permit, each affected engine may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of each engine shall not exceed 100 hours per year. The affected engines may also operate up to 50 hours per year in non-emergency situations, but those 50 hours count towards the 100 hours per year provided for maintenance and testing. This operation in non-emergency situations cannot be for peak shaving or to generate income for a source to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as provided herein, is prohibited.
- e.
 - i. Maintenance checks and readiness testing of the affected engines to confirm their readiness for emergency operation shall be conducted during daylight hours.
 - ii. The duration of maintenance checks and readiness testing of an affected engine to confirm readiness shall only exceed one hour in a day if operational problems are encountered during initial readiness testing of the affected engine and further testing of the affected engine is needed to confirm readiness after corrective actions have been taken.
 - iii. Maintenance checks and readiness testing of the affected engines shall not be conducted concurrently.

2.9.5 Emission Limits

- a. The emissions of the affected emergency generator shall not exceed the following limits:

Pollutant	Limits	
	Pounds/Hour	Tons/Year
NOx	26.20	0.98
CO	22.93	0.86
PM	1.31	0.05
PM ₁₀ /PM _{2.5}	1.31	0.05
VOM	1.23	0.05
SO ₂	---	0.01

- b. The emissions of the affected firewater pump engine shall not exceed the following limits:

Pollutant	Limits	
	Pounds/Hour	Tons/Year
NOx	2.43	0.12
CO	2.12	0.11
PM	0.12	0.01
PM ₁₀ /PM _{2.5}	0.12	0.01
VOM	0.11	0.01
SO ₂	---	0.04

2.9.6 Operational Monitoring

- a. The Permittee shall install, operate and maintain a non-resettable hour meter on each affected engine.

2.9.7 Recordkeeping Requirements

- a. If an affected engine does not also meet the standards of the NSPS, 40 CFR 60 Subpart IIII, applicable to non-emergency engines in the applicable model year, the Permittee must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The Permittee must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214(b)]
- b. The Permittee shall maintain records demonstrating that the sulfur content of the fuel oil used by the affected engines does not exceed 15 ppm, such as records from the fuel supplier indicating the sulfur content of the fuel oil, as provided by 35 IAC 214.305(a)(3)(A).
- c. The Permittee shall keep a file for the affected engines containing copies of the certifications from the manufacturers for the emission rates of the engines and their fuel consumption rates, in gallons per kW-hour.
- d. The Permittee shall keep records for the maintenance checks and readiness testing of the affected engines that address compliance with Condition 2.9.4(e), including:
- i. The date and timing of the maintenance check or readiness testing;
 - ii. If maintenance checks or readiness testing is conducted outside of daylight hours, the reason for the timing of such testing; and
 - iii. If the duration of the maintenance checks and readiness testing of an affected engine in a day is more than one hour, the reason why the maintenance checks and readiness testing could not be completed within one hour.

- e. The Permittee shall maintain records for the operating hours of each affected engine (hours/month and hours/year).
- f. The Permittee shall maintain records of consumption of fuel by the affected engines (gallons/month, separately for the affected emergency generator and the affected firewater pump engine).
- g. For the affected emergency generator and the affected firewater pump engine, the Permittee shall maintain the following records related to emissions of NO_x, CO, SO₂, VOM, PM, PM₁₀/PM_{2.5}, and GHG:
 - i. A file containing the following information, with supporting documentation and calculations:
 - A. The maximum emission rates of NO_x, CO, PM₁₀/PM_{2.5}, and VOM (as NMHC) from the affected engines in grams/hp-hour;
 - B. The maximum emission rates for NO_x + NMHC, CO, and PM from each affected engine in grams/kW-hr output; and
 - C. The maximum emission rates for NO_x, CO, VOM, PM, PM₁₀/PM_{2.5}, SO₂, and GHG from each affected engine in pounds per hour. Compliance with the GHG limits shall be determined using emission factors for GHGs in 40 CFR 98 Subpart C, and the global warming potentials in 40 CFR 98 Subpart A.
 - ii. Records of the actual emissions of NO_x, CO, VOM, PM, PM₁₀/PM_{2.5}, SO₂, and GHG for the affected emergency generator and the affected firewater pump engine (tons/month and tons/year), with supporting calculations.

