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OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM **February 7, 2020**

TO: Phillip Fielder, P.E., Chief Engineer

THROUGH: Rick Groshong, Compliance and Enforcement, Sr. Environmental Manager

THROUGH: Phil Martin, P.E., Existing Source Permits Section Manager

THROUGH: David Schutz, P.E., New Source Permit Section

FROM: Morgan McGrath, P.E., Eng. Section, Regional Office at Tulsa (ROAT)

SUBJECT: Evaluation of Permit Application No. **2008-100-TV**
Pryor Chemical Company
Pryor Mid-America Industrial Park (SIC 2873/NAICS 325311)
AQD Facility ID: 1736
Latitude: 36.24268º, Longitude: -95.2781º
Section 3, Township 20N, Range 19E; Mayes County
Physical Address: 4463 Hunt Street, Pryor, OK.

SECTION I. INTRODUCTION

Pryor Chemical Company (PCC) has applied for their initial Part 70 operating permit for their facility located in the Pryor Mid-America Industrial Park in Mayes County. The facility was issued Permit No. 2008-100-C (M-6) PSD on May 10, 2019. The initial TV operating permit will undergo Tier II review.

This permit action incorporates the all underlying requirements contained in Permit No. 2008-100-C (M-6) PSD. The boiler (EU 803) authorized in Permit No. 2008-100-C (M-6) PSD has completed installation. The as-constructed unit has a lower rated heat input rate than what was previously authorized, resulting in a decrease in emissions. This permit will incorporate the reduction of the maximum installed heat input and related emission limits in this permit as allowed under the operational flexibility clause of OAC 252:100-8-6(f).

PCC submitted an application on October 25, 2018, which requested the addition of a natural gas-fired emergency generator. The application for the addition of the emergency generator has been determined to be a Tier I based on the request for an operating permit at an existing Part 70 source that will result in a minor modification.

In addition, PCC completed a facility-wide NH_3 fugitive component count in November 2019, which resulted in increased hourly and annual emissions due the number of actual fugitive components installed than what was estimated in the construction permit. PCC has requested the

NH_3 permit limitations be made in adjustment to the construction permit limits to account for the actual component count. Permitted hourly emissions of NH_3 were 28.5 lb/hr and are now estimated to be 42.1 lb/hr; while permitted annual emissions of NH_3 have increased by 62.5 TPY. The request for the increase in NH_3 fugitive components is not considered a significant modification and will be aggregated with the minor modification request involving the installation of the emergency generator.

This facility is considered a Prevention of Significant Deterioration (PSD) source of NOx and CO emissions and a synthetic-minor source of PM_{10} and $PM_{2.5}$ emissions. It is also considered an area source of Hazardous Air Pollutants (HAPs) emissions.

SECTION II. HISTROICAL PERMIT ACTIONS

See the memorandum of Permit No. 2008-100-C (M-6) PSD for all historical permitting information.

SECTION III. PROCESS DESCRIPTION

PCC is an integrated inorganic fertilizer plant located at the Mid-America Industrial District in Pryor, Oklahoma. Pryor produces anhydrous ammonia (CAS #7664-41-7), urea (CAS #57-13-6), nitric acid (CAS #7697-37-2), urea ammonium nitrate (UAN), ammonium nitrate (AN) (CAS # 6484-52-2) and carbon dioxide (CAS #124-38-9). PCC uses natural gas feedstock delivered via pipeline. PCC products are transported to market via truck and/or rail.

EUG 1—Ammonia Plant #4

Ammonia Plant #4 has a maximum operating capacity rate of 770 tons of ammonia per day, and 281,050 tons per year. The plant is equipped with a gas-fired primary reformer with a maximum heat input capacity of 300 MMBTUH. The reformer is fired on a combination of pipeline quality natural gas, waste gas generated from the Natural Gas Desulfurization Unit, and process off gas (e.g., purge gas) from Ammonia Plant #4. Ammonia Plant #4 also utilizes a natural gas-fired startup heater related to the operation of the ammonia converter. The maximum heat input capacity of the ammonia converter startup heater is 40 MMBTUH. The emissions from the primary reformer (EU ID 101) and the ammonia converter startup heater (EU ID 107) are vented to atmosphere through a common stack (EU ID 101).

During normal operation, the purge gas at Ammonia Plant #4 is scrubbed to reduce the ammonia content prior to its introduction to the primary reformer as fuel. However, at times scrubbed or un-scrubbed purge gas may be vented to atmosphere downstream of the reformer via piping from the fuel side of the reformer to the reformer stack. In addition, an ammonia-containing gas stream from the Urea Plant #2 Head Tank may be vented to atmosphere downstream of the reformer. These vented gas streams are included in the permit as additional emissions from EU ID 101.

The plant produces ammonia by reacting hydrogen with nitrogen over a catalyst at high temperature and pressure to form ammonia (NH_3). Nitrogen is obtained from ambient air, while hydrogen is obtained from the catalytic steam reforming of methane. The process uses about 21,250 standard

cubic feet of natural gas per ton of ammonia produced. There are six steps required to produce ammonia using the catalytic steam reforming method:

1. Natural gas desulfurization
2. Catalytic steam reforming
3. Carbon monoxide shift
4. Carbon dioxide removal
5. Methanation
6. Ammonia synthesis ($3H_2 + N_2$ ---> $2NH_3$)

PCC had planned to operate two additional ammonia plants (Ammonia Plants #1 and #3) but took them out of service when amended modeling proved that reductions in NO_X emissions had to be accomplished to meet the NAAQS (National Ambient Air Quality Standards). The two plants have been sold and removed from the facility.

Ammonia plant purge gas, produced as an off-gas from the ammonia production process, is a good fuel source rich in hydrogen. PCC originally used purge gas to supplement the primary fuel input (i.e., natural gas) to the primary reformer burners at Ammonia Plant #4 and to the non-selective catalytic burner and SCR unit at Nitric Acid Plant #1 in lieu of purchasing natural gas. Purge gas is used in the Ammonia Plant #4 Primary Reformer and is scrubbed prior to its introduction into the reformer to reduce the ammonia content. At times, the scrubbed purge gas is vented instead of burning it in the reformer. This is because a weak AN solution is produced in the scrubbing process that cannot be totally reintroduced to the process at the nitric acid plants because of the large volume. This weak AN solution then has to be handled as a waste product, creating other environmental concerns. Additionally, the facility cannot maintain the needed gas pressure over the transfer distance from the Ammonia Plant #4 scrubber to the catalytic burner, but the pressure can be maintained when transferred directly from the ammonia plant process step to the reformer. The aforementioned venting episodes at the reformer, as described, are designated as an insignificant activity in the permit. Based on test data from the Ammonia Plant #4 Primary Reformer, less NO_X is generated when using scrubbed purge gas as fuel rather than natural gas. According to the applicant, a purge gas analysis off the flow outlet of the scrubber on July 6, 2017 yielded: hydrogen - 62.1%, nitrogen - 20.5%, and methane - 14.4%. Water content is considered to be less than 100 ppm.

By application dated April 28, 2017, ammonia emissions were increased to account for potential venting of waste gas from the Urea Plant #2 Head Tank. The ammonia vented from the #2 Head Tank will be vented with other vented waste gas streams at Ammonia Plant #4 Primary Reformer stack (EU ID 101).

- <u>Natural Gas Desulfurization</u>

Sulfur is a poison to many catalysts used in the ammonia synthesis process. In this step of the ammonia synthesis process, the sulfur contained in the natural gas feedstock is removed with activated carbon. The activated carbon adsorbs the sulfur contained in the pipeline natural gas that is used to make synthesis gas. Then, about every 8 to 12 hours, the carbon canisters are back flushed with hot natural gas to remove the sulfur, such that they can be used again to remove the

sulfur from the natural gas feed as process operations continue. The desulfurization process off-gas (the sulfur containing natural gas flushed from the carbon canisters) is then routed to the Ammonia Plant #4 Primary Reformer furnace as fuel. This cycle continues on a continuous basis while the ammonia plant is in operation.

- Catalytic Steam Reforming

After desulfurization, the natural gas feed is mixed with the steam and the mixture is sent to the primary reformer. This process utilizes indirect heating fired on a combination of pipeline quality natural gas, waste gas generated from the Natural Gas Desulfurization Unit, and process offgas (e.g., purge gas). In the reforming process, approximately 56% of the methane contained in the natural gas feed is converted to hydrogen and carbon dioxide. The resulting gas mixture is then sent to a secondary reformer, where it is mixed with compressed air to form a final "synthesis gas" that has the desired hydrogen to nitrogen molar ratio. This is an exothermic reaction that does not need an external source of heat. An electrical powered auxiliary chiller and cooling coils may be utilized during warmer weather to cool the inlet air to the air compressor to approximate cooler weather operating conditions, thereby ensuring that higher air density is maintained. The synthesis gas leaving the reformer is cooled, and the heat recovered, in the Feed Gas Preheater.

- Carbon Monoxide Shift

Carbon monoxide is formed as a byproduct in the catalytic steam reforming process. After cooling, the carbon monoxide and water contained in the synthesis gas are converted to carbon dioxide and hydrogen in the High Temperature Shift Converter. Un-reacted steam is condensed and separated from the synthesis gas in a knockout drum. Condensate from the Ammonia Plant #4 knockout drum is flashed in the Ammonia Plant #4 Condensate Steam Flash Drum (EU ID 102) at a rate of approximately 1,050 lb/hr steam to remove volatile gases. The residual condensate is returned to the boiler or may be temporarily held in the de-aerator until ready for use as feed water to the boiler.

- Carbon Dioxide Removal

After the carbon monoxide shift, carbon dioxide is removed from the synthesis gas by sending it through an absorption tower. There, carbon dioxide is stripped out of the gas using methyl diethanolamine (MDEA). Carbon dioxide (CO_2) is removed from the MDEA in a stripper column, where it is then routed as needed to the Carbon Dioxide Plant and/or the Urea Plants, and excess amounts are vented. At the Carbon Dioxide Plant, the CO_2 is filtered, compressed, and sold for food and beverage use. The CO_2 is sent to the urea plants as a primary feedstock along with ammonia to manufacture urea. The transfer of CO_2 to the carbon dioxide and/or urea plants directly reduces the total amount of CO_2 that would otherwise have been emitted to the atmosphere.

There are two towers included at the Carbon Dioxide Removal step of the process description. The first is an absorption column, wherein synthesis gas coming from the Carbon Monoxide Shift step of the ammonia process is introduced at the bottom and flows upward through trays injected with "lean" methyl diethanolamine (MDEA). The MDEA absorbs the CO_2, and the synthesis gas passes on to the Methanation step of the ammonia plant process. The "rich" MDEA (amine liquid

saturated with CO_2) is then sent to the second column, the regenerator, where hot gases are applied, stripping out the CO_2. It is this CO_2, leaving the regenerator, that is sent to the CO_2 Plant and/or the Urea Plants. The two columns (the absorber and the regenerator) and associated pumps, piping, etc. is by technical definition an "amine unit", with MDEA being the chemical amine used as the absorption agent.

- Methanation

The synthesis gas leaving the carbon dioxide absorber consists primarily of uncombined hydrogen and nitrogen, with residual amounts of carbon dioxide and carbon monoxide. Carbon dioxide and carbon monoxide are poisons to ammonia synthesis catalysts and must be removed. This is accomplished by passing the heated process gas over a catalyst, where the carbon dioxide and carbon monoxide are converted to methane.

- Ammonia Synthesis

In this final step, the hydrogen and nitrogen-rich synthesis gas is converted to ammonia using a two stage process. In the first stage, synthesis gas from the methanation process is compressed, mixed with recycled synthesis gas, and then cooled. Any ammonia in the synthesis gas, which has condensed at this point in the process, is separated from the unconverted synthesis gas and sent to a separator to remove impurities. In the second stage, unconverted synthesis gas is compressed, preheated, and then contacted with an iron oxide catalyst in the synthesis converter. Ammonia in the gas leaving the converter is condensed, and the ammonia is sent to the separator. Ammonia sent to the separator is flashed to remove impurities. The impurities include argon, water, and unreacted nitrogen, hydrogen, and methane. Trace amounts of separated water ultimately end up in a storage tank. Flashed N_2, H_2, and CH_4 that is not removed in the Hydrogen Recovery Unit (HRU) or AN Solutions Plant scrubber are sent to the Reformer as fuel along with non-condensables (e.g., argon). The ammonia rich flashed vapor is condensed in a chiller, where anhydrous ammonia is removed and stored as a liquid at low temperature. The process is not 100% efficient, and some of the unconverted synthesis gas leaving this step in the process is mixed with incoming raw synthesis gas and recycled back through the process.

EUG 2—Urea Plants

PCC currently operates one urea production plant (i.e., Urea Plant #2), with a maximum production capacity of 480 tons of urea per day, or 175,200 tons per year. PCC will operate one additional urea production plant, Urea Plant #1, with a maximum production capacity of 80 tons of urea per day. Urea ($CO(NH_2)_2$) is produced by combining ammonia (NH_3) with carbon dioxide (CO_2). The ammonia and carbon dioxide used in this process are produced on-site.

In the first step in the urea manufacturing process, ammonia and carbon dioxide are combined to form ammonium carbamate ($NH_2CO_2NH_4$). The ammonium carbamate is then partially dehydrated to form an aqueous urea solution. All of the urea produced by the facility at Urea Plants #1 and #2 is mixed with ammonium nitrate in the Urea-Ammonium Nitrate Solution Plant to form urea-ammonium nitrate (UAN) solution. The UAN solution is stored on-site temporarily prior to

being shipped off-site with no emissions released to the atmosphere. No urea granulation occurs at this facility.

Process off-gases from Urea Plant #2 are vented below the liquid surface in the Urea Plant #2 Ammonia Recovery Tank, resulting in NH_3 emissions from the tank vent. By application dated April 18, 2017, PCC requests to remove this source from the Insignificant Activities list and assign limits of 36.5 lb/hr and 49.8 TPY. In the same application, PCC also plans to vent ammonia containing waste gas through the Ammonia Plant #4 Primary Reformer stack (EU ID 101) and requests limits of 520.5 lb/hr and 265.2 TPY. The ammonia emission rate from EU 101 depends on the combination of unit operations in service and the production rate. The equipment affecting the level of ammonia emissions from EU ID 101 include the flash gas and purge gas scrubbers in the HRU, the purge gas scrubber in the AN Solutions Plant #2, and the Ammonia Plant #4 Primary Reformer, which is designed to combust scrubbed purge gas as a fuel substitute for natural gas. Normally, all of the aforementioned units are in operation. Depending on operational requirements, however, one or more of these units may be out of service for a period of time while Ammonia Plant #4 continues to operate.

Urea Plant #1 is a totally closed loop process; i.e., no process off-gases from this plant are vented.

EUG 3—Nitric Acid Plants

PCC operates two nitric acid plants at the facility. Nitric Acid Plant #1 produces a maximum of 240 tons of 100% nitric acid per day, or 87,600 tons per year and Nitric Acid Plant #4 produces a maximum of 400 tons of 100% nitric acid per day, or 146,000 tons per year. Nitric acid (HNO_3) is produced in three steps:

1. Ammonia oxidation
   In this process, ammonia is first mixed with ambient air, heated, and passed over a cobalt catalyst, where the ammonia is oxidized to nitric oxide.

2. Condensation
   The nitric oxide rich gas stream is first cooled in a waste heat recovery boiler and then further cooled in a cooler/condenser. Under these conditions, nitric oxide formed during the ammonia oxidation step is further oxidized to nitrogen dioxide and nitrogen tetroxide.

3. Absorption
   The nitrogen dioxide and nitrogen tetroxide mixture from the condensation step is sent to the bottom of an absorption tower, where it flows countercurrent to water introduced at the top of the tower. Nitric acid is formed by contact of the nitrogen dioxide and tetroxide with a water scrubber and is removed at the bottom of the absorption tower.

   To meet Consent Decree requirements, the existing fumeabator at Nitric Acid Plant #1 was replaced by a non-selective catalytic burner followed by a SCR unit. The catalytic burner also serves as a preheater to the SCR unit. The catalytic burner may be fired on natural gas or syngas from Ammonia Plant #4. Note that although both gases can be used as a supplemental fuel, syngas is not the same as purge gas. Syngas is an intermediate process gas

that is further processed to make ammonia, and purge is a waste gas from the ammonia manufacturing process. The process gas exiting the top of the absorption tower at Nitric Acid Plant #1 passes through the non-selective catalytic burner, followed by the SCR unit for NO_X control.

The NO_X containing process gas exiting the top of the absorption tower at Nitric Acid Plant #4 is sent to a SCR unit for control.

EUG 4—Nitric Acid Plants Pre-heaters

The Nitric Acid Plants Preheaters are used to preheat the process air from 300°F to 500°F for start-up purposes. The process air flows through tubes inside the preheater, which are heated by a natural gas fired burner. The preheaters are used for startup purposes only. These emissions units have only combustion related emissions.

EUG 5—Carbon Dioxide Vents

Excess carbon dioxide from the processes may be vented to the atmosphere. Refer to sections describing the Carbon Monoxide Shift, Carbon Dioxide Removal, and Carbon Dioxide Regenerator processes and also emissions calculations for EUG No. 5. The waste CO_2 contains trace amounts of carbon monoxide.

EUG 6—Ammonium Nitrate Plants

PCC operates two ammonium nitrate plants at the facility. The ammonium nitrate plants have a maximum total combined production capacity of 1,140 tons of ammonium nitrate per day (570 tons per day or 208,050 tons per year each). Ammonium nitrate (NH_4NO_3) is produced by the neutralization of nitric acid with ammonia. Both the ammonia and the nitric acid are produced on-site. The resulting aqueous ammonium nitrate solution is either concentrated by evaporation and sent to the granulator to be processed into granules, or mixed with urea to form urea ammonium nitrate solution.

Ammonium nitrate granules are produced at the pan granulator by spraying concentrated ammonium nitrate solution onto a heated, rotating circular pan. Layers of ammonium nitrate are added to the pan as the water evaporates, eventually forming granules. The granules are then cooled, screened to obtain consistent granule sizes, and then stored temporarily prior to being shipped off-site.

Ammonia vapors and 56% Nitric Acid liquid are mixed in a neutralizer (tank) at atmospheric pressure. This process is exothermic, and therefore makes steam at atmospheric pressure due to boiling the water out of the nitric acid. As the level in the neutralizer comes up, it reaches an overflow line that sends the 83% ammonium nitrate solution to the rundown tank still at atmospheric pressure. At this point, the ammonium nitrate solution is approximately 280°F. Steam that is produced in the neutralizer and the rundown tank is utilized to heat the nitric acid and vaporize ammonia. Steam that is not condensed as a result of this heat transfer is subsequently condensed in a water cooled condenser.

EUG 7—Granulator Scrubbers

Granulated ammonium nitrate (AN) can be produced using the Pan Granulator or the Prill Tower. Ammonium nitrate granules are produced at the Pan Granulator by spraying concentrated ammonium nitrate solution onto a heated, rotating circular pan. Layers of ammonium nitrate are added to the pan as the water evaporates, eventually forming granules. The granules are then cooled, screened to obtain consistent granule sizes. Prilled ammonium nitrate can be produced at the Prill Tower. Concentrated ammonium nitrate solution is broken into droplets by the prill plate at the top of the tower. The AN droplets then fall countercurrent to cooling air forming prills. These products are stored temporarily prior to being shipped offsite.

There are three separate scrubbers serving the Granulator Plant and the Prill Tower. They perform the same function of scrubbing ammonium nitrate particulate from separate air flows on three different portions of the Granulator Plant. When the Pan Granulator is running, all three of the scrubbers are in service. When the Prill Tower is running, Granulator Scrubber #1 is the only one in service. The liquid sumps of the three scrubbers each contain a weak ammonium nitrate solution and are connected to make one single liquid circulation. Granulator Scrubber #1 receives condensate from the ammonia nitrate condensate tank, and the liquid concentrates up to a maximum of 3% as a result of control of ammonium nitrate particulate. The scrubber liquid then gravity feeds to Granulator Scrubber #2, where it concentrates up to a maximum of 17%. The liquid is then pumped to Granulator Scrubber #3, where it concentrates up to a maximum of 60%. Finally, the scrubber liquid is pumped back into the ammonium nitrate product solution and reused. Following are additional details concerning each scrubber.

Granulator Scrubber #1: A cyclone blower pulls air across a set of chiller coils and through the product cooler counter current to the flow of ammonium nitrate granules flowing through the cooler. This process cools the nitrate down by a temperature difference of approximately 70 degrees Fahrenheit (^{o}F) from the inlet of the cooler to the exit of the cooler. A small amount of ammonium nitrate particulate is pulled out of the cooler and into the top of the cyclones, where it is forced to the outside of the cyclones by centrifugal force created by the cyclonic action of the forced air. The particles are washed down into the sump (wet system tank) by two nozzles spraying a weak ammonium nitrate solution (1% - 3%) through the cyclones. The air exits the system via the blower discharge stack. The weak ammonium nitrate solution level in the Granulator Scrubber #1 sump runs into an overflow line that feeds Granulator Scrubber #2 Scrubber to maintain the working level in it. The concentration of the ammonium nitrate solution in Granulator Scrubber #1 is controlled by how much condensate is added from the condensate tank in the Ammonium Nitrate Solution Plant, and as noted, is maintained at approximately 1% to 3%. The two nozzles at the top of the cyclone are checked once per shift and are changed out if necessary. The wet system tank is washed out approximately once per month during shutdown for maintenance repairs.

Granulator Scrubber #2 (the Grey Scrubber), on the Pan Granulator only, pulls emissions from two discharges. The scrubber pulls steam and small ammonium nitrate particles off the top of the evaporator and ammonium nitrate dust out of the pan disc. These two streams combine to flow past four nozzles spraying ammonium nitrate solution (13% - 17%) supplied by a recycle pump.

The combined stream flows through a venture scrubber, where the liquid ammonium nitrate solution is separated from the gas. The particle-laden liquid collects in the sump (collection tank), and the gas is discharged to the atmosphere. The sump liquid level is automatically controlled to pump excess liquid to Granulator Scrubber #3. The concentration of the liquid in Granulator Scrubber #2 is determined by how much liquid it receives from Granulator Scrubber #1, but the concentration is usually 13% to 17% (with occasional variances outside that range). This system requires very little maintenance; however, the man-way is opened annually, and the inside of the scrubber is inspected. Past maintenance required that the nozzles be replaced one to two times per year. The collection tank is washed out about once per month when the unit is shut down for maintenance repairs.

Granulator Scrubber #3: A blower pulls air across a set of chiller coils and through the pre-cooler countercurrent to the flow of ammonium nitrate granules also flowing through the pre-cooler. This cools the ammonium nitrate by a temperature drop of approximately 50 ^{o}F from the inlet of the cooler to the exit of the cooler. Ammonium nitrate fines and dust are pulled out of the pre-cooler and into the north vessel of the scrubber, where the emissions-laden air comes into contact with the ammonium nitrate solution (having approximately 60% by concentration) that is being sprayed through four nozzles. The air flows from the north vessel of the scrubber to the south vessel and through four sets of hog hair filters that are sprayed with ammonium nitrate solution to keep the recovered fines washed to the scrubber sump. The concentration of the solution is held at 58% to 60%. At 65% concentration, the solution has a tendency to precipitate out on the filters, thereby plugging them and causing damage. The discharge air then passes through a set of baffles and then through a demister pad designed to remove entrained liquid and mist before it is discharged to the atmosphere. The level of the scrubber sump is monitored manually through a sight glass, and excess liquid is recycled back to the ammonium nitrate granulator. Scrubber #3 is inspected, cleaned out, and filters and nozzles are replaced as needed whenever the granulator is shut down for maintenance. Maintenance activities are performed approximately once per month.

EUG 8—Steam Generation Boilers

PCC currently operates three natural gas fired boilers at this facility. The boilers provide the steam needed to operate the various pieces of equipment at the facility. Boiler #1 has a permitted maximum heat input rate of 53 MMBTUH. Boiler #2 has a maximum heat input rate of 80 MMBTUH. Boiler #3 has a maximum heat input rate of 60 MMBTUH. Boilers #1, #2, and/or #3 will operate as the primary steam generation units to support startup and normal process operations.

EUG 10— Storage Tank and Fugitives

PCC has a one (1) 1,000-gallon gasoline storage tank that was installed in 1965. The tank is subject to 40 CFR Part 63, Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. EUG 10 also includes fugitive ammonia emissions from piping.

EUG 11—Emergency Engines

PCC has one (1) 27.1 Hp Kohler Emergency Generator that is used to power the office building and control rooms during power outages. The emergency generator is subject to NSPS Subpart JJJJ and NESHAP Subpart ZZZZ and has been issued an EPA certificate of conformity for model year 2018.

SECTION IV. EQUIPMENT

The following table categorizes the processes at the facility by emission unit group (EUG) and emission point identification.

EUG 1—Ammonia Plant #4

EU	Description	Construction Date
101	Ammonia Plant #4 Primary Reformer (300 MMBTUH)	1995
102	Ammonia Plant #4 Condensate Steam Flash Drum	1995
107	Ammonia Plant #4 Ammonia Converter Startup Heater (40 MMBTUH)	2012
110a	Ammonia Plant #4 Startup/Shutdown Vent	1995
110b	Ammonia Plant #4 Startup/Shutdown Vent	1995
110	Ammonia Plant #4 – Planned Startup/Shutdown Vent Flare	2019
111	Urea Plant #2 Ammonia Recovery Tank	1965

EUG 2—Urea Plants

EU	Description	Construction Date
201	Urea Plant #1	1995
202	Urea Plant #2	1995[1]

1 Urea Plant #2 was originally constructed in California in 1965 and relocated to the Pryor Plant Chemical Company in 1995.