2.9.8 Notification and Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected engines with the permit requirements with the periodic compliance reports required by Condition 2.1.9(b). These notifications shall include the information specified in Condition 3.4.
- b. For the affected emergency generator, the Permittee is required to submit an Initial Notification that includes the information in 40 CFR 63.9(b)(2)(i) through (v) and a statement that the affected emergency generator stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions). [40 CFR 63.6645(f)]
- c. Pursuant to 35 IAC 214.305(a)(3)(C), the Permittee shall notify the Illinois EPA within 30 days after discovery of deviations

from the requirements of 35 IAC 214.305(a)(2). At minimum, such notification must include a description of the deviations, a discussion of the possible cause of the deviations, any corrective actions taken, and any preventative measures taken.

PART 3: GENERAL PERMIT CONDITIONS

Condition 3.1: General Requirements for Emission Testing

- a.
 - i. At least 60 days prior to the actual date of initial emission testing required by this permit, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include at a minimum:
 - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - B. The specific conditions, e.g., operating rate and control device operating conditions, under which testing shall be performed including a discussion of why these conditions will be representative and the means by which the operating parameters will be determined.
 - C. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations.
 - D. The test method(s) that will be used, with the specific analysis method if the method can be used with different analysis methods.
 - ii. As provided by 35 IAC 283.220(d), the Permittee need not submit a test plan for subsequent emissions testing that will be conducted in accordance with the procedures used for previous tests accepted by the Illinois EPA or the previous test plan submitted to and approved by the Illinois EPA, provided that the Permittee's notification for testing, as required below, contains the information specified by 35 IAC 283.220(d)(1)(A), (B) and (C).
- b.
 - i. The Permittee shall notify the Illinois EPA prior to performing emissions testing required by this permit to enable the Illinois EPA to observe the tests. Notification for the expected date of testing shall be submitted a minimum of 30 days* prior to the expected date and identify the testing that will be performed. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days* prior to the actual date of testing. Notwithstanding 40 CFR 60.8(d), the Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
 - ii. This notification shall also identify the parties that will be performing testing and the set or sets of operating conditions under which testing will be performed.
- c. Three copies of the Final Reports for emission tests shall be forwarded to the Illinois EPA within 30 days after the test results

are compiled and finalized but not later than 90 days after the date of testing. At a minimum, the Final Report for testing shall contain the following. Copies of emission test reports shall be retained for at least five years after the date that an emission test is superseded by a more recent test.

- i. A tabular summary of results which includes:
 - A. Process rates (e.g., feedstock usage rate or firing rate).
 - B. Measured emission rates for different pollutants tested.
 - C. Emission factor, calculated using the average test results in the terms of the applicable limits, for example, in units of lbs/mmBtu.
 - D. Compliance demonstrated - Yes/No.
- ii. Description of test method(s) and procedures, including a description of sampling points, sampling train, analysis equipment, and test schedule
- iii. Detailed description of test conditions, including:
 - A. Pertinent process information (e.g., usage of raw material or fuel and composition).
 - B. Control equipment information (i.e., monitored data and other relevant operating parameters during testing).
- iv. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.

Condition 3.2: General Requirements for "Logs" or Similar Records

- a. Operating logs or other similar records required by this permit shall, at a minimum, include the following information related to the emission units and associated control system:
 - i. Information identifying periods when an emission unit or group of related emission units was not in service.
 - ii. For periods when a unit or group of related units is in service and operating normally, relevant process and control system information to generally confirm normal operation.
 - iii. For periods when a unit or group of related units is in service and is not operating normally, identification of each such period, with detailed information describing the operation of the unit(s), the potential consequences for additional emissions from the unit(s), the potential of any excess emissions from the affected unit(s), the actions taken to restore normal operation, and any actions taken to prevent similar events in the future.

- iv. Other information as may be appropriate to show that the emission unit or group of related emission units is operated in accordance with good air pollution control practice.
- b. Inspection, maintenance and repair logs or other similar information required by this permit shall, at a minimum, include the following information related to the emission units and associated control system:
 - i. Identification of equipment, with date, time, responsible employee and type of activity.
 - ii. For inspections, a description of the inspection, findings, and any recommended actions, with reason.
 - iii. For maintenance and repair activity, a description of actions taken, reason for action (e.g., preventative measure or corrective action as a result of inspection), probable cause for requiring maintenance or repair if not routine or preventative, and the condition of equipment following completion of the activity.
 - iv. Other information as may be appropriate to show that the emission unit or group of related emission units is maintained in accordance with good air pollution control practices, including prompt repair of defects that interfere with effective control of emissions.
- c. The logs required by this permit may be kept in manual or electronic form and may be part of a larger information database maintained by the Permittee provided that the information required to be kept in a log is readily accessible.