EUG 3—Nitric Acid Plants

EU	Description	Construction Date
301	Nitric Acid Plant #1 - NSCR Burner/SCR	1966/2017[1]
303	Nitric Acid Plant #4 - SCR Unit	2008[2]

1 Nitric Acid Plant #1 was originally constructed in 1966. The NSCR Burner/SCR was installed in 2017 as required by the federal consent decree.

2 Nitric Acid Plant #4 was originally constructed in Illinois in 1964 and relocated to the Pryor Plant Chemical Company in 1995. The SCR was new construction added during 2008-2009.

EUG 4—Nitric Acid Plant Preheaters

EU	Description	Construction Date
401	Nitric Acid Preheater #1 (20 MMBTUH)	1966
403	Nitric Acid Preheater #4 (20 MMBTUH)	1995

EUG 5—Carbon Dioxide Vents

EU	Description	Construction Date
501a	Ammonia Plant #4 – CO_2 Tower Vent	1966
501b	Carbon Dioxide Plant – CO_2 Vent	1965
501c	CO_2 Plant – Pressure Control Vent	1965[1]

(1) EU ID 501c on the ammonia plant #1 regenerator tower has been used as a CO_2 pressure control vent during startup of the CO_2 plant. Due to the removal of this vent, a separate pressure control valve was installed on the main line leading to the CO_2 Plant. The replacement valve retained the original designated EU.

EUG 6— Ammonium Nitrate Plants

EU	Description	Construction Date
601	Ammonium Nitrate Plant #1 Neutralizer Vent	1966
602	Ammonium Nitrate Plant #2 Neutralizer Vent	1995

EUG 7— Granulator Scrubbers

EU	Description	Construction Date
701	Granulator Scrubber #1	1975
702	Granulator Scrubber #2	1975
703	Granulator Scrubber #3	1975

EUG 8— Steam Generating Boilers

EU	Description	Construction Date
801	Boiler #1 (53 MMBTUH)	1978
802	Boiler #2 (80 MMBTUH)	1995
803	Boiler #3 (60 MMBTUH)	2019

EUG 9— Cooling Towers

EU	Description	Construction Date
901	Cooling Tower #1	1966
902	Cooling Tower #2	1995/2013

EUG 10—Storage Tank and Fugitives

EU	Description	Construction Date
1002	Gasoline Storage Tank (1,000-GAL)	1965
1003	Ammonia Fugitives	N/A

EUG 11— Emergency Engine

EU	Description	Construction Date
1101	Kohler Emergency Generator (27.1-HP)	2019

SECTION V. EMISSIONS

Emissions are based on permitted production rates. Permit limits are based on these calculations and are justified through PSD analysis, including BACT analysis and modeling to document compliance with the NAAQS. For all following emissions, calculations are carried out to the 2nd decimal place for criteria pollutants and are rounded up to the next decimal place (whole 1/10th) for augmented fractions of 0.01 and higher. Calculations are carried out to the 3rd decimal place for hazardous air pollutants and are rounded up to the next decimal place (whole 1/100th) for augmented fractions of 0.001 and higher.

EUG 1—Ammonia Plant #4

Ammonia Plant #4 is permitted to operate at a maximum ammonia production rate of 770 tons per day (TPD). Emissions generated at the ammonia plant primarily includes products of combustion from the Primary Reformer (EU ID 101), emissions of volatile organic compounds (VOC) generated from the Condensate Steam Flash Drum (EU ID 102) and purge gas which consists of hydrogen, nitrogen, argon, and methane.

Primary Reformer (EU 101)

The primary reformer at Ammonia Plant #4 has a maximum heat input rating of 300-MMBTUH. A Re-BACT study on NOx emissions from the primary reformer was completed and submitted to DEQ on April 15, 2015 and authorized in Permit No. 2008-100-C (M-6).

The Re-BACT study resulted in two (2) BACT limits for EU 101: a NO_X limit of 0.1146 Lbs/MMBTU (Upper Prediction Limit (UPL) – Normal Operation) to represent emissions during normal operation excluding Planned Startup/Shutdown/Reduced Operation events; a NO_X limit of 0.1658 Lbs/MMBTU (UPL – Planned Startup/Shutdown/Reduced Operation) to represent emissions during Planned Startup/Shutdown events, or when the Ammonia Plant #4 is being operated at reduced rates for various reasons, including inventory control. The basis for the EU 101 Re-BACT limits and the justification were addressed in the memorandum of Permit No. 2008-100-C (M-6). Compliance with the NOx permitted limits shall be demonstrated by utilizing the mean value of 0.0748 Lbs/MMBTU during Normal Operations, which was established from the emissions data collected during the Re-BACT study. It is assumed that during normal operations there is longer periods of sustained operation and that the mean factor is appropriate to be used during normal operating periods.

During Startup/Shutdown/Reduced Operation (SU/SD/RO), the facility will be required to use the NOx UPL BACT limit of 0.1658 lb/MMBTU to calculate emissions during these operational scenarios. Due to the conditions that occur during SU/SD/RO, the emission profile is more erratic than when operating in normal conditions; and the time period for each operation (SU/SD/RO) is variable. Thus, a mean factor would not be conservative of the actual emissions or actual operations

given each events variability. The NOx UPL BACT limit of 0.1658 lb/MMBTU during SU/SD/RO is appropriate since it will ensure compliance with all limits.

Planned Startup is defined as beginning when the primary reformer burner is first lit and ending when no more than 150 burners are in operation, and Ammonia Plant #4 is producing ammonia at a rate no greater than 300 TPD.

Planned Shutdown is defined as beginning when Primary Reformer operation has been reduced to no more than 150 burners in service, and the Ammonia Plant #4 production rate has been reduced to no more than 300 TPD. Planned Shutdown is complete when all Primary Reformer burners have been turned off, and no ammonia is being produced.

Reduced operations addresses an operational variation the ammonia plant is forced to operate the reformers at a reduced rate (at or below 300 TPD). The reduced firing rates of the burners (no more than 150 burners in service) results in decreased combustion efficiency and more thermal NOx.

SO_2 emissions result from the combustion of a mixture of fuel gases from two sources, namely pipeline natural gas used as fuel gas and desulfurization gas, which contains the sulfur removed from pipeline quality natural gas used for feedstock gas (commonly known as syngas). Feedstock gas for ammonia production must be desulfurized in the desulfurization unit to protect the ammonia reaction catalyst. Periodically, the desulfurization unit is back flushed with hot natural gas to remove the accumulated sulfur, and the flushed sulfur containing fuel gas is combined with fuel gas to fire the primary reformer. The ammonia process uses approximately 21,250 (SCF) of feedstock gas per ton of ammonia produced. For Plant #4, at a production rate of 770 TPD, this equates to 5,972 MMSCFY of natural gas feedstock. The facility also uses an additional 2,526.9 MMSCFY of fuel gas combusted in the reformer burners.

The facility estimates, based on data from past operations, that the fuel sulfur content of the combined gas mixture to the primary reformers during the desulfurization process can be as high as 20 grains/100 SCF when the desulfurization unit is in operation. Using 20 grains/100 SCF, the maximum hourly rate of SO_2 emissions is calculated as 16.5 lb/hr. Annual emissions of sulfur dioxide (SO_2) for Ammonia Plant #4 are based on the concentration of sulfur in the natural gas used for fuel gas and the desulfurization waste gas, which contains the accumulation of sulfur separated from the feedstock gas used to make syngas. The concentration of sulfur in both the fuel gas and the feedstock gas is 0.25 grains/100 SCF. Calculations using this concentration result in 0.90 (natural gas fuel) + 2.13 (waste gas fuel) = 3.03, rounded to 3.1 TPY. The calculations assume 100% conversion of sulfur compounds (assumed to be hydrogens sulfide) to SO_2.

Emissions of CO, VOC, PM, and HAPs from combustion are based on emission factors in Table 1.4-1 of AP-42, a gross calorific value of 1,040 BTU/SCF for commercial natural gas, fuel demand, and annual operating hours of 8,760.

Combustion Emissions– Ammonia Plant #4 (300 MMBTUH Primary Reformer, EU 101)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (TPY)
CO	84.0	lbs-CO/MMSCF	AP-42; Table 1.4-1	24.3	106.2
NO_X UPL – Normal Operation	0.1146 (1)	lbs-NO_x/MMBTU	**BACT Limit** Re-BACT Study April 17, 2015	34.4	--
NO_X Mean Value – Normal Operation	0.0748 (1)	lbs-NO_x/MMBTU	Re-BACT Study April 17, 2015	22.5	98.3
NO_X UPL – Startup, Shutdown, and Purge Gas Out with Reduced Plant Operations	0.1658	lbs-NO_x/MMBTU	**BACT Limit** Re-BACT Study April 17, 2015	49.8	--
NO_X Mean Value – Startup, Shutdown, and Purge Gas Out with Reduced Plant Operations	0.0913	lbs-NO_x/MMBTU	Re-BACT Study April 17, 2015	27.4	--
$PM/PM_{10}/PM_{2.5}$	7.6	lbs-PM/MMSCF	AP-42; Table 1.4-2	2.2	9.6
SO_2 primary fuel	0.25	gr-sulfur/100 SCF (avg)	Supplier Data	NA (2)	0.9
SO_2 waste gas	20.0	gr-sulfur/100 SCF (max)	Site Specific Test Data (Hourly) Supplier Data (Annual)	16.5 (2)	2.2
VOC	5.5	lbs-VOC/MMSCF	AP-42; Table 1.4-2	1.6	7.0
Formaldehyde	0.075	lbs-Form./MMSCF	AP-42; Table 1.4-3	0.03	0.10

(1) Factor during burning purge gas;

(2) Hourly limit based on worst case when burning natural gas and waste gas from the desulfurization unit.

Condensate Steam Flash Drum (EU 102)

The following table illustrates a summary of pollutants emitted from this source, which are a mass balance calculation based on measured concentrations and maximum design steam discharge rate of 1,050 lb/hr

Condensate Steam Flash Drum (EU 102) - Ammonia Plant #4

Pollutant	Concentration	Steam Discharge	Emissions	
	ug/mL/ppmw	lb/hr	lb/hr	TPY
VOC	1,827 ug/mL(1)	1,050	2.0	8.40
Methanol	1,740 ug/mL(2)	1,050	1.83	8.01
NH_3	7,750 ppm_w(3)	1,050	8.2	35.7

(1) Compliance monitoring data for 2016 through 2017 - based on worst case sample results plus 5% to account for additional VOCs that may be present in the condensate;
(2) Compliance monitoring data for 2016 through 2017 - based on worst case sample results for methanol (1,392 ppmw) plus 25% at 1,050 lb/hr steam flow;
(3) Compliance monitoring data for 2015 - based on worst case sample results (6,200 ppmw) plus 25% at 1,050 lb/hr steam flow.

Ammonia Converter Startup Heater (EU 107)

The ammonia converter startup heater is permitted to combust commercial natural gas. Emissions are based on a maximum heat input rating of 40 MMBTUH, emission factors in Table 1.4-1 of AP-42, a gross calorific value of 1,040 BTU/SCF for commercial natural gas, and annual operating hours of 8,760.

Ammonia Converter Startup Heater (EU 107)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (TPY)
CO	84	lbs-CO/MMSCF	AP-42; Table 1.4-1	3.3	14.2
NO_X	100	lbs-NO_x/MMBTU	AP-42; Table 1.4-1	3.9	16.9
PM	7.6	lbs-PM/MMSCF	AP-42; Table 1.4-2	0.3	1.3
PM_{10}	7.6	lbs-PM_{10}/MMSCF	AP-42; Table 1.4-2	0.3	1.3
$PM_{2.5}$	7.6	lbs-$PM_{2.5}$/MMSCF	AP-42; Table 1.4-2	0.3	1.3
SO_2 primary fuel	0.25	gr-sulfur/100 SCF	Supplier Data	0.1	0.2
VOC	5.5	lbs-VOC/MMSCF	AP-42; Table 1.4-2	0.3	1.0

Carbon Dioxide Regenerator (EU 501a, EU 501b, and EU 501c)

Off-gases from the Carbon Dioxide Regenerator of Ammonia Plant #4 are routed back to the Carbon Dioxide Plant and/or the Urea Plants as needed, and excess amounts are vented, as described for EUG 5.

Ammonia Plant #4 Startup/Shutdown Vents (EU 110)

Planned Startup is defined as beginning when the Primary Reformer burners are first lit and ending when no more than 150 burners are in service, and Ammonia Plant #4 is producing ammonia at a rate equal to or less than 300 TPD. Planned Shutdown is defined as beginning when Primary Reformer operations have been reduced to no more than 150 burners in operation, and the Ammonia Plant #4 production rate has been reduced to no greater than 300 TPD. Planned Shutdown is complete when all Primary Reformer burners have been turned off, and no ammonia is being produced. The emission limits for the Ammonia Plant #4 Startup/Shutdown Vent Flare (EU 110) apply during planned startups and shutdowns, when:

- No more than 150 burners are in operation at the Primary Reformer;
- Ammonia Plant #4 is producing ammonia at a rate at or below 300 TPD (hourly emissions are based on 12.5 TPH of ammonia produced which is roughly equivalent to 265,625 scf/hr based on the ratio of feedstock required per ammonia production);

During planned startups and shutdowns, CO emissions are controlled by a process flare. The following discussion and table illustrate both uncontrolled and controlled emissions of CO at EU 110.

Uncontrolled CO Emissions during Startups and Shutdowns

Emissions from the startup/shutdown vents will be vented to a flare. Uncontrolled emissions from these vents are estimated below using the facility's design mass balance for the streams venting together with the design production rate for the plant. These estimates reflect the total stream composition and assume full stream flow (i.e., 100% valve open) exhausted through the vents.

EU ID 110a Startup/Shutdown Vent (Combination of Process Vents B-1 and D-2)

Pollutant	Emission Factor		Source of Emission factor	Uncontrolled Emissions	
	Value	Units		Max. (lb/hr)	Annual (TPY)
CO (Startup/Shutdown)	937.0	lbs-CO/ton-NH_3	Mass Balance	11,712.4	780.9

EU ID 110b Startup/Shutdown Vent (Pre-Methanator Process Vent)

Pollutant	Emission Factor		Source of Emission factor	Uncontrolled Emissions	
	Value	Units		Max. (lb/yr)	Annual (TPY)
CO (Startup/Shutdown)	30.8	lbs-CO/ton-NH_3	Mass Balance	384.7	128.3

Controlled Emissions during Startups and Shutdowns (EU 110)

EU ID 110 Startup/Shutdown Vent Flare

Pollutant	Reference	Controlled Emissions	
		Max. (lb/hr)	Annual (TPY)
CO (Startup/Shutdown)	98% reduction of combined flow from two vents 110a and 110b	242.0	18.2

NH_3 Emissions

Ammonia emissions are not a regulated criteria pollutant or hazardous air pollutants. However, at the applicant's request, Permit No. 2008-100-C (M-6) established ammonia limits in an effort to make the facility eligible for CERCLA federally enforceable limit exclusion, which is related to the reporting of excess emissions of a listed pollutant above the federal reportable quantity value.

Ammonia emissions from the Ammonia Plant #4 Reformer Stack (EU ID 101) depend on a combination of process unit operations in service and the production rate. The equipment affecting ammonia emissions include the flash gas and purge gas scrubbers in the Hydrogen Recovery Unit (ammonia process equipment), the purge gas scrubber in the AN Solutions Plant #2, and the Ammonia Plant #4 Primary Reformer, which is designed to combust scrubbed purge gas as a fuel substitute for natural gas. Normally, all of the aforementioned units are in operation but, depending on operational requirements, one or more of these units may be out of service for a period of time while the Ammonia Plant #4 Plant continues to operate. The tables below summarize the bypass configurations, the anticipated bypass hours per year, and the associated ammonia emissions.

To develop an emissions limit, PCC used mass balance derived emissions estimates (in lb/hr) from each operational scenario combined with estimates of the maximum number of hours per year that each scenario is expected to occur. These six scenarios are represented in the following discussion and the table. The hours/year values come from knowledge of process and operating history and PCC considers it to be conservative. The proposed limit represents an aggregate total of the individual estimates for each scenario. Note here that the hours used in the calculations for each scenario are not individual permit limits, but are only used to estimate the time operating in each scenario. As long as the actual, mass balance derived emission rates for each scenario are used with the actual operating hours recorded for compliance demonstration, and as long as the original hours/year estimates were conservative, PCC should be able to comply with the limit. The permit will require recording of the hours operating in each scenario. The alternate operating scenarios resulting from the equipment outages can be summarized as follows:

- Alternate Scenario 1 (Normal Operation)

Under Scenario 1, which is normal operation, purge gas is routed through water scrubbers at the Hydrogen Recovery Unit (HRU) and then through the Ammonium Nitrate Purge Gas Scrubber (AN Purge Gas Scrubber) to reduce the ammonia concentration before it is fed to the Ammonia Plant #4 Primary Reformer (Primary Reformer) for combustion as a supplemental fuel. Ammonia emissions are at their lowest during this scenario due to the scrubbing and combustion operations.

- Alternate Scenario 2

Under Scenario 2, the HRU and the AN Purge Gas Scrubber are shut down for maintenance or operational purposes (e.g., to limit the amount of weak AN solution from the scrubbers that would have to be disposed of), and the purge gas is not being routed to the Primary Reformer to prevent ammonia salts (present at a higher concentration in the un-scrubbed purge gas stream) from clogging the reformer burners. Under this scenario, ammonia emissions are the highest of any of the alternate scenarios, because the un-scrubbed purge gas bypasses the Primary Reformer and is emitted directly to the atmosphere.

- Alternate Scenario 3

Under Scenario 3, the HRU is shut down for maintenance or operational purposes, but the AN Purge Gas Scrubber remains in operation. Because the ammonia concentration in being reduced at least partially in the AN Purge Gas Scrubber, the purge gas can be routed to the Primary Reformer for combustion. Ammonia emissions are higher under this alternate scenario than during normal operation, because the purge gas is not subjected to the additional scrubbing step in the HRU. However, the ammonia concentration in the purge gas is still significantly reduced due to the scrubbing operation in the AN Purge Gas Scrubber.

- Alternate Scenario 4

Under Scenario 4, the HRU is shut down for maintenance or operational purposes, the Ammonia Plant #4 process is operating at a rate no greater than 300 ton/day, and the AN Purge Gas Scrubber remains in operation. However, the partially scrubbed purge gas is being routed around the Primary Reformer and emitted directly to the atmosphere. Ammonia emissions, although partially scrubbed, are elevated under this scenario because the purge gas stream is not being combusted in the Primary Reformer due to the lower production and/or firing rate of the reformer.

- Alternate Scenario 5

Under Scenario 5, the HRU is operating and the AN Purge Gas Scrubber is shut down for maintenance or operational purposes (e.g., to limit the amount of weak AN solution from the scrubber that would have to be disposed of). Because the ammonia concentration is being reduced in the HRU, the purge gas can be routed to the Primary Reformer for combustion. Ammonia emissions are higher under this alternate scenario than during normal operation, but are still significantly reduced due to the partial scrubbing operation.

- Alternate Scenario 6

Under Scenario 6, the HRU remains in operation and the AN Purge Gas Scrubber is shut down for maintenance or operational purposes (e.g., to limit the amount of weak AN solution from the scrubbers that would have to be disposed of). The purge gas stream is being routed around the Primary Reformer and emitted directly to the atmosphere. Ammonia emissions, although partially

scrubbed, are elevated under this scenario, because the purge gas stream is not being combusted in the Primary Reformer due to operational constraints in the combustion process.

Ammonia Emissions – Ammonia Plant #4 (Primary Reformer Stack, EU 101)

Operating Scenario	Process Rate (TPD)	HRU Bypassed (Y/N)	AN Purge Gas Scrubber Bypassed (Y/N)	Reformer Bypassed (Y/N)	Estimated Hours Per Year In Mode	Ammonia Emissions (lb/hr)	Ammonia Emissions (TPY)
1	770	No	No	No	6,456	0.01	0.03
2	770	Yes	Yes	Yes	216	425.30	45.93
3	770	Yes	No	No	1,440	2.13	1.53
4	300	Yes	No	Yes	240	41.43	4.97
5	770	No	Yes	No	240	0.97	0.12
6	770	No	Yes	Yes	168	48.52	4.08
Urea Plant #2 Head Tank Gas Stream					8,760	95.20	208.49
Total Emissions						**520.5** (1)	**265.2**

(1) Sum of worst case Operating Scenario (Scenario 2) and Urea Plant #2 Head Tank.

Ammonia Recovery Tank (EU 111)

The Urea Plant #2 Ammonia Recovery Tank (ART) uses water as an absorption media to recover ammonia. The applicant states that higher level releases of ammonia to the atmosphere would only occur in the event absorption capacity was exceeded. Compliance with the NH_3 emission limits shall be documented by monitoring the ammonia concentration in the tank at least weekly. Liquid additions to the tank shall be managed to prevent the NH_3 concentration from reaching the saturation point of 17%.

EU ID 111 Urea Plant #2 ART

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (TPY)
NH_3	36.5	49.8

EUG 2—Urea Plants #1 and #2

All off-gases from Urea Plant #1 are recycled back into the process. Off-gases from Urea Plant #2, as well as the Ammonia Plant, resulting from infrequent venting through pressure relief valves are vented subsurface or through internal spray headers into the Urea Plant #2 ART. See EU 111.

EUG 3—Nitric Acid Plant #1 and #4 (EU 301 and EU 303)

The fumeabator was removed and replaced by a non-selective catalytic burner, which was followed by a SCR unit as part of the requirements to be implemented under the EPA Consent Decree. The catalytic burner at Nitric Acid Plant #1 may be fired on natural gas or syngas from Ammonia Plant #4. Tail gases exiting the top of the absorption tower on Nitric Acid Plant #4 pass through a SCR unit for NO_X control prior to discharge to the atmosphere.

Nitric Acid Plants Production Rates (tons nitric acid produced per time rate)

EU	Description	Process Rates(1)		Control Device
		TPH	TPD	
301	Nitric Acid Plant #1	10	240	NSCR Burner/SCR
303	Nitric Acid Plant #4	16.7	400	SCR Unit

(1) Process Rates represent tons of 100% nitric acid per hour (TPH) and tons of 100% nitric acid per day (TPD).

Hourly emissions of NOx are based on the short-term limit of 1.0 lb/ton of nitric acid production taken from the EPA consent decree with the first compliance deadline being January 1, 2018. Annual emissions of NO_X from Nitric Acid Plants #1 and #4 are based on the long-term limit of 0.6 lbs/ton of nitric acid production taken from the EPA consent decree. Compliance with the long term limit is demonstrated on a 365-day rolling average basis with the first compliance deadline being January 1, 2019. The EPA Consent Decree requires CEMS for NO_X monitoring for compliance with both short term and long term limits.

NO_X Emissions – Nitric Acid Plants #1 and #4

EU	Controlled NO_X Emissions Limit (lb/ton-100% HNO3)		Hourly (lb/hr)	Annual (TPY)
	Short Term Limit (STL) [1] 3-hour rolling average	Long Term Limit (LTL) [2] 365-day rolling average		
301	1.00	0.60	10	26.3
303	1.00	0.60	16.7	43.8
Total				**70.1**

[1] The short-term limit does not apply during periods of startup, shutdown, or malfunction.
[2] The long-term limit applies at all times, including during periods of startup, shutdown and malfunction.

The catalytic heater (or NSCR) at Nitric Acid Plant #1 is authorized to combust commercial grade natural gas and ammonia plant synthesis gas. The composition of the ammonia plant synthesis gas consists of nitrogen (80.1 wt.%), hydrogen (17.3 wt.%), argon (1.3 wt.%), methane (0.9 wt.%), and water (0.4 wt.%). The composition of the ammonia plant synthesis gas indicates that it is a cleaner burning fuel when compared to natural gas. Therefore, the maximum emissions from this unit are calculated assuming 8,760 hour per year of operation using natural gas fuel.

EU ID 301 – Nitric Acid Plant #1 NSCR Natural Gas Emissions

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Hourly (lb/hr)	Annual (TPY)
CO	2.2	Lb/ton-100% HNO_3	Stack Test(1)	22.0	96.4
$PM/PM_{10}/PM_{2.5}$	7.6	Lb/MMSCF	AP-42, Table 1.4-2	0.1	0.1
SO_2	1.5	Lb/MMSCF	AP-42, Table 1.4-2	0.1	0.1
VOC	5.5	Lb/MMSCF	AP-42, Table 1.4-2	0.1	0.1

(1) Based on January 4, 2018 average test result at 196 ton/day production (8.2 tons/hr) +15% safety factor. Stack testing had not been performed on EU 301 since the new catalytic burner (NSCR) had been installed.

NH_3 Emissions

The exhaust gasses from the SCRs at both nitric acid plants are anticipated to have ammonia slip emissions during normal operations and during SSM. Annual emissions from EU 301 during SSM assumes 300 hours per year. Annual emissions from EU 303 during SSM assuming 750 hours per year. For compliance demonstration of the proposed NH_3 permit limits, the applicant proposed initial performance testing during normal operations at 90% of the short term maximum capacity to verify the permitted emission limits.

Ammonia Slip Emissions – Nitric Acid Plants #1 and #4

NH_3 Emissions	NH_3 Emissions	
	lb/hr	TPY
Plant #1 – EU Point 301	5.4 Normal Operations	29.1
	41.6 Startup/Shutdown Related	
Plant #4 – EU Point 303	7.3 Normal Operations	52.5
	61.9 Startup/Shutdown Related	
Total	**103.5***	**81.6**

*Maximum hourly rate occurs if both plants have Startup/Shutdown emissions at the same time.

EUG 4—Nitric Acid Preheaters

Nitric Acid Plants #1 and #4 Preheaters (EU 401, EU 403)

The preheaters at each of the nitric acid plants are identical in heat input rating. Emissions generated from the Nitric Acid Plant Preheaters are primarily emissions of combustion of natural gas. The maximum heat input rating of each heater is 20 MMBTUH. Calculations of combustion emissions for each heater are based on the emission factors listed in the table below and a gross calorific value of 1,040 BTU/SCF. Annual emissions are based on 8,760 continuous hours per year. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions, the results of the calculations for the total combined emissions for the two preheaters, and the requested permit limits.

Nitric Acid Plants #1 and #4 – Preheaters

Pollutant	Emission Factor		Source of Emission factor	Potential Emissions	
	Value	Units		Maximum (lb/hr)	Annual (TPY)
CO	84.0	Lb/MMSCF	AP-42; Table 1.4-1	3.4	14.2
NO_X	50.0	Lb/MMSCF	AP-42; Table 1.4-1, Low NO_x Burners	2.0	8.6
PM	7.6	Lb/MMSCF	AP-42; Table 1.4-2	0.4	1.4
PM_{10}	7.6	Lb/MMSCF	AP-42; Table 1.4-2	0.4	1.4
$PM_{2.5}$	7.6	Lb/MMSCF	AP-42; Table 1.4-2	0.4	1.4
SO_2	1.5	Lb/MMSCF	AP-42; Table 1.4-2	0.2	0.4
VOC	5.5	Lb/MMSCF	AP-42; Table 1.4-2	0.4	1.0

EUG 5—Carbon Dioxide Vents

Carbon Dioxide Vents – Ammonia Plant #4 (EU ID 501a, 501b and 501c)

CO_2 produced from Ammonia Plant #4 can be utilized in the CO_2 plant and/or either of the two Urea Plants (#1 and #2). Carbon dioxide venting may occur when the capacity of CO_2 Plant and/or the Urea Plants #1 and #2 are reduced or shut down. CO_2 venting and CO emissions can occur from a combination of vents located at the Ammonia Plant #4 and/or the Carbon Dioxide Plant, as follows: the CO_2 Tower Vent (EU ID 501a) at Ammonia Plant #4 or the CO_2 Vent (EU ID 501b) or the Pressure Control Vent (EU ID 501c) at the Carbon Dioxide Plant.

Calculations of carbon monoxide (CO) emissions are based on mass balance using a known concentration of the subject pollutant from past operations, the maximum carbon dioxide (CO_2) throughput rate (maximum rate to CO_2 Plant and/or Urea Plants), and continuous operation (8,760 hours per year). Carbon dioxide is produced at a ratio of 1.25 ton/ton of ammonia production developed from on-site test data and throughput. CO is then calculated based on 0.1 lb/ton of carbon dioxide. These emissions are expected to be the worse-case scenario if venting occurred 8,760 hours per year.

Permit Limits - Carbon Dioxide Vents – Ammonia Plant #4 (EU ID 501a, 501b and 501c)

CO/CO_2 Venting Scenarios	Emissions Factor	Carbon Dioxide Vented	Carbon Monoxide Emissions	
	lb/ton	TPH	lb/hr	TPY
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c	0.1	40.1	4.1	17.6
Total			**4.1**	**17.6**

For compliance demonstration purposes, emissions from EU IDs 501b and 501c will be accounted for in the calculation of emissions at EU ID 501a.

Permit Limits - Carbon Dioxide Vents – Ammonia Plant #4 to EU ID's 501a, 501b and 501c

Pollutant	Emissions Factor Lbs/throughput basis		Throughputs TPH	Emissions	
				Lb/hr	TPY
NH_3	0.128 (1)	lb/ton- NH_3	32.1	4.2	18.1
Methanol	0.006 (2)	Lb/ton-NH_3	32.1	0.21	0.88 (4)
VOC	0.044 (3)	Lb/ton- NH_3	32.1	1.5	6.3

1) Highest stack test data from Ammonia Plant #3 performed on December 12, 2012 (502 Vent: 0.41 lb/hr at 96 TPD ammonia production rate with 25% contingency).
2) Highest stack test data from Ammonia Plant #3 performed on December 12, 2012 (502 Vent: 0.02 lb/hr at 96 TPD ammonia production rate with 25% contingency).
3) Highest stack test data from Ammonia Plant #1 performed on December 10, 2012 (501c Vent: 0.14 lb/hr at 96 TPD ammonia production rate with 25% contingency).
4) Methanol is not rounded up to 0.9 because PCC is not requesting a permit limit.

EUG 6—Ammonium Nitrate Plants

Emissions are controlled by in-stack condensers. As noted earlier, steam that is not condensed as a result of this heat transfer is subsequently condensed in a water cooled condenser. To reduce monitoring requirements, PCC has elected to make the neutralizers a closed process which effectively eliminates point source emissions. However, as a contingency for potential fugitive emissions, PCC estimates that 1% of the emission-laden steam escapes.

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers (EU 601, EU 602) Production Rates

EU	Description	Process Rates(1)	
		TPH	TPY
601	Ammonium Nitrate Plant #1	23.8	208,050
602	Ammonium Nitrate Plant #2	23.8	208,050

(1) Process Rates represent liquid ammonium nitrate production.

Calculations for emissions of ammonia and ammonium nitrate are based on the liquid ammonium nitrate production rate, emission factors used during the previous operator's (Wil-Gro's) operation of the facility, and continuous operation (8,760 hours per year). Emission factors were developed as illustrated in the table, where 0.4985 is the amount of steam emitted per ton of product, and fugitive emissions are estimated at 1%. Concentration values of 1.0% and 0.05% for ammonia, and 0.5%, and 0.05% for ammonium nitrate (i.e., PM/PM_{10}) were used for hourly and annual emissions calculations, respectively. Since this is a batch process, hourly emissions cannot be annualized at 8,760 hours to obtain annual emissions. Emissions of particulate matter are based on AP-42 emission factors. Actual emissions are the same as PTE. The following table summarizes the methodology used to calculate emissions and the results of the calculations for each of the two neutralizers.

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers (EU ID #601 and #602 Individual Limits)

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Max. (lb/hr)	Annual (TPY)
NH_3 (hourly)	0.0997	0.4985 x ton/ton x 1.0% x 1% x 2,000 lbs/ton	2.4	NA
NH_3 (annual)	0.0050	0.4985 x ton/ton x 0.05% x 1% x 2,000 lbs/ton	NA	0.6
PM/PM_{10}/$PM_{2.5}$ (hourly)	0.0499*	0.4985 x ton/ton x 0.5% x 1% x 2,000 lbs/ton	1.2	NA
PM/PM_{10}/$PM_{2.5}$ (annual)	0.0050*	0.4985 x ton/ton x 0.05% x 1% x 2,000 lbs/ton	NA	0.6

*Based the AP-42 factor of 0.004 - 0.43 lbs-PM/ton-product for neutralizers and the applicant's best engineering judgment.

The emissions (above) are for the neutralizers only. The rundown tanks for each process provide intermediate storage for ammonium nitrate product. Ammonia emissions from the rundown tank vents are minimal (similar to the Ammonia Nitrate Storage Tanks) and considered as insignificant sources. Back half testing is not relevant to this issue. NH_4NO_3, (as particulate matter) is emitted from the neutralizers and exists as condensable particulate in the steam that is emitted. All of the particulate matter emitted is condensable, and assumed to be $PM_{2.5}$. The emissions estimates provided in the application use site specific information to calculate how much steam is emitted and how much condensable PM is contained in the steam; thus, the use of AP-42 factors to estimate any additional condensable PM emissions would be double counting.

EUG 7—Granulator Scrubbers

Granulator Scrubbers #1, #2, and #3 (EU 701, EU 702, EU 703)

Granulator Scrubbers #1, #2, and #3 are identical in throughput capacity (400 TPD per unit).

Emissions of ammonia and particulate matter are based on AP-42 (10/96) Table 8.3-2 emission factor for "pan granulators" and annual operating hours of 8,760. The following table summarizes the methodology used to calculate emissions and the results of the calculations for each of the three scrubbers. Controlled emissions of PM assume a control efficiency of 98.5%.

Process Information for Granulator Scrubbers #1, #2, and #3

EU	Description	Process Rates[(1)]	
		TPH	TPY
701	Granulator Scrubbers #1	16.67	146,000
702	Granulator Scrubbers #2	16.67	146,000
703	Granulator Scrubbers #3	16.67	146,000

(1) Process Rates represent tons of dry ammonium nitrate.

Granulator Scrubbers #1, #2, and #3 (individual rates)

Pollutant	Emission Factor	Source of Emission Factor	Uncontrolled Emissions (TPY)	Controlled Emissions	
	lbs/ton NH_4NO_3			Hourly (lb/hr)	Annual (TPY)
PM	0.04	AP-42, Table 8.3-2 (10/96)	193	0.7	3.0
$PM_{10}/PM_{2.5}$	0.04		193	0.7	3.0
NH_3	0.14		10.3	2.4	10.3

EUG 8—Steam Generating Boilers (EU 801, EU 802, EU 803)

Permit No. 2008-100-C (M-1) & (M-2) PSD revised the rating for Boiler #1 from 80.0 MMBTUH down to 53 MMBTUH. Boiler #2 remains permitted at 80.0 MMBTUH. Boiler #3 is permitted at 60 MMBTUH.

Emissions are based on natural gas fuel having a gross calorific value of 1,040 BTU/SCF, emission factors from Table 1.4-1 of AP-42 (07/98) for low NOx burners, and 8,760 hours of operation annually. The following tables summarize the methodology used to calculate emissions and the results of the calculations for each boiler.

Boiler #1, EU ID 801 (53 MMBTUH)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (TPY)
CO	84.0	lb/MMSCF	AP-42; Table 1.4-1 (07/98)	4.3	18.8
NO_X	50.0	lb/MMSCF	AP-42; Table 1.4-1 (07/98)	2.6	11.2
PM	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.4	1.7
PM_{10}	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.4	1.7
$PM_{2.5}$	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.4	1.7
SO_2	0.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.1	0.2
VOC	5.5	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.3	1.3
Formaldehyde	0.075	lb/MMSCF	AP-42; Table 1.4-3 (07/98)	0.01	0.02

Boiler #2, EU ID 802 (80 MMBTUH)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (TPY)
CO	84.0	lb/MMSCF	AP-42; Table 1.4-1 (07/98)	6.5	28.3
NO_X	50.0	lb/MMSCF	AP-42; Table 1.4-1 (07/98)	3.9	16.9
PM	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.6	2.6
PM_{10}	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.6	2.6
$PM_{2.5}$	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.6	2.6
SO_2	0.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.1	0.3
VOC	5.5	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.5	1.9
Formaldehyde	0.075	lb/MMSCF	AP-42; Table 1.4-3 (07/98)	0.01	0.03

Boiler #3, EU ID 803 (60 MMBTUH)

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (TPY)
CO	84.0	lb/MMSCF	AP-42; Table 1.4-1 (07/98)	4.9	21.3
NO_X	50.0	lb/MMSCF	AP-42; Table 1.4-1 (07/98)	2.9	12.7
PM	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.5	2.0
PM_{10}	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.5	2.0
$PM_{2.5}$	7.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.5	2.0
SO_2	0.6	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.1	0.2
VOC	5.5	lb/MMSCF	AP-42; Table 1.4-2 (07/98)	0.4	1.4
Formaldehyde	0.075	lb/MMSCF	AP-42; Table 1.4-3 (07/98)	0.01	0.02

EUG 9—Cooling Towers

Cooling Tower #1 has a circulation capacity of 2,592,000 gallons per hour and uses an induced draft system. The cooling towers do not use chromium additives, and the only pollutant emitted is particulate matter (as Total Dissolved Solids). Permit No. 2008-100-C (M-2) PSD provided for an increase in the circulation rate from 1,470,000 gallons per hour to 2,592,000 gallons per hour and the associated increase in particulate matter emissions necessary to support cooling cell up-grades to support operation of Ammonia Plants #1 and #3. Emission calculations for the first three issued permits were originally based on a method from AP-42 Chapter 13.4. However, that method does not provide a means of speciation to assess PM and $PM_{2.5}$ emissions. For $PM_{2.5}$ emissions, they were assumed equal to PM_{10}, causing an over-conservatively high estimate of $PM_{2.5}$. Note that the AP-42 method states that it is already conservatively high for PM_{10}. The detrimental effect of this overestimation shows up later in the PSD evaluation with a significant increase in $PM_{2.5}$ when considering successive modifications (to the cooling towers) and aggregation. To provide what PCC believes to be a more realistic assessment of $PM_{2.5}$ emissions, they adopted a method that speciates PM, PM_{10}, and $PM_{2.5}$, which is published in a technical memorandum by the New Mexico Environment Department – Air Quality Bureau titled "Calculating TSP, PM-10 and PM-2.5 from Cooling Towers." This method is identical to the AP-42, Chapter - 13.4 method of using the product of total liquid drift (TLD) and total dissolved solids (TDS), except the additional information from the New Mexico memo provides for the speciation of PM, PM_{10}, and $PM_{2.5}$ emissions. The manufacturer's TLD of 0.01%, site-specific total dissolved solids (TDS) concentrations of 3,059 ppmw (maximum per hour data point plus 15%) and 1,699 ppmw (annual average data point plus 15%), and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. Actual emissions are the same as potential to emit (PTE). The following table summarizes the results of the calculations for Cooling Tower #1.

Cooling Tower #1 (EU 901)

Pollutant	Emissions	
	Maximum (lb/hr) (1)	**Annual (TPY) (2)**
PM	6.6	16.1
PM_{10}	4.7	11.3
$PM_{2.5}$	0.1	0.1

(1) Based on 3,059 ppmw TDS maximum concentration.
(2) Based on 1,699 ppmw annual average TDS concentration.

Cooling Tower #2 has a circulation capacity of 3,264,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only emission is particulate matter. Emissions calculation methods, are based on speciated fractions for PM, PM_{10}, and $PM_{2.5}$ provided by the New Mexico Environment Department – Air Quality Bureau in its technical memorandum entitled "Calculating TSP, PM-10 and PM-2.5 from Cooling Towers and manufacturer information using the product of total liquid drift (TLD) and total dissolved solids (TDS) to obtain estimates of PM, PM_{10}, and $PM_{2.5}$ emissions. A manufacturer's TLD of 0.008%, TDS concentrations of 2,749 ppmw (maximum per hour data point plus 15%) and 1,955 ppmw (annual average data point plus 15%), and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. The following table summarizes the results of the calculations for Cooling Tower #2.

Cooling Tower #2 (EU 902)

Pollutant	Emissions	
	Maximum (lb/hr) (1)	**Annual (TPY) (2)**
PM	6.0	18.7
PM_{10}	4.2	13.2
$PM_{2.5}$	0.1	0.1

(1) Based on 2,749 ppmw TDS maximum concentration.
(2) Based on 1,955 ppmw annual average TDS concentration.

EUG 10—Gasoline Storage Tank and Ammonia Fugitives

Gasoline Storage Tank (EU 1002)

The facility is subject to 40 CFR 63, Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. Compliance with the VOC emission limit in the following table will be demonstrated by limiting the monthly throughput of gasoline to 10,000 gallons. Permittee will maintain records of gasoline throughput. The HAP emissions are for informational purposes only, no limits are imposed.

EU ID 1002 – Gasoline Storage Tank

Pollutant	Emissions	
	Maximum (lb/hr)	**Annual (TPY)**
VOC	3.9	0.4

Pollutant	Emissions	
	Maximum (lb/hr)	**Annual (TPY)**
Benzene	0.20	0.02
Ethyl Benzene	0.08	0.01
Cumene	0.04	0.01
Methyl Tert-Butyl Ether	0.59	0.06
Toluene	0.59	0.06
Xylene	0.47	0.05

NH_3 Fugitives – Valves/Seals/Flanges/Connections (EU ID 1003)

Supplemental information concerning non-VOC fugitives from equipment in anhydrous ammonia, 16% ammonia vapor, and 16% ammonia solution service was submitted by PCC based on numerous potential sources considered throughout the facility. PCC offers the following calculations, which are considered to represent a conservatively high estimate, based on the approximate number of components in service and emission factors from "Emission Estimation Technique Manual for Synthetic Ammonia Manufacturing", March 2004, Table 8.

Fugitive Emissions (Process Piping in Anhydrous Ammonia Service)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions	
				(lb/hr)	(TPY)
Valves	Gas	811	0.0132	10.7	46.9
	Light Liquid	102	0.0089	0.9	4.0
Pump Seals/ Compressor Seals	Gas	10	0.0439	0.4	1.9
	Light Liquid	8	0.5027	4.0	17.6
Pressure Relief Valves	Gas	101	0.2293	23.2	101.4
Connectors	All	337	0.0041	1.4	6.1
Open-ended Lines	All	0	0.0038	0.0	0.0
Sampling Connections	All	0	0.0331	0.0	0.0
Total				**40.6**	**177.9**

Fugitive Emissions (Process Piping in 16% Aqueous Ammonia Solution Service)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions (lb/hr)	Potential Emissions (TPY)
Valves	Gas	0	0.002112	0.0	0.0
	Light Liquid	390	0.001424	0.6	2.4
Pump Seals/ Compressor Seals	Light Liquid	2	0.007024	0.2	0.7
	Gas	0	0.080432	0.0	0.0
Pressure Relief Valves	Gas	0	0.036688	0.0	0.0
Connectors	All	374	0.000656	0.2	1.1
Open-ended Lines	All	12	0.000608	0.01	0.03
Sampling Connections	All	0	0.005296	0.0	0.0
Total				**1.0**	**4.0**

Fugitive Emissions (Process Piping in 16% Ammonia Vapor Service)

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions (lb/hr)	Potential Emissions (TPH)
Valves	Gas	105	0.002112	0.2	1.0
	Light Liquid	0	0.001424	0.0	0.0
Pump Seals/ Compressor Seals	Light Liquid	0	0.007024	0.0	0.0
	Gas	5	0.080432	0.04	0.2
Pressure Relief Valves	Gas	4	0.036688	0.1	0.6
Connectors	All	103	0.000656	0.1	0.3
Open-ended Lines	All	0	0.000608	0.0	0.0
Sampling Connections	All	0	0.005296	0.0	0.0
Total				**0.5**	**2.1**

EUG 11—Emergency Generator

The emergency generator is a natural gas-fired, Kohler, 27.1-hp 4SLB engine (EU 1101). Emissions of CO, NO_X and VOC are based on 500 hours of annual operation and the Table 1 Exhaust Emission Standards of 519 g/kW-hr for CO and 13.4 g/kW-hr for NO_X + VOC taken from 40 CFR §90.103, Table 1. Since the NO_X and VOC standard is combined, PCC has prorated the NO_X emissions using emissions factors for NO_X and VOC from AP-43 Table 3.2-2 to get 13.01 g/kW-hr. Emissions of NO_X were calculated to be 0.14 TPY and emissions of CO are 5.78 TPY. All other pollutants were less than 0.01 TPY

A. Facility-Wide Summary

Criteria Pollutants

Since the potential emissions of NOx and CO exceed 100 TPY, the facility is considered to be a major source for these pollutants. The facility will be a synthetic-minor source for PM, PM_{10}, and $PM_{2.5}$ since the facility-wide emissions would exceed major source threshold without the granulator scrubbers.

Emission Summary (Hourly)

EU	NO_X (lb/hr)	CO (lb/hr)	VOC (lb/hr)	SO_2 (lb/hr)	PM (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	NH_3 (lb/hr)
101	34.4[(1)]	24.3	1.6	16.5	2.2	2.2	2.2	520.5[(2)]
110	--	242[(3)]	--	--	--	--	--	--
102	--	--	2	--	--	--	--	8.2
107	3.9	3.3	0.3	0.1	0.3	0.3	0.3	--
111	--	--	--	--	--	--	--	36.5
301	10[(4)]	22	0.1	0.1	0.1	0.1	0.1	5.4[(5)]
303	16.7[(4)]							7.3[(5)]
401	1	1.7	0.2	0.1	0.2	0.2	0.2	--
403	1	1.7	0.2	0.1	0.2	0.2	0.2	--
501a	--	4.1	1.5	--	--	--	--	4.2
501b	--			--	--	--	--	
501c	--			--	--	--	--	
601	--	--	--	--	1.2	1.2	1.2	2.4
602	--	--	--	--	1.2	1.2	1.2	2.4
701	--	--	--	--	0.7	0.7	0.7	2.4
702	--	--	--	--	0.7	0.7	0.7	2.4
703	--	--	--	--	0.7	0.7	0.7	2.4
801	2.6	4.3	0.3	0.1	0.4	0.4	0.4	--
802	3.9	6.5	0.5	0.1	0.6	0.6	0.6	--
803	2.9	4.9	0.4	0.1	0.5	0.5	0.5	--
901	--	--	--	--	6.6	4.7	0.1	--
902	--	--	--	--	6.0	4.2	0.1	--
1002	--	--	3.9	--	--	--	--	--
1003	--	--	--	--	--	--	--	42.1
1101	0.6	23.2	0.1	0.1	0.1	0.1	0.1	--
Total	**77.0**	**338.0**	**11.1**	**17.3**	**21.7**	**18.0**	**9.3**	**636.2**

[(1)] Hourly rate of 34.4 lb-NOx/hr reflects Re-BACT Study UPL during normal operation; 49.8 lb-NOx/hr reflects limit during startup/shutdown/purge gas out with reduced plant operations.

[(2)] Sum of worst case Operating Scenario (Scenario 2) and Urea Plant #2 Head Tank.

(3) Represents controlled emissions with 98% reduction of combined flow from two vents 110a and 110b.

(4) Hourly rates reflect consent order short term emission limits of 1.0 lb-NOx/ton, 3-hour rolling average. Per the consent order, the Short-Term NOx Emissions Limit does not apply during periods of Startup, Shutdown, or Malfunction.

(5) Hourly rates reflect ammonia emissions during normal operations; the hourly rate of 41.6 lb-NH_3/hr for EU 301 and 61.9 lb-NH_3/hr for EU 303 represent the hourly limit during startup/shutdown. The maximum hourly rate of 103.5 lb/hr occurs if both plants have SSM at the same time.

Emission Summary (Annual)

EU	NO_X (TPY)	CO (TPY)	VOC (TPY)	SO_2 (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	NH_3 (TPY)
101	98.3(1)	106.2	7.0	3.1	9.6	9.6	9.6	265.2(2)
110	0.2	18.2(3)	0.1	0.1	0.1	0.1	0.1	--
102	--	--	8.4	--	--	--	--	35.7
107	16.9	14.2	1.0	0.2	1.3	1.3	1.3	--
111	--	--	--	--	--	--	--	49.8
301	26.3(4)	96.4	0.1	0.1	0.1	0.1	0.1	29.1(5)
303	43.8(4)	--	--	--	--	--	--	52.5(5)
401	4.3	7.1	0.5	0.2	0.7	0.7	0.7	--
403	4.3	7.1	0.5	0.2	0.7	0.7	0.7	--
501a	--	17.6	6.3	--	--	--	--	18.1
501b	--			--	--	--	--	
501c	--			--	--	--	--	
601	--	--	--	--	0.60	0.60	0.60	0.60
602	--	--	--	--	0.60	0.60	0.60	0.60
701	--	--	--	--	3.0	3.0	3.0	10.3
702	--	--	--	--	3.0	3.0	3.0	10.3
703	--	--	--	--	3.0	3.0	3.0	10.3
801	11.2	18.8	1.3	0.2	1.7	1.7	1.7	--
802	16.9	28.3	1.9	0.3	2.6	2.6	2.6	--
803	12.7	21.3	1.4	0.2	2.0	2.0	2.0	--

EU	NO_X (TPY)	CO (TPY)	VOC (TPY)	SO_2 (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	NH_3 (TPY)
901	--	--	--	--	16.1	11.3	0.1	--
902	--	--	--	--	18.7	13.2	0.1	--
1002	--	--	0.4	--	--	--	--	--
1003	--	--	--	--	--	--	--	184.2
1101	0.2	5.8	0.1	0.1	0.1	0.1	0.1	--
IA*	1.2	1.0	0.1	0.01	5.6	5.6	5.6	6.4
Total	**236.3**	**323.8**	**29.1**	**4.71**	**69.5**	**59.2**	**34.9**	**673.1**

(1) Reflects mean value during normal operation as submitted in BACT study submitted to ODEQ on April 17, 2015.
(2) Sum of worst case Operating Scenario (Scenario 2) and Urea Plant #2 Head Tank.
(3) Represents controlled emissions with 98% reduction of combined flow from two vents 110a and 110b.
(4) Representative of the long term 365-day rolling average limit of 0.6 lb/ton of nitric acid taken from the EPA consent decree.
(5) Requested as enforceable limits.
*****IA= Insignificant Activities and reflects the total emissions from all IA's which are detailed in Section VI. of the permit memorandum (individually < 5 TPY/activity)

HAP

Emissions of combined HAP total 12.75 TPY, with the highest level of individual HAP (Methanol) estimated to be 8.89 TPY. Since potential emissions of a single HAP are less than 10 TPY and total HAP is less than 25 TPY, the facility is a not major source of HAP.

HAP Emission Summary (Annual)

HAP	CAS #	Emissions (TPY)
Methanol	67561	8.89(1)
Formaldehyde	50000	0.19
Benzene	71432	0.03
Toluene	108883	0.07
Hexane	110543	4.34(2)
Xylene	1330207	0.05
Methyl tert-butyl ether	1634044	0.06
Ethyl Benzene	100414	0.01
Total		**12.75**

(1) Emitted from EU 102 and EU 501.
(2) Hexane resulting from all combustion equipment (EU 101, EU 401, EU 403, EU 801, EU 802, EU 803).

SECTION VI. INSIGNIFICANT ACTIVITIES

The insignificant activities identified and justified in the construction permit application are duplicated below. Appropriate recordkeeping of activities indicated below with "*" is specified in the Specific Conditions (hours, quantity, or capacity).

1. Activities having the potential to emit no more than 5 TPY (actual) of any criteria pollutant. Records sufficient to verify actual emissions.