Condition 3.3: General Requirements for Recordkeeping for Deviations

- a. Except as specified in a particular provision of this permit or in a subsequent CAAPP Permit for the plant, records for deviations from applicable requirements shall include at least the following information: the date, time and estimated duration of the deviation; a description of the deviation; the manner in which the deviation was identified, if not readily apparent; the probable cause for deviation, if known, including a description of any equipment malfunction or breakdown associated with the deviation; information on the magnitude of the deviation, including actual emissions or performance in terms of the applicable standard if measured or readily estimated; confirmation that standard procedures were followed or a description of any event-specific corrective actions taken; and a description of any preventative measures taken to prevent future occurrences, if appropriate.

Condition 3.4: General Requirements for Reporting of Deviations

- a. The Permittee shall include the following information in records and reports for deviations:

- i. Identity of the deviation, with date, time, duration and description.
 - ii. Describe the effect of the deviation on compliance, with an estimate of the excess emissions that accompanied the deviation, if any.
 - iii. Describe the probable cause of the deviation and any corrective actions or preventive measures taken.
- b.
- i. Unless otherwise specified in a particular condition of this permit, if deviation(s) from requirements of this permit occurs during a reporting period, a compliance report shall be submitted no later than 45 days after the end of the reporting period. This report shall also provide a listing of all deviations for which immediate or 30-day reporting was required but need not include copies of the previously submitted information.
 - ii. If there are no deviations during a reporting period, the Permittee shall still submit a compliance report, which report shall state that no deviations occurred during the reporting period.
- c. Upon issuance of a Clean Air Act Permit Program (CAAPP) permit for the plant, the provisions of the CAAPP permit with respect to reporting of deviations will supersede the requirements of this permit.

ATTACHMENT 1: SUMMARY OF PERMITTED EMISSIONS OF THE FACILITY^a

Table 1: Emissions of the Facility (tons/year)

Pollutant	Ammonia Plant		Reformer Furnace	Boilers	"Other Units" (See Table 2)	Total
	Flares	CO ₂ Vent				
NO _x	19.5	---	52.3	15.7	17.1	104.7
CO	79.2	1.7	93.1	2.0	9.5	185.5
VOM	2.2	28.4	6.7	2.2	5.2	44.7
PM	0.7	---	11.5	3.0	6.0	21.2
PM ₁₀	0.8	---	11.5	3.0	3.0	18.3
PM _{2.5}	0.8	---	11.5	1.6	3.0	16.8
SO ₂	0.2	---	2.8	0.9	0.1	4.0
GHG	34,695	1,292,232	562,317	184,038	5,087	2,078,369

Notes:

- a. This summary addresses operation of the facility after the commissioning and shakedown period of the facility is complete. In the period prior to the commissioning and shakedown period, operation and emissions of the Startup Heater (addressed in Table 2) and the flares in the Ammonia Plant would potentially be greater but operation and emissions of other units would be lower.

Table 2: Emissions of "Other Units" (tons/year)

Pollutant	Startup Heater	Cooling Tower	Engines ^a	Equipment Components	Roadways	Ammonia Storage Flare	Tanks ^b	Process Water Deaerator	Sub Total
NO _x	0.36	---	1.1	---	---	15.7	---		17.2
CO	0.10	---	1.0	---	---	8.4	---		9.5
VOM	0.01	---	0.06	4.61	---	0.15	0.01	0.31	5.2
PM	0.01	4.42	0.06	---	1.54	0.01	---		6.0
PM ₁₀	0.01	2.85	0.06	---	0.08	0.01	---		3.0
PM _{2.5}	0.01	2.85	0.06	---	0.02	0.01	---		3.0
SO ₂	0.01	---	0.04	---	---	0.01	---		0.1
GHG	604	---	184	994	---	3,305	---		5,087

Notes:

- a. The engines are the emergency generator and the firewater pump engine.
 b. The tanks are the storage tanks at the facility for organic liquids, e.g., amine absorption solvent and diesel fuel.