Description	Tank Volume (gal)	Throughput (gpy)	Material Stored	TPY
Urea Plant Feed (Ammonia Head Tank)	15,857	39.71×10^6	NH_3	1.3-NH_3
CO_2 Plant (Ammonia Recovery Tank)	2,024	21 TO[1]	NH_3	6.80E-04-NH_3
Ammonium Nitrate Tank	267,314	36,025,974	Ammonium Nitrate[2]	0.12-NH_3
UAN Blend Tank	57,337	36,025,974	Ammonium Nitrate[2]	0.07-NH_3
UAN (AS & DS)	4,505,798	36,025,974	Ammonium Nitrate[2]	0.58-NH_3
UAN (BS & CS)	116,471	36,025,974	Ammonium Nitrate[2]	0.09-NH_3
Diesel Fuel Tank	1,000	6,000	Diesel	1.65E-04-VOC
Ammonium Nitrate Plant #1 and #2 Rundown Tanks	4,048/tank	208,050 ton-AN/yr	Ammonium Nitrate[2]	0.05-NH_3
OBT Mix Tank	40,000	208,050 ton-AN/yr	Ammonium Nitrate[2]	0.07-NH_3

[1](10.8 lb-vapor per turnover)

[2]83% ammonium nitrate solution evaluated as ammonia (higher VP) for emission estimations

2. Granular Ammonium Nitrate – Storage, Handling, and Loading/Unloading Operations: PCC produces dry ammonium nitrate (AN) using its Pan Granulator or Prill Tower. The granular AN is then stored in a warehouse prior to shipment. During transfer operations, the granular AN is fed into a hopper inside the warehouse and is then transferred outside via a conveyor system to railcar and truck loading facilities. Coatings are applied to the granular AN during the manufacturing process to harden the granules and prevent breakdown, such that particulate matter emissions are minimized. PCC also uses its onsite warehouse as a terminal facility to store/distribute granular AN produced at other LSB Industries plants. Granular AN received from the other locations is offloaded from trucks inside the warehouse. The granular AN is then loaded out using the process and equipment described above for product produced onsite. Granular AN received from other locations has also been coated to prevent breakdown, and particulate matter emissions are minimal.

The following calculations estimate the amount of fugitive particulate matter emissions generated at PCC from bulk loading operations. The emission factor was taken from EPA AP-42 Table 8.3-2.

Operating Data
Ammonium Nitrate Throughput Limit: 500,000 ton/yr

Emission Factor
Uncontrolled PM Emission Factor: ≤0.02 lb/ton of product

Potential Annual Emissions
0.02 lb/ton x 500,000 ton/yr x ton/2,000 lb = 5.0 ton PM/yr

3. **Ammonia Truck and Railcar Loading:** PCC sells ammonia produced at Ammonia Plant #4, as well as transferring ammonia to other LSB Industries plants for use as feedstock. A small quantity of ammonia is released from the transfer piping after the supply source is shut off, and as each truck or railcar is disconnected following the loading process. Potential emissions from this process come from the ammonia vapor that remains in the transfer lines. The remaining ammonia vapor is assumed to be at ambient pressure and temperature. Bleeder valves in the lines will be used to remove this remaining ammonia vapor. No other emissions are expected from Ammonia Loading.

Operating Data

Estimated Maximum Annual Loading Rate	150,000 TPY
Truck Capacity	40,000 lb/truckload
Railcar Capacity	152,000 lb/railcar load
Loading Hose diameter	3 in
Loading Hose length	12 ft
Ammonia density	5.34 lb/gal
Average load size	(40,000 lb + 152,000 lb)/2 = 96,000 lb
Estimated loads per year	150,000 TPY x 2,000 lb/ton x load/96,000 lb = 3,125 loads

Emission Factor
Volume of loading hose = π (0.125 ft)2 x 12 ft x 7.481 gal/ft^3 = 4.4 gal
Volume of residual liquid released per loading event = 4.4 gal x 10% = 0.44 gal
Mass NH_3 released per loading event = 0.44 gal x 5.34 lb/gal = 2.3 lb/load

Potential Annual Emissions
2.3 lb/load x 3,125 loads/yr x ton/2,000 lb = 3.59 ton NH_3/yr

4. **Ammonia Plant #4 Purge Gas Scrubber Vent:** Purge Gas Scrubber Vent emissions occur during SSM events only and are not part of normal operations.

5. **Ammonia Plant #4 – Syn-Gas Startup/Shutdown Vent 110c:** Emissions from the Syn-Gas Startup/Shutdown Vent emissions occur during SSM events only and are not part of normal operations. No regulated pollutants are emitted from the Syn-Gas Vent. Facility material balance information indicates that the only emissions from this vent are N_2, H_2, CH_4, Ar, and H_2O.

6. **Portable Flare:** The portable flare is used occasionally for maintenance activities related to the ammonia storage and transfer system.

   Operating Data
   Maximum Heat Input: 41 MMBTUH
   Estimated Maximum Operating Hours: 500 hr/yr
   Estimated Maximum Annual Heat Input: 41 MMBTUH x 500 hr/yr = 20,500 MMBTUY
   Maximum Fuel Usage : 20,500 MMBTUY x MMSCF/1,040 MMBTU = 20 MMBTUY

   Emission Factors

CO:	84.0 lb/MMSCF	AP-42; Table 1.4-1
NO_x:	100.0 lb/MMSCF	AP-42; Table 1.4-2
PM:	7.6 lb/MMSCF	AP-42; Table 1.4-2
$SO_{2:}$	0.6 lb/MMSCF	AP-42; Table 1.4-2
VOC:	5.5 lb/MMSCF	AP-42; Table 1.4-2

   Potential Annual Emissions

CO:	84.0 lb/MMSCF x 20 MMSCFY x ton/2,000 lb = 0.84 TPY
NO_x:	100.0 lb/MMSCF x 20 MMSCFY x ton/2,000 lb = 1.00 TPY
PM:	7.6 lb/MMSCF x 20 SCFY x ton/2,000 lb = 0.08 TPY
$SO_{2:}$	0.6 lb/MMSCF x 20 SCFY x ton/2,000 lb = 0.006 TPY
VOC:	5.5 lb/MMSCF x 20 SCFY x ton/2,000 lb = 0.06 TPY

1. **Maintenance Painting:** PCC spray paints as part of its maintenance activities. As required by Appendix I, PCC keeps monthly records of coatings, thinners, and clean-up solvents to verify the activity's combined total usage does not exceed 60 gallons/month. Per Appendix J, surface coating for maintenance purposes such as roll/brush/pad coating, painting with aerosol cans, spray airless, and conventional spray painting is a trivial activity and does not require recordkeeping.

2. **Ammonium Nitrate (AN) Plants #1 and #2 Neutralizers:** Fugitive emissions containing a minimal amount of free ammonia and particulate matter can be emitted during the AN neutralizing process.

   Operating Data

Maximum Annual AN Production	208,050 TPY
Amount of Steam Emitted	0.4985 ton steam/ton AN
Average Concentration of Ammonia in Steam	0.05%
Average Concentration of AN (particulate) in Steam	0.05%
Mist Eliminator/Condenser Control Efficiency	99%

Emission Factors
NH_3: 0.4985 ton steam/ton AN x 0.05% ton NH_3/ton steam x (0.01)= 2.5E-06 ton NH_3/ton AN
PM: 0.4985 ton steam/ton AN x 0.05% ton AN/ton steam x (0.01) = 2.5E-06 ton PM/ton AN

Potential Annual Emissions
NH_3: 2.5E-06 ton NH_3/ton AN x 208,050 ton AN/yr = 0.52 TPY
$PM/PM_{10}/PM_{2.5}$: 2.5E-06 ton NH_3/ton AN x 208,050 ton AN/yr = 0.52 TPY

3. **Ammonia Storage Flare Pilot (EU 1001):** The ammonia storage flare is used only in case of emergency/equipment malfunction, primarily when there is a power failure affecting the ammonia storage tank refrigeration systems. The Ammonia Storage Flare Pilot runs continuously so that the flare is ready to be ignited whenever needed. Emissions from the Ammonia Storage Flare Pilot are generated from the combustion of natural gas on a constant schedule. The maximum heat input rating of the Ammonia Storage Flare Pilot is 0.0683 MMBTUH.

Operating Data

Maximum Heat Input	0.0683 MMBTUH
Maximum Annual Operating Hours	8,760 hr/yr
Maximum Annual Heat Input	0.0683 MMBTUH x 8,760 hr/yr = 598 MMBTUY
Maximum Fuel Usage MMBTUY	598 MMBTUY x MMSCF/1,040 MMBTU = 0.575

Emission Factors

CO:	84.0 lb/MMSCF	AP-42; Table 1.4-1
NO_x:	100.0 lb/MMSCF	AP-42; Table 1.4-2
PM:	7.6 lb/MMSCF	AP-42; Table 1.4-2
SO_2:	0.6 lb/MMSCF	AP-42; Table 1.4-2
VOC:	5.5 lb/MMSCF	AP-42; Table 1.4-2

Potential Annual Emissions
CO: 84.0 lb/MMSCF x 0.575 MMSCFY x ton/2,000 lb = 0.02 TPY
NO_x 100.0 lb/MMSCF x 0.575 MMSCFY x ton/2,000 lb = 0.03 TPY
PM: 7.6 lb/MMSCF x 0.575 SCFY x ton/2,000 lb = 0.002 TPY
SO_2 0.6 lb/MMSCF x 0.575 SCFY x ton/2,000 lb = 0.0002 TPY
VOC 5.5 lb/MMSCF x 0.575 SCFY x ton/2,000 lb = 0.002 TPY

4. **Ammonia Plant #4 Startup/Shutdown Vent Flare Pilot:** The Ammonia Plant #4 Startup/Shutdown Vent Flare will be used to control emissions from the startup and shutdown vents during normal operations. Emissions from flaring are permitted as EU ID 110. The pilot runs continuously so that the flare is ready to be ignited whenever needed and are generated from the combustion of natural gas on a constant schedule.

Operating Data
Maximum Heat Input: 0.39 MMBTUH
Maximum Annual Operating Hours: 8,760 hr/yr
Maximum Annual Heat Input: 0.39 MMBTUH x 8,760 hr/yr = 3,416 MMBTUY
Maximum Fuel Usage: 3,416 MMBTUY x MMSCF/1,040 MMBTU = 3.28 MMBTUY

Emission Factors

CO:	84.0 lb/MMSCF	AP-42; Table 1.4-1
NO_x:	100.0 lb/MMSCF	AP-42; Table 1.4-2
PM:	7.6 lb/MMSCF	AP-42; Table 1.4-2
$SO_{2:}$	0.6 lb/MMSCF	AP-42; Table 1.4-2
VOC:	5.5 lb/MMSCF	AP-42; Table 1.4-2

Potential Annual Emission

CO	84.0 lb/MMSCF x 3.28 MMSCFY x ton/2,000 lb = 0.14 TPY
NO_x	100.0 lb/MMSCF x 3.28 MMSCFY x ton/2,000 lb = 0.16 TPY
PM	7.6 lb/MMSCF x 3.28 SCFY x ton/2,000 lb = 0.01 TPY
SO_2	0.6 lb/MMSCF x 3.28 SCFY x ton/2,000 lb = 0.001 TPY
VOC	5.5 lb/MMSCF x 3.28 SCFY x ton/2,000 lb = 0.009 TPY

5. **Catalyst Building Exhaust:** The catalyst building has two exhausts from the building: a lab fume hood and an exhaust fan in the pelletizing room. The fume hood exhausts via a 16.25 inch, 400 scfm exhaust fan that is switched and turned on during mixing operations. The pelletizing room is ventilated using a 22 inch exhaust fan. Mixing and pelletizing operations are estimated to be conducted a maximum of five (5) days per month. An average of 25 lb of material is processed per day, with a daily maximum not to exceed 50 lb/day. The material processed contains 63% cobalt compounds and 37% water. Trace amounts of HAP-containing particulate matter are expected to be generated inside the building and emitted through the exhaust fans. PCC conservatively estimates that 100% of the dust generated is exhausted to the atmosphere.

Operating Data

Maximum Operation	5 day/month
Average Long-term Throughput	25 lb/day

Emission Factors

PM	0.01 lb/ton	AP-42; Table 11.24-2
PM_{10}	0.004 lb/ton	AP-42; Table 11.24-2
$PM_{2.5}$	Assume equal to PM_{10}	

Potential Annual Emissions
PM: 25 lb/day x 5 day/mo x 12 mo/yr x ton/2,000 lb x 0.01 lb/ton x ton/2,000 lb = 3.8E-06 TPY.

$PM_{10}/PM_{2.5}$: 25 lb/day x 5 day/mo x 12 mo/yr x ton/2,000 lb x 0.004 lb/ton x ton/2,000 lb = 1.5E-06 TPY

6. Catalyst Screener: The catalyst screener is located outside the catalyst building under an awning. The screener is used to clean spent catalyst and prepare it for reuse. The catalyst screener is controlled by a fabric filter that is rated at 99.99% efficient @ 0.7 microns.

Operating Data

Maximum Operation	5 day/month
Maximum Throughput	1,000 lb/day
Baghouse Control Efficiency	99.99% @ 0.7 microns

Emission Factors

PM	0.01 lb/ton	AP-42; Table 11.24-2
PM_{10}	0.004 lb/ton	AP-42; Table 11.24-2
$PM_{2.5}$	Assume equal to PM_{10}	

Potential Annual Emissions

PM: 1,000 lb/day x 5 day/mo x 12 mo/yr x ton/2,000 lb x 0.01 lb/ton x ton/2,000 lb x (1–0.9999) = 1.5E-08 TPY

$PM_{10}/PM_{2.5}$: 1,000 lb/day x 5 day/mo x 12 mo/yr x ton/2,000 lb x 0.004 lb/ton x ton/2,000 lb x (1–0.9999) = 6.0E-09 TPY

SECTION VII. OKLAHOMA AIR POLLUTION CONTROL RULES

OAC 252:100-1 (General Provisions) [Applicable]
Subchapter 1 includes definitions but there are no regulatory requirements.

OAC 252:100-2 (Incorporation by Reference) [Applicable]
This subchapter incorporates by reference applicable provisions of Title 40 of the Code of Federal Regulations listed in OAC 252:100, Appendix Q. These requirements are addressed in the "Federal Regulations" section.

OAC 252:100-3 (Air Quality Standards and Increments) [Applicable]
Subchapter 3 enumerates the primary and secondary ambient air quality standards and the significant deterioration increments. At this time, all of Oklahoma is in "attainment" of these standards.

OAC 252:100-5 (Registration, Emissions Inventory and Annual Operating Fees) [Applicable]
Subchapter 5 requires sources of air contaminants to register with Air Quality, file emission inventories annually, and pay annual operating fees based upon total annual emissions of regulated pollutants. Required annual information (Turn-Around Document) shall be provided to Air Quality.

OAC 252:100-8 (Permits for Part 70 Sources) [Applicable]
Part 5 includes the general administrative requirements for Part 70 permits. Any planned changes in the operation of the facility that result in emissions not authorized in the permit and that exceed the "Insignificant Activities" or "Trivial Activities" thresholds require prior notification to AQD

and may require a permit modification. Insignificant activities refer to those individual emission units either listed in Appendix I or whose actual calendar year emissions do not exceed the following limits.

- 5 TPY of any one criteria pollutant
- 2 TPY of any one hazardous air pollutant (HAP) or 5 TPY of multiple HAP or 20% of any threshold less than 10 TPY for a HAP that the EPA may establish by rule

Emission limitations and operational requirements necessary to assure compliance with all applicable requirements for all sources are taken from the construction and operating permit applications, or are developed from the applicable requirement.

OAC 252:100-9 (Excess Emissions Reporting Requirements) [Applicable]
Except as provided in OAC 252:100-9-7(a)(1), the owner or operator of a source of excess emissions shall notify the Director as soon as possible, but no later than 4:30 p.m. the following working day of the first occurrence of excess emissions in each excess emissions event. No later than thirty (30) calendar days after the start of any excess emission event, the owner or operator of an air contaminant source from which excess emissions have occurred shall submit a report for each excess event describing the extent of the event and the actions taken by the owner or operator in response to this event. Request for mitigation, as described in OAC 252:100-9-8, shall be included in the excess emissions event report. Additional reporting may be required in the case of ongoing emission exceedances.

OAC 252:100-13 (Open Burning) [Applicable]
Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in this subchapter. The 0.0683 MMBTUH Ammonia Storage Flare Pilot Flare is an insignificant activity. The flare is smokeless.

OAC 252:100-19 (Particulate Matter (PM)) [Applicable]
Section 19-4 regulates emissions of PM from new and existing fuel-burning equipment, with emission limits based on maximum design heat input rating. Fuel-burning equipment is defined in OAC 252:100-19 as any internal combustion engine or gas turbine, or other combustion device used to convert the combustion of fuel into usable energy. Thus, the following table lists all equipment items, their individual limits, and expected emissions. Table 1.4-2 of AP-42 lists natural gas total PM emissions to be 7.6 lbs/million SCF or about 0.0076 lbs/MMBTU, which is in compliance for all fuel burning units at the facility.

Equipment	Maximum Heat Input (MMBTUH)	Appendix C Emission Limit (lb/MMBTU)	Potential Emission Rate (lb/MMBTU)
Ammonia Plant #4 Primary Reformer (EU 101)	300	0.29	0.0076
Ammonia Plant #4 Primary Ammonia Converter Startup Heater (EU 107)	40	0.5	0.0076
Nitric Acid Preheater #1 (EU 401)	20	0.51	0.0076

Equipment	Maximum Heat Input (MMBTUH)	Appendix C Emission Limit (lb/MMBTU)	Potential Emission Rate (lb/MMBTU)
Nitric Acid Preheater #4 (EU 403)	20	0.51	0.0076
Boiler #1 (EU 801)	53	0.37	0.0076
Boiler #2 (EU 802)	80	0.37	0.0076
Boiler #3 (EU 803)	60	0.35	0.0076
Emergency Generator (EU 1101)	0.29	0.6	0.0076

Section 19-12 limits particulate emissions from emission points in an industrial process based on process weight rate, as specified in Appendix G. As shown on the following table, all emission points are in compliance with Subchapter 19.

Equipment	Process Rate (TPH)	Appendix G Emission Limit (lb/hr)	Potential Emission Rate (lb/hr)
Granulator Scrubber #1	16.7	27.0	0.7
Granulator Scrubber #2	16.7	27.0	0.7
Granulator Scrubber #3	16.7	27.0	0.7
Cooling Tower #1	10,809	112.8	6.6
Cooling Tower #2	10,008	111.5	6.0

OAC 252:100-25 (Visible Emissions and Particulates) [Applicable]
No discharge of greater than 20% opacity is allowed except for short-term occurrences that consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. The permit will require the use of natural gas in the fuel-burning units and maintenance and monitoring of all other particulate-emitting units to ensure the opacity standard is met.

OAC 252:100-29 (Fugitive Dust) [Applicable]
No person shall cause or permit the discharge of any visible fugitive dust emissions beyond the property line on which the emissions originated in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or to interfere with the maintenance of air quality standards. Most of the parking areas, unloading areas, and access areas are paved. Under normal operating conditions, this facility has negligible potential to violate this requirement; therefore it is not necessary to require specific precautions to be taken.

OAC 252:100-31 (Sulfur Compounds) [Applicable]
Part 2 limits the ambient air concentration of hydrogen sulfide (H_2S) emissions from any facility to 0.2 ppmv (24-hour average) at standard conditions which is equivalent to 283 $\mu g/m^3$. As discussed previously in the memorandum, the Ammonia Plant #4 Primary Reformer burns waste gas containing 20 gr/100 SCF of waste sulfur (H_2S). The primary fuel is natural gas but waste gas recovered from the Desulfurization Unit is used as fuel. This waste gas contains H_2S that was removed from the natural gas that is used as a raw material in the ammonia production

process. Thus the total sulfur burned in the reformer will be the sulfur in the waste gas and also the sulfur in the natural gas fuel. PCC performed air dispersion modeling utilizing the AERMOD (Version 16216r) model with 2011-2015 meteorological data for Pryor to determine H_2S concentrations at the property boundary. Using emissions rates at the reformer stack based on 98% destruction and also 0% destruction, PCC demonstrated that concentrations at the property line for these two scenarios were 0.07 mg/m^3 and 3.53 mg/m^3, both in compliance with the standard. Emissions from other natural gas fuel burning sources at the facility not accounted for in the model would account for approximately another 50% of what was modeled for the reformer. Additional modeling was not required because of the wide margin of compliance with the standard.

Part 5 limits sulfur dioxide emissions from new fuel-burning equipment (constructed after July 1, 1972). For gaseous fuels the limit is 0.2 lb/MMBTU heat input averaged over 3 hours. All equipment at this facility is being treated as new for purposes of this permit evaluation. For all equipment at the facility except the primary reformers, the permit requires the use of pipeline natural gas having no more than 0.25 grains/100 SCF to ensure compliance with Subchapter 31, which easily meets the standard. As discussed above, the primary reformer burns waste gas containing waste sulfur (H_2S) from the Desulfurization Unit and the total sulfur content burned in the reformer will be the sulfur in natural gas fuel required plus the sulfur in the waste gas recovered from the Desulfurization Unit. From the "Emissions" section, the highest calculated SO_2 emission is 16.5 lb/hr from the Ammonia Plant #4 Reformer which is rated at 300 MMBTUH. This equates to 0.055 lbs-SO_2/MMBTU, which is in compliance with the 0.2 lb/MMBTU standard. These are peak emissions, which would not likely span the three-hour averaging period. All other fuel-burning equipment at the facility is fired on natural gas, easily meeting the standard.

OAC 252:100-33 (Nitrogen Oxides) [Applicable]

This subchapter limits new gas-fired fuel-burning equipment with rated heat input greater than or equal to 50 MMBTUH to emissions of 0.2 lb of NOx per MMBTU, three-hour average. PCC has four (4) emission units with a rated heat input greater than 50 MMBTUH. Thus, the following table lists all equipment items, their individual limits, and expected emissions.

EU	Equipment	Maximum Heat Input (MMBTUH)	Emission Factor (lb/MMBTU)	Source of Emission Factor
101	Ammonia Plant #4 Primary Reformer	300	0.1658	Re-BACT Limit(1)
801	Boiler #1	53	0.049	Table 1.4-1 of AP-42 (7/98)
802	Boiler #2	80	0.049	Table 1.4-1 of AP-42 (7/98)
803	Boiler #3	60	0.049	Table 1.4-1 of AP-42 (7/98)

(1) Representative of the UPL NOx limitation during planned startup/shutdown and purge gas out with reduced plant operations. All other emission limitations for EU 101 are less than 0.1658 lb/MMBTU.

(2) Based on AP-42 factor of 50 lb/MMSCF for low NOx burners converted to lbs/SCF using a GCV for natural gas of 1,040 BTU/SCF.

OAC 252:100-35 (Carbon Monoxide) [Not Applicable]
This subchapter affects gray iron cupolas, blast furnaces, basic oxygen furnaces, petroleum catalytic cracking units, and petroleum catalytic reforming units. There are no affected sources.

OAC 252:100-37 (Volatile Organic Compounds) [Applicable]
Part 3 requires storage tanks with a capacity of 400 gallons or more and storing a VOC with a vapor pressure greater than 1.5 psia to be equipped with a permanent submerged fill pipe or with an organic vapor recovery system. There is one 1,000-gallon gasoline storage tank. It was installed in 1965. Per 252:100-37-3, the subchapter only applies to installations occurring after December 28, 1974. Therefore, the 1,000-gallon gasoline storage tank is not affected.
Part 5 limits the VOC content of coating used in coating lines or operations. This facility will not normally conduct coating or painting operations except for routine maintenance of the facility and equipment, which is not an affected operation.
Part 7 requires fuel-burning equipment to be operated and maintained so as to minimize VOC emissions. Temperature and available air must be sufficient to provide essentially complete combustion. All fuel-burning equipment is designed to provide essentially complete combustion of organic materials.
Part 7 also regulates effluent water separators that receive water containing more than 200 gallons per day of VOC. There is no effluent water separator at this location.

OAC 252:100-40 (Control Of Emission Of Friable Asbestos) [Applicable]
This subchapter regulates the release of friable asbestos to the ambient air during demolition and renovation operations. Section 40-5, in addition to the requirements set forth for the handling of asbestos found in 40 CFR Part 61, Subpart M, contains provisions for handling, containerizing, storing, transporting and disposal of friable asbestos during demolition or renovation operations as well as maintenance of existing asbestos. The facility is subject to this rule.

OAC 252:100-42 (Toxic Air Contaminants (TAC)) [Applicable]
This subchapter regulates toxic air contaminants (TAC) that are emitted into the ambient air in areas of concern (AOC). Any work practice, material substitution, or control equipment required by the Department prior to June 11, 2004 to control a TAC shall be retained, unless a modification is approved by the Director. Because no AOC has been designated, there are no specific requirements for this facility at this time. PCC has requested enforceable limits on NH_3 emissions and has conducted air dispersion modeling to demonstrate that NH_3 concentrations at the property line will be in compliance with the current maximum ambient air concentration (MAAC). Modeling was conducted using the AERMOD (Version 16216r) air dispersion model with 2011-2015 meteorological data for Pryor and the requested permitted emission limits. Modeling results indicate that the maximum modeled ambient concentration of ammonia of 1,399 $\mu g/m^3$ is below the MAAC for ammonia of 1,742 $\mu g/m^3$ (24-hour average basis).

OAC 252:100-43 (Testing, Monitoring, and Recordkeeping) [Applicable]
This subchapter provides general requirements for testing, monitoring and recordkeeping and applies to any testing, monitoring or recordkeeping activity conducted at any stationary source. To determine compliance with emissions limitations or standards, the Air Quality Director may require the owner or operator of any source in the state of Oklahoma to install, maintain and operate monitoring equipment or to conduct tests, including stack tests, of the air contaminant source. All

required testing must be conducted by methods approved by the Air Quality Director and under the direction of qualified personnel. A notice-of-intent to test and a testing protocol shall be submitted to Air Quality at least 30 days prior to any EPA Reference Method stack tests. Emissions and other data required to demonstrate compliance with any federal or state emission limit or standard, or any requirement set forth in a valid permit shall be recorded, maintained, and submitted as required by this subchapter, an applicable rule, or permit requirement. Data from any required testing or monitoring not conducted in accordance with the provisions of this subchapter shall be considered invalid. Nothing shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. Each emissions unit must be evaluated for periodic testing in accordance with the Periodic Testing Standardization guidance issued December 1, 2011, on a pollutant by pollutant basis. The frequency of the periodic testing requirement is based on the quantity of the pollutant emitted. Periodic testing requirements are not required for an emission unit that is subject to an applicable requirement that already requires periodic testing, continuous emission monitoring (CEM), or predictive emission monitoring (PEMS).

Periodic Testing Review

EU	Pollutant	TPY	Current Monitoring	Periodic Testing
101	CO	106.2	Every 5 Years [1]	YES – Every 5 Years
	NOx	98.3	Good Combustion Practices [4]	YES – Every 5 Years [2]
	PM_{10}	9.6	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	9.6	Good Combustion Practices [4]	NO [3]
	SO_2	3.1	Good Combustion Practices [4]	NO [3]
	VOC	7	Good Combustion Practices [4]	NO [3]
	NH_3	265.2	Initial Performance Test	NO
102	VOC	8.4	None	NO
	Methanol	8	None	YES – Monthly
	NH_3	35.7	None	NO
107	CO	14.2	Good Combustion Practices [4]	NO [3]
	NO_X	16.9	Good Combustion Practices [4]	NO [3]
	PM_{10}	1.3	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	1.3	Good Combustion Practices [4]	NO [3]
	SO_2	0.2	Good Combustion Practices [4]	NO [3]
	VOC	1	Good Combustion Practices [4]	NO [3]
110	CO	18.2	Good Combustion Practices [4]	NO – Continuous Monitoring of Pilot Flame
111	NH_3	49.8	Weekly Concentration Readings	NO
301	NOx	26.3	Part 60/Consent Decree CEMS [6]	NO
	CO	96.4	Every 5 Years [1]	YES – Every 5 Years

EU	Pollutant	TPY	Current Monitoring	Periodic Testing
	PM_{10}	0.1	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	0.1	Good Combustion Practices [4]	NO [3]
	SO_2	0.1	Good Combustion Practices [4]	NO [3]
	VOC	0.1	Good Combustion Practices [4]	NO [3]
	NH_3	29.1	Initial Performance Test	NO
303	NOx	43.8	Part 60/Consent Decree CEMS [6]	NO
	NH_3	52.5	Initial Performance Test	NO
401	NOx	4.3	Good Combustion Practices [4]	NO [3]
	CO	7.1	Good Combustion Practices [4]	NO [3]
	VOC	0.5	Good Combustion Practices [4]	NO [3]
	SO_2	0.2	Good Combustion Practices [4]	NO [3]
	PM_{10}	0.7	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	0.7	Good Combustion Practices [4]	NO [3]
403	NOx	4.3	Good Combustion Practices [4]	NO [3]
	CO	7.1	Good Combustion Practices [4]	NO [3]
	VOC	0.5	Good Combustion Practices [4]	NO [3]
	SO_2	0.2	Good Combustion Practices [4]	NO [3]
	PM10	0.7	Good Combustion Practices [4]	NO [3]
	PM2.5	0.7	Good Combustion Practices [4]	NO [3]
501	CO	17.6	None	NO
	VOC	6.3	None	NO
	NH_3	18.1	None	NO
	MeOH	0.88	None	YES – Initial Performance Test [5]
601	PM_{10}	0.6	None	NO [7]
	$PM_{2.5}$	0.6	None	NO [7]
602	PM_{10}	0.6	None	NO [7]
	$PM_{2.5}$	0.6	None	NO [7]
701	PM_{10}	3	Opacity/Initial Performance Test [8]	YES – Initial Performance Test
	$PM_{2.5}$	3	Opacity/Initial Performance Test [8]	YES – Initial Performance Test
	NH_3	10.3	None	NO [3]
702	PM_{10}	3	Opacity/Initial Performance Test [8]	YES – Initial Performance Test
	$PM_{2.5}$	3	Opacity/Initial Performance Test [8]	YES – Initial Performance Test
	NH_3	10.3	None	NO [3]
703	PM_{10}	3	Opacity/Initial Performance Test [8]	YES – Initial Performance Test

EU	Pollutant	TPY	Current Monitoring	Periodic Testing
	$PM_{2.5}$	3	Opacity/Initial Performance Test [8]	YES – Initial Performance Test
	NH_3	10.3	None	NO [3]
801	NOx	11.2	Good Combustion Practices [4]	NO [3]
	CO	18.8	Good Combustion Practices [4]	NO [3]
	VOC	1.3	Good Combustion Practices [4]	NO [3]
	SO_2	0.2	Good Combustion Practices [4]	NO [3]
	PM_{10}	1.7	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	1.7	Good Combustion Practices [4]	NO [3]
802	NOx	16.9	Good Combustion Practices [4]	NO [3]
	CO	28.3	Good Combustion Practices [4]	NO [3]
	VOC	1.9	Good Combustion Practices [4]	NO [3]
	SO_2	0.3	Good Combustion Practices [4]	NO [3]
	PM_{10}	2.6	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	2.6	Good Combustion Practices [4]	NO [3]
803	NOx	12.7	Good Combustion Practices [4]	NO [3]
	CO	21.3	Good Combustion Practices [4]	NO [3]
	VOC	1.4	Good Combustion Practices [4]	NO [3]
	SO_2	0.2	Good Combustion Practices [4]	NO [3]
	PM_{10}	2	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	2	Good Combustion Practices [4]	NO [3]
901	PM_{10}	11.3	None	NO [3]
	$PM_{2.5}$	0.1	None	NO [3]
902	PM_{10}	13.2	None	NO [3]
	$PM_{2.5}$	0.1	None	NO [3]
1002	VOC	0.4	None	NO [3]
1003	NH_3	184.2	None	NO
1101	NOx	0.2	Good Combustion Practices [4]	NO [3]
	CO	5.8	Good Combustion Practices [4]	NO [3]
	VOC	0.1	Good Combustion Practices [4]	NO [3]
	SO_2	0.1	Good Combustion Practices [4]	NO [3]
	PM_{10}	0.1	Good Combustion Practices [4]	NO [3]
	$PM_{2.5}$	0.1	Good Combustion Practices [4]	NO [3]

[1] – This unit is currently required to conduct periodic testing at least once every five years under their current construction permit (Permit No. 2008-100-C (M-6)).

[2] - Annual emissions of NOx fall just below 100 TPY based on the mean 3-hr average value derived from the Re-BACT study (0.0748 lb-NOx/MMBTU). However, this is not what was proposed as the BACT limit during normal operations (0.1146 lb-NOx/MMBTU) which represents the upper prediction limit during normal operations. It should also be noted that the 0.0748 lb-NOx/MMBTU value represents OSR Regeneration while the UPL value of 0.1146 lb-NOx/MMBTU does not. Annual emissions using the Re-BACT limit yields 150.6 TPY. Given that the facility is subject to a higher BACT limit for SSM events (0.1658 lb-NOx/MMBTU) would further justify the need for additional testing; Testing every 5 years with results to be included with renewal application is recommended. Testing should be conducted while the unit is in normal operation.

[3] – The PTE of this unit is < 40 TPY. Therefore, periodic testing is not warranted.

[4] – Part of the maintenance and monitoring requirements (meant to apply at all times) of Specific Condition No. 9.

[5] – Emissions limits were developed using the highest stack test data from Ammonia Plant #3 (no longer in operation). No VOC/methanol testing has been performed on Ammonia Plant #4. Since methanol generation is from the type of catalyst used, and methanol emission limits are within 80% of the major source HAP threshold. Initial performance testing is being recommended for EU 501.

[6] – Emission units that use a continuous emission monitor (CEM) would not be required to conduct additional periodic testing.

[7] – PCC has elected to make the neutralizers a closed process which effectively eliminates point source emissions. However, as a contingency for potential fugitive emissions, PCC estimates that 1% of the emission-laden steam escapes. Based on the inherent closed process design of the equipment, the PTE of this unit is estimated to be < 40 TPY. Therefore, periodic testing is not warranted.

[8] – The granulator unit scrubbers (EU 701, 702, and EU 703) are subject to CAM under 40 CFR Part 64. CAM will be monitoring the throughput, initial performance testing to correlate the PM limit to an opacity action level, and continued opacity measurements using EPA Method 9. At this time, the emission units are not in service, so no correlation between the pollutant and parameter being monitored has been made. Current monitoring requirements sufficiently assure compliance with the terms and conditions of the permit. Periodic testing is not warranted at this time.

The following Oklahoma Air Pollution Control Rules are not applicable to this facility:

OAC 252:100-7	Minor Facilities	not in source category
OAC 252:100-11	Alternative Emissions Reduction	not eligible
OAC 252:100-15	Mobile (Motor Vehicle) Sources	not in source category
OAC 252:100-17	Incinerators	not type of emission unit
OAC 252:100-23	Cotton Gins	not type of emission unit
OAC 252:100-24	Feed & Grain Elevators	not in source category
OAC 252:100-39	Former Nonattainment Areas	not in applicable county
OAC 252:100-47	Municipal Solid Waste Landfills	not in source category

SECTION VIII. FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]

PCC manufactures nitric acid which is one of the 28 named categories whose major source threshold is 100 TPY. Emissions of NOx and CO exceed the major source level of 100 TPY and PSD will apply to any future project whose added emissions exceed significance levels. The addition of the emergency engine, as applied for in Permit No. 2008-100-TV (M-9) and authorized by this permit, is considered a minor modification and increases facility-wide emissions of NOx 0.14 TPY and CO by 5.78 TPY. All other criteria pollutants have increased by less than 0.01 TPY.

Project Emission Increases

Permit No.	NO_X (TPY)	CO (TPY)	VOC (TPY)	SO_2 (TPY)	PM (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)
2008-100-C (M-6) PSD	243.3	349.3[(1)]	29.9	4.7	65.1	54.8	30.3[(2)]
2008-100-TV	243.4	355.8	30.0	4.8	65.2	54.9	30.4
(Δ) Post-Pre[*]	**0.2**	**5.8**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**

(1) Permit No. 2008-10-C (M-6) PSD presents emissions of CO in the emission summary table from EU 110 as "81.9 TPY". However, this is not the correct value and should be "18.2 TPY" which is consistent with the calculation in the memorandum and the limitations of the specific conditions.

(2) Permit No. 2008-10-C (M-6) PSD presents emissions of $PM_{2.5}$ in the emission summary table as 30.5 TPY. However, this appears to be a rounding error and should be 30.37 TPY.

(3) Permit No. 2008-10-C (M-6) PSD presents emissions of NH_3 in the emission summary table from EU 301 and EU 303 as 29.5 TPY and 59.3 TPY, respectively. However, these are not the correct value and should be 29.1 TPY and 52.5 TPY from EU 301 and EU 303 respectively, which is consistent with the calculation in the memorandum and the limitations of the specific conditions.

[*] Note that the emission change does not incorporate the decrease in emissions following the installation of boiler (EU 803) as authorized in Permit No. 2008-100-C (M-6) PSD. The unit installed has a rated heat input rate that is smaller than what was previously authorized, resulting in a decrease in emissions. This was not taken into account during the analysis but results in an adjustment to the overall facility-wide total emissions.

NSPS, 40 CFR Part 60 [Subpart Dc, Subpart G, Subpart VV, & Subpart JJJJ Applicable]

Subpart D, Fossil-Fuel-Fired Steam Generators. This subpart affects fossil-fuel-fired steam generating units with a design heat input capacity greater than 250 MMBTUH that commenced construction or modification after August 17, 1971. Boiler #1 commenced construction after August 17, 1971 but has a design heat input capacity less than 250 MMBTUH. This subpart is not applicable.

Subpart Da, Electric Utility Steam Generating Units. This subpart affects electric utility steam generating unit capable of combusting more than 250 MMBTUH that commenced construction, modification, or reconstruction after September 18, 1978. There are no applicable emission units at this facility.

Subpart Db, Industrial-Commercial-Institutional Steam Generating Units. This subpart affects electric steam generating units with a design capacity greater than 100 MMBTUH constructed after June 19, 1984. There are no applicable emission units at this facility.

Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units, affects steam generating units constructed after June 9, 1989, and with capacity between 10 and 100 MMBTUH. EU 802 and 803 are affected units and subject to the requirements of Subpart Dc. Since the affected units will only combust natural gas, there are no emission standards that are applicable under this subpart. The facility is required to keep and maintain records of the amount of fuel combusted each calendar

month, or the total amount of each steam generating unit fuel delivered to that property during each calendar month. This subpart is applicable to the units below.

EU	Point	Description	Construction Date
802	802	Boiler #2 (80 MMBTUH)	1995
803	803	Boiler #3 (60 MMBTUH)	2018

Subpart G, Standards of Performance for Nitric Acid Plants. This subpart affects any nitric acid production unit that commences construction or modification after August 17, 1971 and on or before October 14, 2011. This subpart requires that no owner or operator shall cause to be discharged into the atmosphere from any affected facility any gases which contain nitrogen oxides, expressed as NO_2, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid, and shall not exhibit 10 percent opacity, or greater. The Consent Decree executed between the US Environmental Protection Agency (EPA) Consent Decree (CD), Case: 5:14-cv-00271-F Document 3-1 filed: March 18, 2014 entered by the Court on May 28, 2014, established that the Nitric Acid Plants are subject to this rule. This subpart applies to both Nitric Acid Plants at this time.

Subpart Ga, Standards of Performance for Nitric Acid Plants for Which Construction, Reconstruction, or Modification Commenced After October 14, 2011 Nitric Acid Plants #1 and #4 were originally construction in 1966 and 1964. Both plants have not been reconstructed or modified as defined in §60.2 after October 14, 2011. This subpart does not apply at this time.

Subpart Kb, Volatile Organic Liquid (VOL) Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. This subpart affects VOL storage tanks with a capacity above 19,813 gallons. Volatile organic liquid (VOL) means any organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere. Both the gasoline and diesel fuel tank have a capacity of 1,000-gallons, which is below the threshold capacity of the rule. The ammonia plant #4 condensate steam flash drum (EU 102) stores VOLs and has a capacity above 19,813 gallons. However, EU 102 is a flow through process vessel used to dissipate heat from the condensate generated by the ammonia plant and is not used for storage. Per 60.111b, the definition of storage vessel does not include "process tanks". This subpart is not applicable.

Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006. Urea is a listed chemical in 40 CFR Part 60.489, and is produced as a final product at PCC. Urea Plant #1 (EU 201) and Urea Plant #2 (EU 202) were both constructed in 1995. However, Per §60.480(d), If an owner or operator applies for one of more of the exemptions, then the owner or operator shall maintain records as required in §60.486(i). The facility falls into exception §60.480(d)(5), "any affected facility that has no equipment in VOC service is exempt from §§60.482-1 through 60.482-10". Emission units 201 and 202 do not process VOC while producing ammonia. Therefore, EU 201 and EU 202 are subject to the recordkeeping and reporting requirements under 60.486(i).

Subpart VVa (Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry) affects equipment constructed, reconstructed or modified after November 7, 2006. Potential affected units are EU 201 and 202 which produce urea. However, these units pre-date the regulation since they were constructed before 2006. This subpart is not applicable at this time.

Subpart NNN, Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations. PCC does not produce any of the chemicals listed in §60.667 as a product, co-product, by-product, or intermediate. Product is defined in 40 CFR Part 60, Subpart NNN is any compound or chemical listed in §60.667 that is produced for sale as a final product as that chemical, or for use in the production of other chemicals or compounds. By-products, co-products, and intermediates are considered to be products. §60.667 includes a listing for methanol, which is a byproduct of ammonia production. However, PCC does not produce methanol for sale as a final product, and does not use it in the production of other chemicals or compounds. Therefore, Subpart NNN does not apply to the facility.

Subpart RRR, Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes for which construction, modification, or reconstruction commenced after June 29, 1990. PCC does not produce any of the chemicals listed in §60.707 as a product, co-product, by-product, or intermediate. Product is defined in 40 CFR Part 60, Subpart RRR is any compound or chemical listed in §60.707 that is produced for sale as a final product as that chemical, or for use in the production of other chemicals or compounds. By-products, co-products, and intermediates are considered to be products. §60.707 includes a listing for methanol, which is a byproduct of ammonia production. However, PCC does not produce methanol for sale as a final product, and does not use it in the production of other chemicals or compounds. Therefore, Subpart RRR does not apply to the facility.

Subpart JJJJ, Stationary Spark Ignition Internal Combustion Engines (SI-ICE), promulgates emission standards for all new SI engines that commenced construction after June 12, 2006, and all SI engines modified or reconstructed after June 12, 2006, regardless of size. EU 1101 (emergency generator) was manufacture in 2018, it is considered new and subject to this subpart. Emergency engines greater than 25 HP and manufactured after January 1, 2009 are subject to the emission limits in Table 1 of Subpart JJJJ. However, Per §60.4243(b), the owner/operator may demonstrate compliance with the emissions standards by purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified in paragraph (a) of this section. PCC has submitted a copy of the US EPA certificate of conformity for this engine class and therefore can demonstrate continuous compliance in accordance with either paragraph (a)(1) of this section for certified engines operated in accordance with the manufacturer's instructions or with paragraph (a)(2) for engines that were not operated in accordance with the manufacturer's instructions and became non-certified. Since the engine has been issued a certificate of conformity, no performance testing is required.

NESHAP, 40 CFR Part 61 [Applicable]

Subpart M, National Emission Standard for Asbestos, The provisions of this subpart are applicable to those sources specified in §§61.142 through 61.151, 61.154, and 61.155. Specifically, §61.145, Standard for Demolition and Renovation, affects facilities where demolition or renovation occurs in the presence of asbestos. The facility has been in compliance with this rule to date.

NESHAP, 40 CFR Part 63 [Subpart ZZZZ, CCCCCC, & VVVVVV Applicable]

Subpart B, Requirements for Control Technology Determinations for Major Sources in Accordance With Clean Air Act Sections, Sections 112(g) and 112(j). Section 63.43 of Subpart B requires that any facility not included in a listed source category (or for which a standard has not been promulgated under Section 112c of the CAA prior to May 15, 2002) that constructs or reconstructs

a major source of HAP after June 29, 1998, is subject to a case-by-case MACT determination. This "112g" MACT determination may be superseded by any subsequently promulgated MACT requirement promulgated under Section 112c of the CAA. This facility is not a major source of HAP. Performance testing was completed on Ammonia Plant #4 Condensate Steam Flash Drum (EU 102) which demonstrated compliance with the 9.5 TPY "bubble limit" in previous authorizations. However, because Ammonia Plants #1 and #3 have been removed, the potential to emit is no longer greater than 10.0 TPY. Therefore, the bubble limit of 9.5 TPY is no longer necessary to avoid major source status for HAPs. The PTE of methanol at Ammonia Plant #4 is 8.89 TPY.

Subpart Q, National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers, applies to all new and existing industrial process cooling towers that are operated with chromium-based water treatment chemicals and are either major sources or are integral parts of facilities that are major sources as defined in §63.401. The cooling towers do not use any chromium-based water treatment chemicals. This subpart is not applicable.

Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand. For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006. Owners and operators of new engines and reconstructed engines at area sources meet the requirements of Subpart ZZZZ by complying with either 40 CFR Part 60 Subpart IIII (for CI engines) or 40 CFR Part 60 Subpart JJJJ (for SI engines). EU 1101 is subject to the requirements of this subpart. Per §63.6590(c), Stationary RICE subject to Regulations under 40 CFR Part 60 Subpart JJJJ, meet the requirements of this subpart by meeting the requirements of Subpart JJJJ. EU 1101 is in compliance with Subpart JJJJ; therefore, all requirements of this subpart are met.

Subpart FFFF, National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing. This subpart establishes national emission standards for hazardous air pollutants for miscellaneous organic chemical manufacturing. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limits, operating limits, and work practice standards. You are subject to the requirements in this subpart if you own or operate miscellaneous organic chemical manufacturing process units (MCPU) that are located at, or are part of, a major source of hazardous air pollutants (HAP) emissions and that satisfy each of three criteria: 1) The MCPU must manufacture certain organic chemicals as identified by a number of sub-criteria; 2) The MCPU processes, uses, or generates any of the organic HAP listed in section 112(b) of the CAA or hydrogen halide and halogen HAP, as defined in §63.2550; and 3) The MCPU may not be subject to any other MACT, except for process vents from batch operations within a chemical manufacturing process unit (CMPU), as identified §63.100(j)(4) in Subpart I. This facility is an area source of HAP. This subpart does not apply.

Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from at

major sources of HAP. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards. This facility is not a major source of HAP. This subpart is not applicable at this time.

Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities. This subpart establishes national emission limitations and management practices for hazardous air pollutants (HAP) emitted from the loading of gasoline storage tanks at gasoline dispensing facilities (GDF). This subpart also establishes requirements to demonstrate compliance with the emission limitations and management practices. The affected source includes each gasoline cargo tank during the delivery of product to a GDF and each storage tank that is located at an area source. GDF having a monthly throughput of less than 10,000 gallons of gasoline must comply with the requirements in §63.11116. GDF having a monthly throughput of 10,000 gallons of gasoline or more must comply with the requirements in §63.11117. GDF having a monthly throughput of 100,000 gallons of gasoline or more must comply with the requirements in §63.11118. EU 1002 is subject to the applicable requirements of this rule as an existing GDF having a monthly throughput of less than 10,000 gallons of gasoline.

Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources, affects industrial, commercial, and institutional boilers as defined in §63.11237 that are located at, or are part of, an area source of hazardous air pollutants (HAP), as defined in §63.2, except as specified in §63.11195. Per §63.11195 (e), gas fired boilers are not subject to this subpart. All boilers at the facility are natural gas fired. This subpart is not applicable.

Subpart VVVVVV, National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources. PCC is subject to this subpart because of the applicability provision that states, "The CMPU uses as feedstock, a material that contains quinoline, manganese, and/or trivalent chromium at an individual concentration greater than 1.0 percent by weight, or any other Table 1 HAP at an individual concentration greater than 0.1 percent by weight." The reformer, methanator, and HT Shift Converter at the Ammonia Plant use a catalyst containing nickel compounds, which are listed in Table 1 as metal HAPs. This catalyst falls under the definition of "feedstock" which is defined in the subpart as an additive or other material introduced into a CMPU. Because the metal HAPs in PCC's CMPUs are in a form that should result in no emissions of metal HAPs, in order to comply with Subpart VVVVVV PCC is required to conduct quarterly equipment inspections, repair leaks within fifteen days (and document the reasons for any delays) and use good air pollution control practices for minimizing emissions. Records of inspections and repairs must be maintained. This subpart is applicable to the facility. The Notification of Compliance Status Report was submitted to the USEPA on May 20, 2013.

CAM, 40 CFR Part 64 [Applicable]

Compliance Assurance Monitoring, as published in the Federal Register on October 22, 1997, applies to any pollutant specific emission unit at a major source that is required to obtain a Title V permit, if it meets all the following criteria:

- It is subject to an emission limit or standard for an applicable regulated air pollutant
- It uses a control device to achieve compliance with the applicable emission limit or standard
- It has potential emissions, prior to the control device, of the applicable regulated air pollutant of 100 TPY or 10/25 TPY of a HAP

The following table outlines the pre-control emission calculations based on the manufacturer's data, published emission factors, and/or regulatory limits. As shown below, a CAM Plan is required for each source. The CAM Rule requires the following monitoring frequency:

(1.) Continuous monitoring for units that are classified as a major source after control. For each parameter monitored, the owner or operator shall collect four or more data values equally spaced over each hour and average the values, as applicable, over the applicable averaging period.

(2.) Daily monitoring (or some frequency less than continuous but at least once per a 24-hour period) for units that are not classified as a major source after control.

CAM Applicable Units at PCC

EUG	EU	Source Description	Pollutant	Pre-Control PTE (TPY)	Control Efficiency (%)	Post-Control PTE (TPY)	Type of Monitoring Required
1	110	Ammonia Plant #4 Startup/Shutdown Vent Flare	CO	910	98	18.2	At Least Daily
3	301	Nitric Acid Plant #1	NO_x	85[1]	98	26.3[2]	At Least Daily[3]
3	303	Nitric Acid Plant #4	NO_x	140[1]	98	43.8[2]	At Least Daily[3]
7	701	Granulator Scrubber #1	PM	193	98.5	3.0	At Least Daily
7	702	Granulator Scrubber #2	PM	193	98.5	3.0	At Least Daily
7	703	Granulator Scrubber #3	PM	193	98.5	3.0	At Least Daily

Notes:
[1]Pre-Control PTE emission rates are based on the maximum daily production capacity of each unit and the AP-42 factor for NO_x emissions for extended absorption, single-stage units.
[2]Post-Control PTE emission rates are based on the allowable limits in Federal Consent Decree – Case 5:14-cv-00271, dated 5/28/14 and ODEQ Permit No. 2008-100-C (M-6) PSD require continuous emissions monitoring for NO_x.
[3]Although CAM only requires a minimum of daily monitoring, Federal Consent Decree – Case 5:14-cv-00271, dated 5/28/14, NSPS Subpart G, and ODEQ Permit No. 2008-100-C (M-6) PSD require continuous emissions monitoring for NO_x.

1. The Nitric Acid Plants (EU 301 and EU 303) were determined by EPA to be subject to NSPS Subpart G and are described as such in the Consent Decree, for which the requirements have been incorporated into the permit. In accordance with 40 CFR 64.2(b)(vi), the requirements of Part 64 do not apply to emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1. Permit No. 2008-100-C (M-6) incorporates a continuous compliance determination method which specifies that the facility to install and operate continuous emissions monitoring (CEMs) for NO_X.

2. At this time EUG 7 emission units are not in service, and no CAM plan has been submitted.

EUG	EU	Source Description	Pollutant	Uncontrolled Emissions (TPY)	Control Efficiency (%)	Controlled Emissions (TPY)
7	701	Granulator Scrubber #1	PM	193	98.5	3.0
7	702	Granulator Scrubber #2	PM	193	98.5	3.0

EUG	EU	Source Description	Pollutant	Uncontrolled Emissions (TPY)	Control Efficiency (%)	Controlled Emissions (TPY)
7	703	Granulator Scrubber #3	PM	193	98.5	3.0

3. Ammonia Plant No. 4 Startup/Shutdown Vent (EU 110) has uncontrolled emissions of CO greater than the major source threshold, thus subject to CAM. The following monitoring parameter and justification for compliance assurance monitoring are below. All CAM requirements are incorporated into the specific conditions of the permit as Table 1, Appendix B.

Ammonia Plant #4 Startup/Shutdown Vent Flare Background

A. Emissions Unit

Description: Ammonia Plant #4 Startup/Shutdown Vent Flare
EUG #: 1
EU ID#: 110
Facility: Pryor Chemical Company

B. Applicable Regulation, Emission Limit, and Monitoring Requirements

Emission Limit: Carbon Monoxide
241.9 lb/hr

Monitoring Requirements: Surrogate Monitoring

C. Control Technology

Flare

II. Monitoring Approach

The key elements of the monitoring approach are presented below:

A. Indicator

Pilot Flame

B. Measurement Approach

There are 4 pilots on the flare, each with its own thermocouple that provides an ON/OFF indication in the control room. Only one pilot flame must be on for the flare to operate. The presence of at least one pilot flame will be confirmed and recorded each day.

C. Indicator Range

Confirmation of pilot flame presence will be the indicator. No range is required.

D. QIP Threshold

The QIP threshold is six excursions in a semi-annual reporting period, where at least one pilot flame is not present. However, any failure to confirm any one pilot flame presence will cause corrective action to be taken.

E. Performance Criteria

Data Representativeness:	Measurements are being made at the emission point.
Verification of Operational Status:	All manufacturer's recommendations regarding periodic testing/checks for the proper installation and operation of the flame detecting device will be followed.
QA/QC Practices and Criteria:	Calibration, maintenance, and operation will be conducted in accordance with manufacturer's specifications.
Monitoring Frequency and Data:	Daily monitoring of pilot flame presence.
Collection Procedure:	Confirm presence of flame with thermocouples and keep daily records of observations.

III. Justification

A. Background

Pryor Chemical Company operates a chemical manufacturing facility in Pryor, Oklahoma. A flare is used to control CO emissions generated at Ammonia Plant #4 during startup, shutdowns, and malfunction, and during maintenance events, as needed.

B. Rationale for Selection of Performance Indicator

The presence of at least one pilot flame indicates the flare is operational.

C. Rationale for Selection of Indicator Level

The indicator was selected to allow a simple and effective procedure for compliance tracking purposes. When an excursion occurs (when all four pilot flames are not present), or when any one pilot flame is not present, corrective action will be initiated based upon the pilot flame observations. All excursions will be documented and reported. The selected QIP threshold for flare operations is six excursions during the semi-annual reporting period, where all four pilot flames are not present. If the QIP

threshold is exceeded in a semi-annual period, a QIP will be developed and implemented.

Chemical Accident Prevention Provisions, 40 CFR Part 68 [Applicable]
The plant has substances regulated under 40 CFR Part 68 present in quantities greater than the threshold quantities; therefore, 40 CFR Part 68 is applicable. A Risk Management Plan was submitted on September 26, 2017 (EPA Facility ID: 1000 0013 6337). PCC appears to be in compliance with requirements of this part, including registration and submission of an RMP. More information on this federal program is available on the web page: *https://www.epa.gov/rmp*

Stratospheric Ozone Protection, 40 CFR Part 82 [Subparts A and F Applicable]
These standards require phase out of Class I & II substances, reductions of emissions of Class I & II substances to the lowest achievable level in all use sectors, and banning use of nonessential products containing ozone-depleting substances (Subparts A & C); control servicing of motor vehicle air conditioners (Subpart B); require Federal agencies to adopt procurement regulations which meet phase out requirements and which maximize the substitution of safe alternatives to Class I and Class II substances (Subpart D); require warning labels on products made with or containing Class I or II substances (Subpart E); maximize the use of recycling and recovery upon disposal (Subpart F); require producers to identify substitutes for ozone-depleting compounds under the Significant New Alternatives Program (Subpart G); and reduce the emissions of halons (Subpart H).
Subpart A identifies ozone-depleting substances and divides them into two classes. Class I controlled substances are divided into seven groups; the chemicals typically used by the manufacturing industry include carbon tetrachloride (Class I, Group IV) and methyl chloroform (Class I, Group V). A complete phase-out of production of Class I substances is required by January 1, 2000 (January 1, 2002, for methyl chloroform). Class II chemicals, which are hydrochlorofluorocarbons (HCFCs), are generally seen as interim substitutes for Class I CFCs. Class II substances consist of 33 HCFCs. A complete phase-out of Class II substances, scheduled in phases starting by 2002, is required by January 1, 2030.
Subpart F requires that any persons servicing, maintaining, or repairing appliances except for motor vehicle air conditioners; persons disposing of appliances, including motor vehicle air conditioners; refrigerant reclaimers, appliance owners, and manufacturers of appliances and recycling and recovery equipment comply with the standards for recycling and emissions reduction.

Greenhouse Gas Reporting, 40 CFR Part 98 [Applicable]
The following rules are applicable to the facility but are not addressed in the permit because Oklahoma has not been delegated authority to enforce these rules.
Subpart A, General Provision
Subpart C, General Stationary Fuel Combustion Sources
Subpart G, Ammonia Manufacturing
Subpart V, Nitric Acid Production
Subpart PP, Suppliers of Carbon Dioxide

SECTION IX. COMPLIANCE

Tier Classification

The application for an initial TV operating permit will undergo Tier II review.

Landowner Affidavit

PCC has submitted an affidavit documenting that it is not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that PCC owns the real property.

Public Review

The applicant is required to publish a "Notice of Filing a Tier II Application" in a local newspaper in order to give public notice that a Tier II permit application has been filed with DEQ.

The applicant is also required to publish a "Notice of Draft Tier II Permit" in a local newspaper for a 30 day public review. A copy of the draft permit will be available on the Air Quality section of the DEQ web page at *www.deq.ok.gov*.

State Review

This facility is located within 50 miles of the Arkansas, Missouri and Kansas border. All states mentioned above will be notified of the draft permit.

EPA Review

The proposed permit will be forward to EPA Region VI for a 45-day review period following public review.

Fee Paid

A fee of $2,000 for the initial Part 70 operating permit was paid on June 7, 2010. A fee of $3,000 for a minor modification of a Part 70 permit was paid on February 12, 2019.

Inspection

A full compliance evaluation was performed on June 6, 2019 by Michael Provence, Environmental Programs Manager with the Air Quality Division. The final compliance evaluation report was not available at the time of the permit draft.

Performance Testing

Performance testing was conducted on ammonia plant #4 primary reformer, nitric acid plant #1 and nitric acid plant #4 on the second week of December 2019. The final report with the test results were

not available to AQD at the time of this permit draft.

SECTION XI. SUMMARY

The applicant has demonstrated compliance with all applicable air quality rules and regulations. Ambient air quality standards are not threatened at this site. Issuance of the permit is recommended, contingent on public, state, and EPA review.

PERMIT TO OPERATE
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS

Pryor Chemical Company **Permit No. 2008-100-TV**
Pryor - Mid America Industrial Park Facility

The permittee is authorized to operate in conformity with the specifications submitted to Air Quality on June 7, 2010, October 25, 2018, and subsequent information received. The Evaluation Memorandum dated February 7, 2020, explains the derivation of applicable permit requirements and estimates of emissions, however, it does not contain limitations or permit requirements. Continuing operations under this permit constitutes acceptance of, and consent to the conditions contained herein.

1. Points of emissions and emissions limitations for each point: [OAC 252:100-8-6(a)]

EUG 1 – Ammonia Plant #4

A. <u>EU 101 – Ammonia Plant #4 Primary Reformer (300-MMBTUH)</u>: Emissions from the primary reformer shall not exceed the following:

NO_x		CO		VOC		SO_2		$PM_{10}/PM_{2.5}$		NH_3	
lb/hr	**TPY**	**lb/hr**	**TPY**	**lb/hr**	**TPY**	**lb/hr**	**TPY**	**lb/hr**	**TPY**	**lb/hr**	**TPY**
34.4[(1)]/49.8[(2)]	98.3	24.3	106.2	1.6	7.0	16.5	3.1	2.2	9.6	520.5	265.2

[(1)]Upper prediction limit applies at all times during normal operations (0.1146 lb/MMBTU), excluding planned startup and shutdown events, as determined by the BACT study submitted April 21, 2015;
[(2)]Upper prediction limit applies during planned startup/shutdown/reduced operations (0.1658 lb/MMBTU) as determined by the BACT study submitted April 21, 2015.

i. Maximum production of ammonia from Ammonia Plant #4 shall not exceed 770 tons-NH_3 per day. Permittee shall measure and record the amount of ammonia produced shall be daily basis when operating. [OAC 252:100-8-6(a)(1)]

ii. EU 101 Ammonia Plant #4 Primary Reformer may be fired on either natural gas or a combination of natural gas, waste gas produced from the natural gas desulfurization unit, and purge gas. [OAC 252:100-8-6(a)(1)]

iii. Unplanned events including any malfunctions are to be reported in accordance with OAC 252:100-9. [OAC 252:100-9]

iv. NOx emissions shall not exceed 0.1146 lb/MMBTU averaged over a 3-hour period during any time when Ammonia Plant No. 4 Primary Reformer is operating, excluding planned startup/shutdown/reduced operation mode. [OAC 252:100-8-5(d)(1)(A)]
   a. Compliance with the UPL Normal BACT limit shall be demonstrated based on periodic performance testing requirements in Specific Condition 14.

v. NOx emissions shall not exceed 0.1658 lb/MMBTU averaged over a 3-hour period during planned startup/shutdown/reduced operations. [OAC 252:100-8-5(d)(1)(A)]

vi. The permittee shall monitor the fuel gas flow (natural gas and purge gas) combusted in the primary reformer (scf) and the amount of feedstock gas introduced into the primary reformer (scf) on an hourly basis. The parameters shall be recorded at the end of each operating hour (minimum). The permittee shall keep a daily records, when operating the ammonia plant, documenting the following.

Parameter	**Unit Notation**	**Description**
Start-Time	$T_{(SU\text{-}START)}$	Time when primary reformer is first lit
Fuel Use (scf/hr)	$F_{(0\ hr\text{-}1\ hr)}$	Total Fuel Combusted during each hour operated (i.e. hour 0 to hour 1, etc…)
Feedstock Gas (scf/hr)	$F_{(0\ hr\text{-}1\ hr)}$	Total feedstock natural gas introduced into the primary reformer catalysts during each hour operated (i.e. hour 0 to hour 1, etc…)
Startup-Stop Time	$T_{(SU\text{-}END)}$	End of Startup
Shutdown Start Time	$T_{(SD\text{-}START)}$	Start of Shutdown
Shutdown Stop Time	$T_{(SD\text{-}END)}$	End of Shutdown
Reduced Operation Start Time	$T_{(RO\text{-}END)}$	Start of Reduced Operation
Reduced Operation Stop Time	$T_{(RO\text{-}END)}$	End of Reduced Operation

vii. At the end of each month, the permittee shall review the daily records from that month to determine the heat input (MMBTUH) and total operating time per month (hours) in planned startup/shutdown/reduced operation (SU/SD/RO) mode. When determining the hourly production equivalence rate, a conversion ratio of 21,250 scf/ton ammonia produced shall be assumed. Planned startup/shutdown/reduced operation (SU/SD/RO) mode shall be defined as:

Planned Startup is defined as the beginning of operations when the first primary reformer burner is lit and ending when no more than 150 burners are in operation at a maximum heat input value of 129 MMBTUH and production is at or below 300 TPD (hourly equivalent, 3-hour average). In the event of a failed or aborted startup, the startup event ends when feedstock natural gas flow to the reformer stops.

Planned Shutdown is defined as beginning when Primary Reformer operation has been reduced with when no more than 150 burners are in operation at a maximum heat input value of 129 MMBTUH and production is at or below 300 TPD (hourly equivalent, 3-hour average). Planned Shutdown is complete when all primary reformer burners have been turned off and no ammonia is being produced.

Reduced Operations is defined as an operational variation where the ammonia plant is forced to operate the reformers at a reduced rate (at or below 300 TPD). At the reduced

production rate, no more than 150 burners are in operation at a maximum heat input value of 129 MMBTUH resulting in decreased combustion efficiency and more thermal NOx.

viii. Emissions occurring during normal operation and planned startup/shutdown/reduced operation (SU/SD/RO) will contribute to and are limited by the annual NO_x permit limits (lb/hr and TPY) specified for EU 101. Every month the applicant shall calculate emissions of NOx from the primary reformer during normal operations (excluding planned startup/shutdown/reduced operations) using the appropriate *mean emission factors* indicated in the BACT Study (submitted to DEQ on April 21, 2015) and the equations listed below. Every month the applicant shall calculate emissions of NOx from the primary reformer during planned startup/shutdown/reduced operations, using the emission factor of 0.1658 lb/MMBTU and the equations listed below. Emissions from both normal operation and planned startup/shutdown/reduced operation (SU/SD/RO) shall be summed on a monthly, 12-month rolling basis for determining compliance with the annual NO_x limit specified in the table above.

[OAC 252:100-8-6(a)(1)]

$$E_{Total} = E_{Normal} + E_{SU/SD/RO}$$

Where:

E_{Total} = Total emissions of NOx from the primary reformer per month (tons-NOx/month)

E_{Normal} = Total emissions of NOx occurring during normal operations per month (tons-NO_x/month). Calculated as the Sum of the daily emissions during normal operations for that month, where n equal the number days in the month.

$$E_{Normal} = \sum_{i=1}^{n} M_{Day,i\ (Normal)}$$

$M_{Day,\ i\ (Normal)}$ = Daily Normal Operating Emissions (tons-NOx/day)

$$M_{Day,i\ (Normal)} = EF_{Mean,\ lb/MMBTU} \cdot (Daily\ Fuel\ Gas_{MMSCFD}) \cdot \left(Heat\ Content\ Fuel\ \frac{BTU}{SCF}\right)$$

$E_{SU/SD/RO}$ = Monthly emissions of NOx occurring during startup/shutdown/reduced operations (tons-NO_x/month). Calculated as the Sum of daily emissions during normal operations for that month.

$$E_{SU/SD/RO} = \sum_{i=1}^{n} M_{Day,i\ (SU/SD/RO)}$$

$M_{Day,i\ (SU/SD/RO)}$ = Daily SU/SD/RO Emissions (tons-NOx/day)

$$M_{Day,i\ (SU/SD/RO),} = 0.1658 \frac{lb\ NO_x}{MMBTU} \cdot (Daily\ Fuel\ Gas_{MMSCFD}) \cdot \left(Heat\ Content\ Fuel\ \frac{BTU}{SCF}\right)$$

ix. Compliance with CO emission limits shall be demonstrated by periodic testing as indicated in Specific Condition 14. [OAC 252:100-43]

x. The primary reformer (EU 101) shall not exceed 0.20 lb-SO_2/MMBTU heat input averaged over 3-hour period. This includes periods when the unit is combusting waste gas generated from the desulfurization unit. [OAC 252:100-31]

xi. Permittee shall follow good combustion practices as required by Specific Condition 9.

xii. NH_3 emissions shall be documented by tracking venting hours and using the mass balance derived emission rate (in lb/hr) for each of the following scenarios to determine compliance with the annual limit.

Operating Scenario	Process Rate (TPD)	HRU Bypassed (Y/N)	AN Purge Gas Scrubber Bypassed (Y/N)	Reformer Bypassed (Y/N)	Ammonia Emission Rate (lb/hr)
1	770	No	No	No	0.01
2	770	Yes	Yes	Yes	425.30
3	770	Yes	No	No	2.13
4	300	Yes	No	Yes	41.43
5	770	No	Yes	No	0.97
6	770	No	Yes	Yes	48.52
Urea Plant #2 Head Tank Gas Stream					95.20

B. <u>EU 102 – Condensate Steam Flash Drum:</u> Emissions from the condensate steam flash drum shall not exceed the following:

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
NH_3	8.2	35.7
VOC	2.0	8.40
Methanol	1.83	8.01

i. The permittee shall control process conditions as required by Specific Condition 10 as to limit hourly and annual emissions to the values specified in the table above.

ii. Compliance with the emission limits shall be demonstrated by conducting monthly testing of methanol in the Condensate Steam Flash Drum exhaust stream using sampling protocols approved by AQD. Permittee shall assume the maximum design discharge stack gas flow from the Condensate Steam Flash Drum exhaust of 1,050 pounds per hour in calculating methanol emissions unless the stack gas flow rate and duration is documented when venting occurs.

C. <u>EU 107 – Ammonia Converter Startup Heater (40-MMBTUH):</u> Emissions from the startup heater shall not exceed the following:

Pollutant	Emissions	
	Max Hourly (lb/hr)	Annual (TPY)
CO	3.3	14.2
NO_X	3.9	16.9
PM	0.3	1.3
PM_{10}	0.3	1.3
$PM_{2.5}$	0.3	1.3
SO_2	0.1	0.2
VOC	0.3	1.0

i. EU 107 shall be fueled with commercial grade natural gas only. Compliance with the sulfur limit on commercial grade natural gas can be shown by the following methods: a current gas company bill, lab analysis, stain-tube analysis, gas contract, tariff sheet, or other approved methods. Compliance shall be demonstrated at least once per calendar year. [OAC 252:100-31]

ii. Permittee shall follow good combustion practices as required by Specific Condition 9. [OAC 252:100-8-6(a)(1)]

D. <u>EU 110: Startup/Shutdown Vent Flare:</u> Emissions from Startup/Shutdown Vent shall be limited to the following:

Pollutant	Reference	Controlled Emissions	
		(lb/hr)	(TPY)
CO	98% reduction of combined flow from two vents 110a and 110b	242.0	18.2

i. During Planned Startup/Shutdown, emissions from EU 110 Startup/Shutdown Vents at Ammonia Plant #4 shall be routed to a flare that achieves 98% conversion of CO emissions to CO_2. [OAC 252:100-8-5(d)(1)(A)]

ii. The owner or operator shall operate the flare with a pilot light flame present at all times when the vapors are routed to the flare. The flare shall be monitored for the present of a pilot flame using a thermocouple to detect the presence of a flame. [OAC 252:100-8-6(a)(1), OAC 252:100-43]

iii. Unplanned flaring events including malfunctions are to be reported in accordance with OAC 252:100-9.

iv. EU 110 shall is subject to CAM and shall comply with all requirements incorporated into the Specific Conditions as Appendix B.

v. Compliance with the hourly permitted limit shall be demonstrated by assuring 98% combustion efficiency during active flaring.

vi. Compliance with the annual permitted limit shall be multiplying the lb/hr CO limit identified above with the number of startup/shutdown/reduced operation hours day (as determined via Specific Condition No. 1(A)(viii)) on a monthly and 12-month rolling total basis. [OAC 252:100-8-6(a)(1)]

vii. Permittee shall follow good combustion practices as required by Specific Condition 9. [OAC 252:100-8-6(a)(1)]

E. EU 111 – Urea Plant #2 Ammonia Recovery Tank (ART): Emissions from the ammonia recovery tank shall be limited to the following:

Pollutant	Emissions	
	Max Hourly (lb/hr)	Annual (ton/yr)
NH_3	36.5	49.8

i. Compliance with the NH_3 emission limits shall be demonstrated by monitoring the ammonia concentration in the tank at least weekly. Liquid additions to the tank shall be managed to prevent the NH_3 concentration from reaching the saturation point of 17%. [OAC 252:100-8-6(a)(1)]

EUG 3 – Nitric Acid Plants #1 and #4

F. EU 301 and EU 303 – Nitric Acid Plants #1 and #4: Emissions from Nitric Acid Plant #1 and #4 shall be limited to the following.

EU	Pollutant	Emission Limits		NSPS Subpart G Emission Limit lb/ton
		lb/ton	TPY	
301	NOx	$1.0^{(1)}/0.60^{(2)}$	26.3	$3.0^{(3)}$
303	NOx	$1.0^{(1)}/0.60^{(2)}$	43.8	$3.0^{(3)}$

(1) Short Term Limit is lb/ton nitric acid produced (with the production being expressed as 100 percent nitric acid) based on a rolling 3-hour average (rolled hourly) applies at all times when nitric acid plant 1 and 4 are operating but shall exclude periods of start-up, shutdown, and malfunction. The compliance date for the Short Term Limit is January 1, 2018.
(2) Long Term Limit is lb/ton nitric acid produced (with production being expressed as 100 percent nitric acid) based on a rolling 365-day average (rolled daily) applies at all times when nitric acid plant 1 and 4 are operating including during startup, shutdown, and malfunction. The compliance date for the Long Term Limit is January 1, 2019.
(3) NSPS NOx Emission Limit is lb/ton nitric acid produced (with the production being expressed as 100 percent nitric acid) based on a rolling 3-hour average applies at all times when nitric acid plant 1 and 4 are operating but shall exclude periods of start-up, shutdown, and malfunction.

i. The Permittee shall demonstrate compliance with the emission limits above by complying with all applicable requirements for affected facilities under the NSPS at 40 C.F.R. Part 60, Subparts A and G, including but not limited to the obligation to install, calibrate, maintain, and operate a CEMS at EU 301 and EU 303 pursuant to 40 C.F.R. Part 60 Subparts A and G, except as modified by Attachment A (the CEMS Plan), which is hereby incorporated into this permit as a federally enforceable permit condition and appended to the Specific Conditions of the permit.

ii. The NOx emission requirements in this permit were established pursuant to a negotiated Consent Decree with the United States, the State of Alabama, and the ODEQ, and shall not be relaxed without the approval of EPA and the ODEQ.

iii. Tail gases exiting the top of the absorption tower on Nitric Acid Plant #1 (EU 301) shall pass through a non-selective catalytic burner (NSCR unit) followed by a SCR unit. The catalytic burner shall burn only natural gas and/or ammonia plant synthesis gas.

iv. Emissions of CO shall not exceed 22.0 lb/hr and 96.4 TPY. Compliance with the limit shall be demonstrated by stack testing as specified in Specific Condition No. 14. [OAC 252:100-8-6(a)(1)]

iii. Permittee shall follow good combustion practices as required by Specific Condition 9. [OAC 252:100-8-6(a)(1)]

v. Hourly and Annual Limits for Ammonia Slip Emissions. Compliance shall be based on maximum concentrations of 100 ppmv in the exhaust gas of the SCR during normal operations and 1,000 ppmv during startup or shutdown related operations. Initial compliance with the limit shall be verified by the initial performance test required in Specific Condition No. 14. Continuous compliance shall be documented by means of an initial performance test for NH_3 emissions, tracking nitric acid production, and operation of the SCR unit in accordance with the manufacturer's recommendations. Records of these monitoring parameters and operating practices shall be maintained at the facility. [OAC 252:100-8-6(a)(1)]

NH_3 Emissions	NH_3 Emissions	
	lb/hr	TPY
Plant #1 – EU 301	5.4 Normal Operations	29.1
	41.6 Startup/Shutdown Related	
Plant #4 – EU 303	7.3 Normal Operations	52.5
	61.9 Startup/Shutdown Related	

EUG 4 – Nitric Acid Preheaters

G. EU 401 and EU 403 – Nitric Acid Preheaters #1 and #4 (20-MMBTUH/each): Emissions from the Nitric Acid Preheaters shall not exceed the following.

EU	NO_X		CO		VOC		$PM/PM_{10}/PM_{2.5}$		SO_2	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
401	1	4.3	1.7	7.1	0.2	0.5	0.2	0.7	0.1	0.2
403	1	4.3	1.7	7.1	0.2	0.5	0.2	0.7	0.1	0.2

i. EU 401 and EU 403 shall be fueled with commercial grade natural gas only. Compliance with the sulfur limit on commercial grade natural gas can be shown by the following methods: a current gas company bill, lab analysis, stain-tube analysis, gas contract, tariff sheet, or other approved methods. Compliance shall be demonstrated at least once per calendar year. [OAC 252:100-31]

ii. Permittee shall follow good combustion practices as required by Specific Condition 9. [OAC 252:100-8-6(a)(1)]

EUG 5 – Carbon Dioxide Vents

H. EU 501a, EU 501b and EU 501c – CO_2 Tower Vent at Ammonia Plant #4, CO_2 Vent at CO_2 Plant, and Pressure Control Vent at CO_2 Plant, respectively: Emissions from the carbon dioxide vents shall not exceed the following.

Pollutant	Emissions Factor lb/throughput basis	Emissions	
		lb/hr	TPY
CO	0.1 lb/ton-CO_2	4.1	17.6
NH_3	0.128 lb/ton- NH_3	4.2	18.1
VOC	0.044 lb/ton- NH_3	1.5	6.3

i. For compliance demonstration purposes, emissions from EU IDs 501b and 501c will be accounted for in the calculation of emissions at EU ID 501a. Specifically, compliance with the carbon monoxide emission limits shall be demonstrated by multiplying the actual daily ammonia production total by 1.25, which is the stoichiometric ratio of CO_2 generated from the ammonia production process with a contingency; multiplying that product by the carbon monoxide ratio of 0.1 lb-CO

per ton CO_2; and then dividing the result by the process equipment (i.e., ammonia process equipment) operating hours for that day. [OAC 252:100-8-6(a)(1)]

ii. Compliance with the NH_3 and VOC emission limits shall be demonstrated by tracking actual daily ammonia production and multiplying the amount of ammonia produced by the emission factors listed in the table above; and then dividing the result by the process equipment (i.e., ammonia process equipment) operating hours for that day. [OAC 252:100-8-6(a)(1)]

EUG 6 –Ammonium Nitrate Plants #1 and #2

The Ammonium Nitrate Plants are considered a closed system and have fugitive emissions less than 5 TPY. The emissions from EUG 6 are included with the Insignificant Activities.

EUG 7 – Granulator Scrubbers

I. **<u>EU 701, EU 702, and EU 703 – Granulator Scrubbers #1, #2, and #3:</u>** Emissions from the granulator scrubbers shall not exceed the limits specified in the following table.

EU	$PM/PM_{10}/PM_{2.5}$		NH_3	
	lb/hr	TPY	lb/hr	TPY
701	0.7	3	2.4	10.3
701	0.7	3	2.4	10.3
701	0.7	3	2.4	10.3

i. Maximum dry ammonium nitrate production shall not exceed 16.7 TPH from the granulator production system or prill tower controlled by either Granulator Scrubber #1, #2, or #3, based on a 24-hour average. Compliance with the granulator or prill tower production limits and the emission limits indicated in the table below shall be demonstrated by dividing the actual daily dry ammonium nitrate production total by the process equipment operating hours for that day. [OAC 252:100-8-5(d)(1)(A)]

ii. Upon startup, the permittee shall perform monthly opacity measurements using EPA Method 9 and conduct initial performance testing to correlate the PM limit to an opacity action level specified in Specific Condition 14. Within sixty days (60) of startup, permittee shall submit, for approval by the Air Quality Division, a proposed monitoring plan that includes, in addition to the opacity monitoring requirement of this condition, at least one secondary monitoring parameter to be used as a surrogate or parametric monitoring to document continuous compliance with the permit limits. [OAC 252:100-8-5(d)(1)(A) & OAC 252:100-43]

EUG 8 – Boilers

K. <u>EU 801, EU 802, and EU 803 – 53-MMBTUH Boiler, 80-MMBUTH Boiler, and 60-MMBTUH Boiler, respectively</u>: Emissions from the boilers shall be limited to the following.

EU	NO_X		CO		VOC		$PM/PM_{10}/PM_{2.5}$		SO_2	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
801	2.6	11.2	4.3	18.8	0.3	1.3	0.4	1.7	0.1	0.2
802	3.9	16.9	6.5	28.3	0.5	1.9	0.6	2.6	0.1	0.3
803	2.9	12.7	4.9	21.3	0.4	1.4	0.5	2.0	0.1	0.2

i. EU 801, EU 802, and EU 803 shall be fueled with commercial grade natural gas only. Compliance with the sulfur limit on commercial grade natural gas can be shown by the following methods: a current gas company bill, lab analysis, stain-tube analysis, gas contract, tariff sheet, or other approved methods. Compliance shall be demonstrated at least once per calendar year. [OAC 252:100-31]

ii. Emissions of NO_x from each boiler shall not exceed 0.20 lb-NO_x/MMBTU, three-hour average. [OAC 252:100-33]

iii. Permittee shall follow good combustion practices as required by Specific Condition 9. [OAC 252:100-8-6(a)(1)]

EUG 9 – Cooling Towers

L. <u>EU 901 and EU 902 – Cooling Towers #1 and #2:</u> Emissions from the cooling towers shall be limited to the following.

EU	PM		PM_{10}		$PM_{2.5}$	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
901	6.6	16.1	4.7	11.3	0.1	0.1
902	6	18.7	4.2	13.2	0.1	0.1

i. The maximum circulation rate of Cooling Tower # 1 (EU 901) shall not exceed 2,592,000 gallons per hour and the maximum total dissolved solids (TDS) in the circulating water to 3,059 ppm_w. [OAC 252:100-8-6(a)(1)]

ii. The maximum circulation rate of Cooling Tower No. 2 (EU 902) shall not exceed 3,264,000 gallons per hour and the maximum total dissolved solids (TDS) in the circulating water to 2,749 ppm_w. [OAC 252:100-8-6(a)(1)]

iii. Compliance with the emission limits for each cooling tower shall be demonstrated by keeping records of the maximum recirculation rate via the manufacturer's visible capacity rating on the pump equipment or by a copy of the manufacturer's performance data and by conducting monthly TDS sampling of the recirculation

water for each cooling tower using an EPA approved method found in 40 CFR 136, where TDS is listed as filterable residue in 40 CFR 136. [OAC 252:100-8-6(a)(1)]

iv. The permittee shall not use any chromium-containing additives in the cooling tower units. [OAC 252:100-8-6(a)(1)]

EUG 10 – Gasoline Storage Tank and NH_3 Fugitive Equipment

M. <u>EU 1002 – Gasoline Storage Tank:</u> Emissions from the 1000-gallon gasoline storage tank shall be limited to the following.

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (TPY)
VOC	3.9	0.4

i. Compliance with the emission limit in the following table shall be demonstrated by limiting the throughput of gasoline to 10,000 gallons per month. Permittee shall maintain records of gasoline throughput (monthly and 12-month rolling). [OAC 252:100-8-6(a)(1)]

N. <u>EU 1003 – NH_3 Fugitive Equipment:</u> Emissions from ammonia fugitive equipment shall not exceed the limits specified in the following table.

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (TPY)
NH_3	42.1	184.2

i. The permittee shall maintain an accurate count of components in ammonia service, so as to limit hourly and annual emissions to the values specified in the following table. A periodic component count should be conducted and submitted with each Title V permit renewal application. [OAC 252:100-8-6(a)(1)]

EUG 11 – Emergency Generator

i. The emergency engine contained in EUG 11 shall not exceed 500 hours per year of operation.
   a. The engine contained in EUG 11 shall be equipped with a non-resettable hour meter. [OAC 252:100-8-6(a)(1)]

2. Nitric Acid Plant #1 (EU 301) and Nitric Acid Plant #4 (EU 303) are affected sources under NSPS Subpart G and shall comply with all sections including, but not necessarily restricted to, the following. [40 CFR Part 60, Subpart G]

a. §60.70 Applicability and designation of affected facility.
b. §60.71 Definitions.
c. §60.72 Standard for nitrogen oxides.
d. §60.73 Emission monitoring.
e. §60.74 Test methods and procedures.

In order to demonstrate compliance with Subpart G, above, the permittee, except as modified by Appendix A (the CEMS Plan) shall:

(i) Shall not cause to be discharged into the atmosphere any gases which (1) Contain nitrogen oxides, expressed as NO_2, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.
(ii) Exhibit 10 percent opacity, or greater.
(iii) Shall install, calibrate, maintain, and operate a continuous monitoring system for measuring nitrogen oxides (NOx). The pollutant gas mixtures under Performance Specification 2 and for calibration checks under §60.13(d) of this part shall be nitrogen dioxide (NO^2). The span value shall be 500 ppm of NO2. Method 7 shall be used for the performance evaluations under §60.13(c). Acceptable alternative methods to Method 7 are given in §60.74(c).
(iv) The permittee shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standard to units of the monitoring data, i.e., kg/metric ton per ppm (lb/ton per ppm). The conversion factor shall be reestablished during any performance test under §60.8 or any continuous monitoring system performance evaluation under §60.13(c).
(v) The permittee shall record the daily production rate and hours of operation. For the purpose of reports required under §60.7(c), periods of excess emissions that shall be reported are defined as any 3-hour period during which the average nitrogen oxides emissions (arithmetic average of three contiguous 1-hour periods) as measured by a continuous monitoring system exceed the standard under §60.72(a).

3. Boiler #2 (EU 802) and Boiler #3 (EU 803) are affected sources under NSPS Subpart Dc and shall comply with all sections including, but not necessarily restricted to, the following.

[40 CFR Part 60, Subpart Dc]

a. §60.40c Applicability and delegation of authority.
b. §60.41c Definitions.
c. §60.42c Standard for sulfur dioxide (SO2).
d. §60.43c Standard for particulate matter (PM).
e. §60.44c Compliance and performance test methods and procedures for sulfur dioxide.

f. §60.45c Compliance and performance test methods and procedures for particulate matter.
g. §60.46c Emission monitoring for sulfur dioxide.
h. §60.47c Emission monitoring for particulate matter.
i. §60.48c Reporting and recordkeeping requirements.

Per §60.42(c) the permittee is required to:

- Keep and maintain records of the amount of fuel combusted each calendar month, or the total amount of each steam generating unit fuel delivered to that property during each calendar month.

4. The facility is subject to 40 CFR 60, Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, including but not limited to the following. [40 CFR Part 60, Subpart VV]

a. §60.480 Applicability and designation of affected facility.
b. §60.481 Definitions.
c. §60.482-1 Standards: General.
d. §60.482-2 Standards: Pumps in light liquid service.
e. §60.482-3 Standards: Compressors.
f. §60.482-4 Standards: Pressure relief devices in gas/vapor service.
g. §60.482-5 Standards: Sampling connection systems.
h. §60.482-6 Standards: Open-ended valves or lines.
i. §60.482-7 Standards: Valves in gas/vapor service and in light liquid service.
j. §60.482-8 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors.
k. §60.482-9 Standards: Delay of repair.
l. §60.482-10 Standards: Closed vent systems and control devices.
m. §60.483-1 Alternative standards for valves—allowable percentage of valves leaking.
n. §60.483-2 Alternative standards for valves—skip period leak detection and repair.
o. §60.484 Equivalence of means of emission limitation.
p. §60.485 Test methods and procedures.
q. §60.486 Recordkeeping requirements
r. §60.487 Reporting requirements.
s. §60.488 Reconstruction.
t. §60.489 List of chemicals produced by affected facilities

Per §60.486(i) and §60.486(j), the permittee is required to keep the following records:

- Information recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in §60.480(d):
  (1.) An analysis demonstrating the design capacity of the affected facility,
  (2.) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and
  (3.) An analysis demonstrating that equipment is not in VOC service.

- Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.

5. The facility is subject to 40 CFR 63, Subpart VVVVVV, National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources, including but not limited to the following. [40 CFR Part 63, Subpart VVVVVV]

   a. §63.11494 What are the applicability requirements and compliance dates?
   b. §63.11495 What are the management practices and other requirements?
   c. §63.11496 What are the standards and compliance requirements for process vents?
   d. §63.11497 What are the standards and compliance requirements for storage tanks?
   e. §63.11498 What are the standards and compliance requirements for wastewater systems?
   f. §63.11499 What are the standards and compliance requirements for heat exchange systems?
   g. §63.11500 What compliance options do I have if part of my plant is subject to both this subpart and another Federal standard?
   h. §63.11501 What are the notification, recordkeeping, and reporting requirements, and how may I assert an affirmative defense for violation of emission standards during malfunction?
   i. §63.11502 What definitions apply to this subpart?
   j. §63.11503 Who implements and enforces this subpart?

   Per §63.11495, the permittee is required to:
   - Conduct quarterly equipment inspections to determine soundness and detect leaks while the CMPU is operating and keep records of these inspections.
   - Repair leaks within fifteen days and maintain records. Document the reason for any delay of repair.
   - At all times, operate and maintain any affected CMPU, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.

6. The facility is subject to 40 CFR 63, Subpart CCCCCC, National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities, including but not limited to the following. [40 CFR Part 63, Subpart CCCCCC]

   a. §63.11111 Am I subject to the requirements in this subpart?
   b. §63.11112 What parts of my affected source does this subpart cover?
   c. §63.11113 When do I have to comply with this subpart?
   d. §63.11115 What are my general duties to minimize emissions?
   e. §63.11116 Requirements for facilities with monthly throughput of less than 10,000 gallons of gasoline. Note that §63.11116(b) exempts the source from the requirement to submit notifications or reports as specified in §63.11125,
   f. §63.11126, or subpart A of this part, but you must have records available within 24 hours of a request by the Administrator to document your gasoline throughput.
   g. §63.11130 What parts of the General Provisions apply to me?

h. §63.11132 What definitions apply to this subpart?
i. Table 3 to Subpart CCCCCC of Part 63—Applicability of General Provisions

Per §63.11116, the permittee is required to:

- Not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
    1) Minimize gasoline spills;
    2) Clean up spills as expeditiously as practicable;
    3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
    4) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.
- The permittee must have records available within 24 hours of a request by the Administrator to document gasoline throughput.
- In order to avoid becoming subject to additional Subpart CCCCCC requirements, the permittee must maintain throughput below 10,000 gallons per month.

7. EU 1101 is subject to 40 CFR Part 60 Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, including but not limited to the following.
[40 CFR Part 60, Subpart JJJJ]

a. §60.4230 Am I subject to this subpart?
b. §60.4234 How long must I meet the emission standards if I am an owner or operator of a stationary SI internal combustion engine?
c. §60.4235 What fuel requirements must I meet if I am an owner or operator of a stationary SI gasoline fired internal combustion engine subject to this subpart?
d. §60.4236 What is the deadline for importing or installing stationary SI ICE produced in previous model years?
e. §60.4237 What are the monitoring requirements if I am an owner or operator of an emergency stationary SI internal combustion engine?
f. §60.4243 What are my compliance requirements if I am an owner or operator of a stationary SI internal combustion engine?
g. §60.4244 What test methods and other procedures must I use if I am an owner or operator of a stationary SI internal combustion engine?
h. §60.4245 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary SI internal combustion engine?
i. §60.4246 What parts of the General Provisions apply to me?
j. §60.4248 What definitions apply to this subpart?

In order to comply with Subpart JJJJ, the permittee is required to:

- Meet the requirements of Subpart JJJJ over the entire life of the engine
- Use gasoline that meets the per gallon sulfur limit in 40 CFR 80.195, install a non-resettable hour meter, and limit non-emergency use to 50 hours per year, with no limit on use in emergency situations

- The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response. Except as provided in 40 CFR 60.4243 (d)(3)(i), the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.
- Operate the engine according to manufacturer's specifications, maintain a maintenance plan and records of engine maintenance and records of hours of operation.
- Maintain documentation that the engine is certified to meet the emission standards.

8. EU 1101 is subject to 40 CFR Part 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, including but not limited to the following. [40 CFR Part 63, Subpart ZZZZ]

   a. §63.6580 What is the purpose of subpart ZZZZ?
   b. §63.6585 Am I subject to this subpart?
   c. §63.6590 What parts of my plant does this subpart cover?
   d. §63.6595 When do I have to comply with this subpart?
   e. §63.6603 What emission limitations and operating limitations must I meet if I own or operate an existing stationary RICE located at an area source of HAP emissions?
   f. §63.6605 What are my general requirements for complying with this subpart?
   g. §63.6625 What are my monitoring, installation, operation, and maintenance requirements?
   h. §63.6630 How do I demonstrate initial compliance with the emission limitations and operating limitations?
   i. §63.6640 How do I demonstrate continuous compliance with the emission limitations and operating limitations?
   j. §63.6650 What reports must I submit and when?
   k. §63.6655 What records must I keep?
   l. §63.6660 In what form and how long must I keep my records?
   m. §63.6665 What parts of the General Provisions apply to me?
   n. §63.6670 Who implements and enforces this subpart?
   o. §63.6675 What definitions apply to this subpart?

   In order to comply with Subpart ZZZZ above, the permittee is required to comply with the requirements of Subpart JJJJ.

9. Monitoring. [OAC 252:100-8-6(a)(1) & OAC 252:100-43]

   A. At a minimum, the facility shall monitor and operate all combustion equipment in accordance with the following good combustion practices. Continuous compliance for the source is demonstrated by the requirements contained herein**.**

      a. The permittee shall maintain and operate combustion equipment to achieve optimum combustion efficiency. The permittee shall perform periodic and preventive

maintenance and tune-ups using PEA testing, as necessary, but no less frequent than manufacturer's recommendations.

b. The permittee shall perform weekly inspections of the combustion controls for proper operation. Burners shall be inspected during shutdown. Permittee shall immediately perform any maintenance necessary to maintain equipment at the performance standards specified by the manufacturer(s).

c. The permittee shall exercise all reasonable and necessary operational and preventive measures and actions to control emissions within the BACT limits specified in Specific Condition No. 1 including, but not limited to, minimizing startup and shutdown times and reducing throughput.

B. Good Operation Practices – All Emission Point IDs.

a. The permittee shall exercise all reasonable and necessary operational and preventive measures and actions to control emissions within the BACT limits specified in Specific Condition No. 1 including, but not limited to, minimizing startup and shutdown times and reducing throughput.

10. Maintenance and Monitoring of Controls. [OAC 252:100-43]

A. Permittee shall maintain at the facility, an operation and maintenance plan that includes, at a minimum, the following elements.

i. A visual inspection of each pollution control device shall be performed at a frequency recommended by the manufacturer(s), but no less than weekly. The pollution control devices shall be maintained and operated as recommended by the manufacturers to maintain the required efficiency, including the recommended operating parameters such as, but not limited to, operating pressures/temperatures. Expendable components shall be replaced on a frequency recommended by the manufacturer, or sooner if necessary. The capture system and the housing for the controls shall be constructed and maintained to prevent bypass of emissions.

ii. A complete preventive maintenance inspection of the pollution control device shall be performed semi-annually, or at intervals recommended by the manufacturer, whichever occurs more frequently.

iii. In the event of any malfunction of pollution control equipment which results in an exceedance of any permit limit, the permittee shall immediately shut down the affected emissions unit(s) and perform any repairs necessary to restore the performance of the pollution control equipment to the permitted standard(s), prior to returning the emissions units back to production.

11. The permittee shall conduct only the processes associated with the manufacturing of ammonia, ammonium nitrate, urea, nitric acid, and by-products including carbon dioxide. [OAC 252:100-8-6(a)(1)]

12. Each Emissions Unit (EU) shall be clearly labeled with the EU number on the unit in a conspicuous location that can be easily accessed for inspection. For units not having

emissions controls, the EU label shall be located as near the emissions stack as practical, considering safety and ease of inspection. [OAC 252:100-43]

13. The permittee shall be authorized to operate the sources 24 hours per day, every day of the year. [OAC 252:100-8-6(a)(1)]

14. The permittee shall conduct performance testing as specified below and furnish a written report to the AQD. Performance tests shall be conducted under representative conditions of the affected source and presents the greatest challenge to the emission standard, without creating an unsafe condition. A sampling protocol and notification of testing date(s) shall be submitted to AQD thirty (30) days in advance of commencement of testing, The testing protocol shall include the proposed representative conditions at which the tests will be conducted and in accordance with AQD Guidelines for Conduction Air Quality Stack Tests in Oklahoma (12/18). If a pre-test meeting is determined to be necessary by the source or AQD, the meeting shall be conducted 14 calendar days before the testing date. The owner or operator shall make available to the Administrator such records necessary to determine the conditions of the performance tests. The following USEPA methods shall be used for testing of emissions, unless otherwise approved by AQD. [OAC 252:100-43]

EU	Description	Pollutant Tested	Test Method Required	Frequency
101	Ammonia Plant #4 Primary Reformer	NOx - UPL BACT Limit for Normal Operations	1-4, 7E	Once every 5 years
		CO	1-4, 10	Once every 5 years
		NH_3	350.2 or 350.3	Initial Test
102	Condensate Steam Flash Drum Exhaust	MeOH	308 or Draeger Tube(1)	Monthly
301	Nitric Acid Plant #1 Adsorption Tower Tail Gas	CO	1-4, 10	Once every 5 years
		NH_3	350.2 or 350.3	Initial Test
303	Nitric Acid Plant #4 Adsorption Tower Tail Gas	NH_3	350.2 or 350.3	Initial Test
501	Ammonia Plant #4 CO_2 Tower Vent	MeOH	1-4, 308	Initial Test(2)
701	Granulator Scrubber #1	PM	1 – 5	Initial Test
702	Granulator Scrubber #2	PM	1 – 5	Initial Test
703	Granulator Scrubber #3	PM	1 – 5	Initial Test

(1)If draeger tubes are used, the appropriate range (upper level ppm) for the methanol concentration should be proposed and approved by AQD. An appropriate QAQC procedure should be used for this method as well.

(2)The initial test should be performed on the same day during the monthly MeOH test for EU 102 and shall be conducted while ammonia plant #4 is operating under normal conditions. If possible, without creating an unsafe condition, performance testing should be performed when vent D2 (low-temperature separator

vent) and vent R3 (pre-methanator) are not actively venting, thus allowing all emissions of MeOH to be captured at EU 501 (CO_2 stripper vent).

15. The following records shall be maintained on-site to verify Insignificant Activities. The owner/operator shall be able to keep records on alternative media such as: microfilm, computer files, compact disks, magnetic tape disks, or microfiche, provided it does not conflict with other applicable recordkeeping requirements.

    [OAC 252:100-8-2 &OAC 252:100-8-6 (a)(3)(B)]

    a. Urea Plant Feed Tank—Ammonia Head Tank (cumulative annual ammonia throughput)
    b. CO_2 Plant Ammonia Recovery Tank (cumulative annual ammonia throughput)
    c. Ammonium Nitrate Plant #1 and #2 Rundown Tanks (cumulative annual ammonium nitrate throughput)
    d. OBT Mix Tank (cumulative annual ammonium nitrate throughput)
    e. Ammonium Nitrate Storage Tank (cumulative annual ammonium nitrate throughput)
    f. UAN Blend Tank (cumulative annual ammonium nitrate throughput)
    g. UAN Tanks (AS & DS) (cumulative annual ammonium nitrate throughput)
    h. UAN Tanks (BS & CS) (cumulative annual ammonium nitrate throughput)
    i. Diesel Storage Tank (cumulative annual for diesel)
    j. Ammonia Truck and Railcar Loading (cumulative annual truck and railcar loads)
    k. Portable Flare (cumulative fuel usage and hours)
    l. Granular AN activities (cumulative annual granular ammonium nitrate throughput)
    m. Maintenance Painting (monthly records of all monthly records of coatings, thinners, and clean-up solvents to verify the activity's combined total usage does not exceed 60 gallons/month)
    n. Ammonium Nitrate (AN) Plants #1 and #2 Neutralizers (cumulative annual AN production)
    o. Ammonia Storage Flare Pilot (cumulative annual fuel usage)
    p. Ammonia Plant #4 Startup/Shutdown Vent Flare Pilot (hours of operation including records of downtime if maintenance is performed)
    q. Catalyst Building Exhaust (cumulative annual material throughput)
    r. Catalyst Screener (cumulative annual spent catalyst throughput)

16. The permittee shall keep records of facility operations as listed below. These records shall be retained on-site for a period of at least five years following the dates of recording and shall be made available to regulatory personnel upon request.

    [OAC 252:100-8-6 (a)(3)(B)]

    a. Records of current facility process flow diagrams showing all emission units, process streams and vents;
    b. Records of actual ammonia production from Ammonia Plant #4 (daily when operating);
    c. Records of the parameters specified in Specific Condition 1(B)(vi.) when operating the ammonia plant (hourly when operating);
    d. Records of the total heat input sent to the primary reformer and duration of time when the unit is in startup/shutdown/reduced operation mode (monthly);

e. Total emissions of NOx from EU 101 (monthly and 12-month rolling);
f. Records of NH_3 venting hours from EU 101 and each venting scenario (daily when venting);
g. Emissions of NH_3 from EU 101A/B (monthly and 12-month rolling);
h. Records of MeOH testing for EU 102 (monthly);
i. Emissions from EU 102 (monthly, 12-month rolling total);
j. Emissions of CO from EU 110 (monthly, 12-month rolling total);
k. Records of ammonia concentration in EU 111 (weekly);
l. Records of all CEMs data generated by the appropriate NOx stack analyzer and flow meter, including all data generated during periods of startup, shutdown, and/or malfunction at Nitric Acid Plants 1 and 4, as specified in the CEMS Plan.
m. Records of the quantity of nitric acid produced and the average strength of nitric acid produced (daily);
n. Emission calculations of NOx in terms of lbs per ton of 100% nitric acid from Nitric Acid Plants 1 and 4 (Rolling 3-hr average, Rolling 365-Day Average, NSPS G Rolling 3-hr average, as required by CEMS Plan);
o. Records required to demonstrate compliance with the requirements in the CEMS Plan per Appendix A;
p. Emissions of CO, VOC, and NH_3 from EUG 5 per Specific Condition 1(I)(i)and (ii) (monthly and 12-month rolling);
q. Records of the actual daily dry ammonium nitrate production total by the process equipment operating hours upon startup (daily);
r. Records of CAM plan and associated information for EUG 7 per Specific Condition 1 (J)(ii) (within 60 days of startup);
s. Records of TDS sampling of recirculation water for each cooling tower (monthly);
t. Records of gasoline throughput (monthly and 12-month rolling);
u. Records of ammonia fugitive components equipment per Specific Condition 1(N)(i);
v. Records required by NSPS Dc, G, VV and JJJJ;
w. Records required by NESHAP CCCCC, ZZZZ and VVVVVV;
x. Records required by CAM, upon startup of EUG 7;
y. Records of periodic and preventative maintenance, tune-ups, burner control inspections, and burner inspections, as specified for the combustion sources, per Specific Condition 9;
z. Records of monitoring and inspection of all air pollution control equipment, per Specific Condition 10;
aa. Performance testing records, per Specific Condition 12;

17. The permittee shall not use any NOx emission reductions resulting from implementation of the requirements made by the Federal Consent Decree for the purpose of obtaining netting credits or offsets in any PSD, major NSR, and/or minor NSR permit or permit proceeding, and shall not buy, sell or trade any NOx emission reductions resulting from implementation of the Federal Consent Decree; provided however, that nothing in the Consent Decree is intended to prohibit Settling Defendants from:

a. Using netting reductions or emission offset credits from Covered Nitric Acid Plants that are covered by the Consent Decree to the extent the proposed netting reductions or emission offset credits represent the difference between the emission limits set forth in the Consent Decree and the more stringent emission limits that such Settling Defendant may elect to accept for the Covered Nitric Acid Plants in a permitting process;
b. Using netting reductions or emissions offset credits from units that are not Covered Nitric Acid Plants;
c. Using netting reductions or emissions offset credits for any pollutants other than NOx.

18. For the purposes of calculating baseline actual emissions as defined in the PSD or NSR rules, in any PSD, major NSR, and/or minor NSR permit or permit proceeding for any Operating Nitric Acid Plant, emissions of NOx from any Operating Nitric Acid Plant during any 24-month period selected by PCC (for the Pryor Facility) shall be adjusted downward to exclude any emissions that would have exceeded the Long-Term NOx Emissions Limit for that Operating Nitric Acid Plant established under the Consent Decree had the Operating Nitric Acid Plant been required to comply with the Long-Term NOx Emissions Limit during the selected consecutive 24-month period.

19. This permit supersedes all other Air Quality operating permits for this facility, which are cancelled. The following construction permits remain in effect: Permit No. 2008-100-C (M-6) PSD, 2008-100-C (M-2) PSD, 2008-100-C (M-1) PSD and 2008-100-C PSD.

APPENDIX A

NITRIC ACID PLANT CEMS PLAN

CEMS Plan for NOx Emissions
LSB Operating Nitric Acid Plants

Principle

This CEMS Plan is the mechanism for determining compliance with the Short-Term NOx Limit and Long-Term NOx Limit applicable to each Operating Nitric Acid Plant, as specified in the Consent Decree, and is used to evaluate the compliance status with the NSPS NOx limits. The methodology described in this CEMS Plan will provide a continuous indication of compliance with the above-referenced NOx emission limits established in the Consent Decree by accurately determining the emission rate in terms of pounds of NOx emitted per ton of 100% Nitric Acid Produced (lb/ton) as a rolling 3-hour average and a rolling 365-day average. The CEMS will utilize equipment to measure the stack NOx concentration and the stack volumetric flow rate. The 100% nitric acid production rate will be determined as allowed by NSPS Subpart G. From this data, real-time, accurate, and quality controlled measurements of the mass NOx emission rate per unit of production can be obtained.

Definitions

Terms used in this CEMS Plan that are defined in the Clean Air Act ("CAA") or in Federal or state regulations promulgated pursuant to the CAA shall have the meaning assigned to them in the CAA or such regulations, unless otherwise defined in the Consent Decree. The terms used in this CEMS Plan that are defined in the Consent Decree shall have the meaning assigned to them therein. The following definitions specifically apply for purposes of this CEMS Plan.

- "CEMS" or "Continuous Emission Monitoring System" shall mean the total equipment, required under this CEMS Plan, used to sample and condition (if applicable), to analyze, and to provide a permanent record of emissions or process parameters.
- "Covered Nitric Acid Plants" shall mean all ten of LSB's Nitric Acid Plants at the Pryor Facility (Pryor #1, and #4);
- "Day," "day," or "calendar day" shall mean a calendar day unless expressly stated to be a working day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day;
- "DSCFH" shall mean dry standard cubic feet per hour.
- "Interim NOx Emissions Limit" or "IL" shall mean a 3-hour rolling average NOx emission limit (rolled hourly) expressed in terms of pounds of NOx emitted per ton of 100% Nitric

Acid Produced ("lb/ton"); compliance with the Interim NOx Emissions Limit shall be calculated in accordance with this CEMS Plan. The Interim NOx Emissions Limit does not apply during periods of Startup, Shutdown, or Malfunction;

- "Long-Term NOx Emissions Limit" or "LTL" shall mean a 365-day rolling average NOx emission limit (rolled daily) expressed as pounds of NOx emitted per ton of 100% Nitric Acid Produced ("lb/ton"); compliance with the Long-Term NOx Emissions Limit shall be calculated in accordance with this CEMS Plan. The Long-Term NOx Emissions Limit applies at all times, including during periods of Startup, Shutdown, or Malfunction.
- "Malfunction" shall mean, consistent with 40 C.F.R. § 60.2, any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner, but shall not include failures that are caused in whole or in part by poor maintenance or careless operation.
- "NSPS NOx Emissions Limit" shall mean the NOx emission limit expressed as 1.5 kg of NOx per metric ton of 100% Nitric Acid Produced (3 lb per ton) specified at 40 C.F.R. §60.72(a)(1).
- "NOx" shall mean, consistent with 40 C.F.R. § 60.2, all oxides of nitrogen except nitrous oxide. (N_2O). For the purposes of calculating mass emission rates, NOx has a molecular weight of 46.0055 lb/lb-mol.
- "NOx Stack Analyzer" shall mean, for all Operating Nitric Acid Plants, that portion of a dual range or greater CEMS that senses NOx and generates an output proportional to the NOx concentration during Operating Periods.
- "100% Nitric Acid" shall mean nitric acid product manufactured by a Nitric Acid Plant multiplied by the concentration of actual nitric acid in the product. For example, if a Nitric Acid Plant produces 100 tons of a 54% nitric acid product, this equals 54 tons of 100% Nitric Acid.
- "One-hour period" and "1-hour period" shall mean any 60-minute period commencing on the hour.
- "One-minute measurement" shall mean any single measurement or the arithmetic average of multiple measurements of a parameter during a one-minute period on-the clock.
- "Operating Nitric Plants" shall mean all of the Covered Nitric Acid Plants that continue, or may continue, to operate as of the Date of ; and two at the Pryor Facility (Pryor #1, and #4);
- Operating Periods" shall mean periods during which an Operating Nitric Acid Plant is producing nitric acid and NOx is emitted, including periods of Startup, Shutdown and Malfunction; "Short-Term NOx Emissions
- Limit" or "STL" shall mean a 3-hour rolling average NOx emission limit (rolled hourly) expressed in terms of pounds of NOx emitted per ton of 100% Nitric Acid Produced ("lb/ton"); compliance with the Short-Term NOx Emissions Limit shall be calculated in accordance with this CEMS Plan. The Short-Term NOx Emissions Limit does not apply during periods of Startup, Shutdown, or Malfunction.

- "Shutdown" shall mean the cessation of nitric acid production operations of an Operating Nitric Acid Plant for any reason. Shutdown begins at the time the feed of ammonia to the Operating Nitric Acid Plant ceases and ends when the compressor train(s) is shut down.
- "Stack Flowmeter" shall mean that portion of the CEMS that senses the volumetric flow rate and generates an output proportional to that flow rate.
- "Standard Cubic Foot" or "SCF" shall mean a quantity of gas equal to one cubic foot at a temperature of 68° Fahrenheit and a pressure of 14.696 pounds per square inch absolute.
- "Startup" shall mean the process of initiating nitric acid production operations of a Operating Nitric Acid Plant. Startup begins with the start of the compressor train(s) at the Operating Nitric Acid Plant and ends no more than 5 hours after the initiation of the feed of ammonia.
- "Ton" or "tons" shall mean short ton or short tons. One Ton equals 2,000 pounds.

Emissions Monitoring

- Emissions monitoring under this CEMS Plan will be done using the appropriate NOx Stack Analyzer and a stack flowmeter on each Operating Nitric Acid Plant. Except for periods of CEMS breakdowns, analyzer malfunctions, repairs, and required quality assurance or quality control activities (including calibration checks and required zero and span adjustments), Permittee will demonstrate compliance with the STL, IL, and LTL during all Operating Periods by conducting continuous monitoring pursuant to this CEMS Plan at each Operating Nitric Acid Plant, as follows:

- The NOx Stack Analyzer will measure the stack NOx concentration, in parts per million by volume, dry basis (ppmvd)[1] and reduce the data to one-minute measurements, and the stack flowmeter will measure the volumetric flow rate in dry standard cubic feet per hour (DSCFH)[2].
- For every 1-hour period (60-minute period commencing on the hour), the CEMS will reduce the one-minute measurements generated by the NOx Stack Analyzer and the stack flowmeter by taking the arithmetic average of all the one-minute measurements made during the previous 1-hour period. At least four one-minute measurements must be used to make this calculation, with at least one data point in each 15-minute quadrant of the hour.

[1] For the purposes of calculations under this CEMS Plan, as-is NOx concentration measurements at Operating Nitric Plants (e.g., those utilizing FTIR, NDIR, or other types of stack gas analyzers capable of making wet measurements) will be assumed to be dry. However, LSB may adjust for any moisture contained in the stack gas if the Operating Nitric Acid Plant is equipped with a continuous moisture analyzer or equipment which removes the moisture prior to the stack gas analyzer.

[2] For the purposes of the calculations under this CEMS Plan, as-is volumetric flow rate measurements will be assumed to be dry. However, LSB may adjust for any moisture contained in the stack gas if the Operating Nitric Acid Plant is equipped with a continuous moisture analyzer.

Backup Monitoring Procedure for Long-Term NOx Emissions Limit

In the event that the NOx Stack Analyzer and/or stack flowmeter is/are not available or is/are out-of-control, Permittee will implement the backup monitoring procedure specified below. The resulting data will be used to calculate the 365-day average NOx emission rate.

(a) Permittee will comply with the following requirements to fill in data gaps in the array:

- Exit stack gas will be sampled and analyzed for NOx at least once every three (3) hours, during all Operating Periods. Sampling will be conducted by making physical measurements of the NOx concentration in the gas stream to the main stack using alternative/non-CEMS methods (e.g., through the use of a portable analyzer/detector or non-certified NOx Stack Analyzer). The reading obtained will be substituted for the 180 (or less) one-minute measurements that would otherwise be utilized if the CEMS were operating normally. Alternatively, Permittee may conduct the required sampling and analysis using a redundant, certified NOx Stack Analyzer.

- Stack volumetric flow rate will be estimated using engineering judgment.

(b) During required quality assurance or quality control activities (including calibration checks and required zero and span adjustments) of the CEMS and stack flow meter, Permittee may utilize either (1) the previous calendar day average when the previous day does not include a Startup, Shutdown, or Malfunction, or (2) the average of the block hour average immediately preceding the affected analyzer's(s') stoppage and the initial block hour average of the affected analyzer's(s') upon the resumption of operation following the stoppage, when the previous calendar day includes a Startup, Shutdown or Malfunction, to fill in any data gaps in lieu of the procedures specified in subparagraph a).

(c) If any one or more than one of the CEMS or stack flowmeter is/are not operating for a period of less than 24 consecutive hours due to breakdowns, malfunctions, repairs, or out-of-control period of the same, Permittee may utilize either (1) the previous calendar day average when the previous day does not include a Startup, Shutdown, or Malfunction, or (2) the average of the block hour average immediately preceding the affected analyzer's(s') stoppage and the initial block hour average of the affected analyzer's(s') upon the resumption of operation following the stoppage, when the previous calendar day includes a Startup, Shutdown or Malfunction, to fill in any data gaps in lieu of the procedures specified in subparagraph a).

Production Data

Following each calendar day at each Operating Nitric Acid Plant, as allowed by NSPS Subpart G, Permittee will record the quantity of nitric acid produced during that day and the average strength of the nitric acid produced during that day. From this information, Permittee will calculate the 100% Nitric Acid Produced for that day, in units of tons per day.

Conversion Factor

Permittee will reestablish the conversion factors, in units of lb/ton of 100% Nitric Acid Produced per lb/hr NOx, during each Relative Accuracy Test Audit conducted in accordance with 40 C.F.R. Part 60, Appendix F.

Emissions Calculations

Rolling 3-Hour Average

Compliance with the STL and IL shall be based on a rolling 3-hour average (rolled hourly). For purposes of calculating a rolling 3-hour average NO_x emission rate, the CEMS will maintain an array of the 3 most recent and contiguous 1-hour period average measurements of the NO_x concentration measurement (ppm_{vd}) at the exit stack and the average volumetric flow rate measurement (DSCFH) of the exit stack. Every hour, it will add the most recent 1 hour period value to the array and exclude the oldest 1-hour period value. Data generated using the backup monitoring procedure specified above need not be included in this calculation. Any data generated during periods that are not Operating Periods will not be included in this calculation.

The rolling 3-hour average lb/ton NOx emission rate ($E_{3\text{-hravg}}$) will then be calculated every hour using Equation 1.

Equation 1:

$$E_{3hr,avg} = \frac{K \cdot 1.193\ x\ 10^{7} \sum_{i=1} Q_{Stack,i\cdot} \cdot C_{NOx,i}}{3}$$

Where:

$E_{3HR,\ AVG}$ = lb-NO_x per ton of 100% Nitric Acid Produced, 3-hour average;

$C_{NOx,\ i}$ = Arithmetic average of all one minute measurements of stack NOx concentration in units of part per million by volume dry basis (ppmvd) during 1 hour period "i";

K = Conversion factor determined during the most recent NOx performance test or RATA in units of lb NO_x per ton of 100% nitric acid produced per lb-NO_x per hour;

1.193×10^{7} = Conversion factor in units of pounds per standard cubic foot (lb/SCF) NOx per ppm;

$Q_{Stack,\ i}$ = Arithmetic average of all one minute measurements of stack volumetric flow rate in units of DSCFH during one hour period *"i"*.

Rolling 365-Day Average

Compliance with the LTL shall be based on a rolling 365-day average (rolled daily). For the purposes of calculating the 365-day average NOx emission rate each calendar day at each Operating Nitric Acid Plant, Permittee will maintain an array of the mass emissions (lb/day) of NOx (calcu-

lated using Equation 2) and the 100% Nitric Acid Produced for that day (tons/day) and the preceding 364 days. Each subsequent day, the data from that day will be added to the array, and the data from the oldest day will be excluded.

For the purposes of calculating the daily mass emission rate, the CEMS will maintain an array of each one-hour average NOx concentration measurement (ppmvd) at the exit stack and each one-hour average volumetric flow rate measurement (DSCFH) of the exit stack over each day. Any partial hourly data will be adjusted on a *pro-rata* basis. In the event that one or more of the NOx Stack Analyzers and stack flowmeters is/are not available, Permittee will use the backup monitoring procedure, specified above, to fill in the data gaps. Any data generated during periods that are not Operating Periods will not be included in this calculation.

Following each calendar day, the daily NO_x mass emissions will be calculated using Equation 2.

Equation 2:

$$M_{NO_x Day} = 1.193 \times 10^{-7} \cdot \sum_{i=1}^{n} Q_{Stack\,i} \cdot C_{NOx\,i}$$

Where:

$M_{NOx, DAY}$ = Mass emissions of NOx during a calendar day, in units of lb per calendar day;

$C_{NOx, i}$ = Arithmetic average of all one minute measurements of stack NOx concentration in units of part per million by volume dry basis (ppmvd) during 1 hour period "i";

1.193×10^{-7} = Conversion factor in units of pounds per standard cubic foot (lb/SCF) NOx per ppm;

$Q_{Stack, i}$ = Arithmetic average of all one minute measurements of stack volumetric flow rate in units of DSCFH during one hour period *"i";*

n = Number of hours of operating period in a calendar day.

Following each calendar day, the NOx emission rate as lb/ton, averaged over a rolling 365-day period ($E_{365\text{-Day Avg}}$), will be calculated using Equation 3.

Equation 3:

$$E_{365-Day\ Avg} = \frac{\sum_{d=1}^{365} M_{NOx\ Day,d}}{\sum_{d=1}^{365} P_d}$$

Where:

$M_{NOx\ Day,\ d}$ = Mass emissions of NOx during calendar day "d", lbs;

P_d = 100% Nitric Acid Produced during a calendar day "d", tons;

$E_{365\text{-}Day\ Avg}$= 365-day rolling average lb-NO_x per ton of 100% Nitric Acid Produced.

Rounding of Numbers Resulting from Calculations

Upon completion of the calculations, the final number shall be rounded as follows:

$E_{3hr\ avg}$: Rounded to the nearest tenth
$E_{365\text{-}Day\ Avg}$: Rounded to the nearest hundredth

The numbers "5"-"9" shall be rounded up, and the numbers "1"-"4" shall be rounded down. Thus, "1.05"shall be rounded to "1.1", and "1.04" shall be rounded to "1.0".

Compliance with Consent Decree NOx Limits

Short-Term NOx Emissions Limits and Interim NOx Emissions Limits

The STLs and ILs do not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods at an Operating Nitric Acid Plant, Permittee will be in compliance with the STL specified in the Consent Decree if $E_{3hr\ avg}$ does not exceed 1.0 lb of NOx per ton of 100% Nitric Acid Produced and Permittee will be in compliance with the IL specified in the Consent Decree if $E_{3hr\ avg}$ does not exceed 3.0 lb of NOx per ton of 100% Nitric Acid Produced. If Permittee contend that any 3-hour rolling average emission rate is in excess of 1.0 lb/ton for the STL or 3.0 lb/ton for the IL due to the inclusion of hours of Startup, Shutdown or Malfunction in the 3-hour period, Permittee shall recalculate $E_{3hr\ avg}$ to exclude measurements recorded during the period(s) of the claimed Startup, Shutdown or Malfunction(s).

NSPS NOx Emissions Limits

The NSPS NOx Emissions Limit does not apply during periods of Startup, Shutdown, or Malfunction. During all other Operating Periods at a Operating Nitric Acid Plant, Permittee will be in compliance with the NSPS Limit if E_{3hravg} does not exceed 3.0 lb of NOx per ton of 100% Nitric Acid Produced. If Permittee contend that any 3-hour rolling average emission rate is in excess of 3.0 lb/ton due to the inclusion of hours of Startup, Shutdown or Malfunction in the 3-hour period, Permittee shall recalculate E_{3hravg} to exclude measurements recorded during the period(s) of the claimed Startup, Shutdown or Malfunction(s). Nothing in this CEMS Plan shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a Operating Nitric Acid Plant would have been in compliance with the NSPS NOx Emissions Limit if the appropriate performance test or compliance procedure had been performed.

Long-Term NOx Emissions Limits

Permittee will be in compliance with the LTL specified in the Consent Decree if $E_{365\text{-Day Avg}}$ does not exceed 0.60 lb of NOx per ton of 100% Nitric Acid Produced. The LTL applies during all Operating Periods, including during periods of Startup, Shutdown, or Malfunction.

Retention of All CEMS Data, including Data, during Startup, Shutdown, and Malfunction

Permittee will retain all data generated by the appropriate NO_x Stack Analyzer and Stack Flowmeter, including all data generated during periods of Startup, Shutdown, and/or Malfunction at each Operating Nitric Acid Plant in accordance with Section XIII of the Consent Decree (Information Collection and Retention).

|Analyzer and Stack Flowmeter Specifications

The appropriate NO_x Stack Analyzers and the Stack Flowmeters required under this CEMS Plan at each Operating Nitric Acid Plant will meet the following specifications:

Table 1 –Appendix A

Analyzer	Parameter	Location	Span Value
NOx Stack Analyzers	NOx, ppm by volume, dry basis	Stack	**Dual Range or greater:** Normal: 0 – 500 ppm NOx, or as appropriate to accurately measure the normal concentration range. SSM: 0 to 125% of the maximum estimated NOx emission concentration during the Operating Periods.
Stack Flowmeter	Volumetric Flow rate, SCFH	Stack	0 to 125% of the maximum expected volumetric flow rate

Further specifications for each Operating Nitric Acid Plant under this CEMS Plan are as follows:

- For the Plants utilizing dual range or greater NOx Stack Analyzers (all Operating Nitric Acid Plants):
    - The NOx Stack Analyzer will meet all applicable requirements of 40 C.F.R. §60.11, §60.13, 40 C.F.R. Part 60, Appendix B, Performance Specification 2, and the Quality Assurance and Quality Control Procedures in 40 C.F.R. Part 60, Appendix F, Procedure 1. It should be noted, however, that the daily drift test requirement at 40 C.F.R. §60.13(d) and the requirements of Appendix F apply only to the normal range of the NOx Stack Analyzers with a dual or greater range.
    - The SSM range of the NOx Stack Analyzers will be evaluated once each calendar quarter, or at the next startup and shutdown opportunity if an evaluation cannot be

performed during the calendar quarter, to verify accuracy. For the stack analyzer evaluations at each such Operating Nitric Acid Plant, sampling will be conducted by making physical measurements of the NOx concentration in the gas stream to the main stack using an alternative/non-CEMS method(s) approved by the permitting authority (e.g., stack sampling and analysis, through the use of a portable analyzer/detector, or non-certified NOx stack analyzer). \

- For the Stack Flowmeters at all Operating Nitric Acid Plants:

    - At all other Operating Nitric Acid Plants the stack flow meters will meet 40 C.F.R. Part 60, Appendix B, Performance Specification 6 and will be evaluated once each calendar quarter and during the RATA of the appropriate NO_x Stack Analyzer to verify accuracy.

Compliance with the NSPS: 40 C.F.R. Part 60, Subpart G

In addition to the requirements in this CEMS Plan, Permittee also will comply with all of the requirements of the NSPS relating to monitoring at each Operating Nitric Acid Plant except that, pursuant to 40 C.F.R. §60.13(i), this CEMS Plan will supersede the following provisions of 40 C.F.R. Part 60, Subpart G:

- The requirement at 40 C.F.R. §60.73(a) that the NO_x stack analyzers have a normal span value of 500 ppm. In lieu of this, Permittee will utilize the span values specified in Table 1 of this CEMS Plan; and

- The requirement at 40 C.F.R. § 60.73(a) that pollutant gas mixtures under Performance Specification 2 and for calibration checks under 40 C.F.R. §60.13(d) be nitrogen dioxide (NO_2). Permittee will use calibration gases containing NO and/or NO_2, as appropriate to assure accuracy of the NO_x Stack Analyzers except where verified reference cells are used in accordance with Performance Specification 2.

- The requirement at 40 C.F.R. §60.73(b) that the conversion factor be developed/expressed in the units of lb NOx per ton of 100% nitric acid produced per ppm. In lieu of this requirement, Permittee will develop/express the conversion factor in the units of lb NO_x per ton of 100% nitric acid produced per lb/hr NO_x.

APPENDIX B PERMIT 2008-100-TV

TABLE 1. COMPLIANCE ASSURANCE MONITORING FOR SU/SD VENT FLARE (EU 110)

I. Indicator[1]	Pilot Flame
Measurement Approach	There are 4 pilots on the flare, each with its own thermocouple that provides an ON/OFF indication in the control room. Only one pilot flame must be on for the flare to operate. The presence of at least one pilot flame will be confirmed and recorded each day.
II. Indicator Range	Confirmation of pilot flame presence will be the indicator. No range is required.
III. Performance Criteria A. Data Representativeness	Measurements are being made at the emission point.
C. QA/QC Practices and Criteria	Calibration, maintenance, and operation will be conducted in accordance with manufacturer's specifications. All manufacturer's recommendations regarding periodic testing/checks for the proper installation and operation of the flame detecting device will be followed.
D. Monitoring Frequency	Daily monitoring of pilot flame presence.
Data Collection Procedures	Confirm presence of flame with thermocouples and keep daily records of observations.

[1] The indicator was selected to allow a simple and effective procedure for compliance tracking purposes. When an excursion occurs (when all four pilot flames are not present), or when any one pilot flame is not present, corrective action will be initiated based upon the pilot flame observations. All excursions will be documented and reported. The selected QIP threshold for flare operations is six excursions during the semi-annual reporting period, where all four pilot flames are not present. If the QIP threshold is exceeded in a semi-annual period, a QIP will be developed and implemented.

MAJOR SOURCE AIR QUALITY PERMIT
STANDARD CONDITIONS
(June 21, 2016)

SECTION I. DUTY TO COMPLY

A. This is a permit to operate / construct this specific facility in accordance with the federal Clean Air Act (42 U.S.C. 7401, et al.) and under the authority of the Oklahoma Clean Air Act and the rules promulgated there under. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

B. The issuing Authority for the permit is the Air Quality Division (AQD) of the Oklahoma Department of Environmental Quality (DEQ). The permit does not relieve the holder of the obligation to comply with other applicable federal, state, or local statutes, regulations, rules, or ordinances. [Oklahoma Clean Air Act, 27A O.S. § 2-5-112]

C. The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of the Oklahoma Clean Air Act and shall be grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. All terms and conditions are enforceable by the DEQ, by the Environmental Protection Agency (EPA), and by citizens under section 304 of the Federal Clean Air Act (excluding state-only requirements). This permit is valid for operations only at the specific location listed.

[40 C.F.R. §70.6(b), OAC 252:100-8-1.3 and OAC 252:100-8-6(a)(7)(A) and (b)(1)]

D. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in assessing penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continuing operations. [OAC 252:100-8-6(a)(7)(B)]

SECTION II. REPORTING OF DEVIATIONS FROM PERMIT TERMS

A. Any exceedance resulting from an emergency and/or posing an imminent and substantial danger to public health, safety, or the environment shall be reported in accordance with Section XIV (Emergencies). [OAC 252:100-8-6(a)(3)(C)(iii)(I) & (II)]

B. Deviations that result in emissions exceeding those allowed in this permit shall be reported consistent with the requirements of OAC 252:100-9, Excess Emission Reporting Requirements.

[OAC 252:100-8-6(a)(3)(C)(iv)]

C. Every written report submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.

[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION III. MONITORING, TESTING, RECORDKEEPING & REPORTING

A. The permittee shall keep records as specified in this permit. These records, including monitoring data and necessary support information, shall be retained on-site or at a nearby field office for a period of at least five years from the date of the monitoring sample, measurement, report, or application, and shall be made available for inspection by regulatory personnel upon request. Support information includes all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Where appropriate, the permit may specify that records may be maintained in computerized form.

[OAC 252:100-8-6 (a)(3)(B)(ii), OAC 252:100-8-6(c)(1), and OAC 252:100-8-6(c)(2)(B)]

B. Records of required monitoring shall include:

(1) the date, place and time of sampling or measurement;
(2) the date or dates analyses were performed;
(3) the company or entity which performed the analyses;
(4) the analytical techniques or methods used;
(5) the results of such analyses; and
(6) the operating conditions existing at the time of sampling or measurement.

[OAC 252:100-8-6(a)(3)(B)(i)]

C. No later than 30 days after each six (6) month period, after the date of the issuance of the original Part 70 operating permit or alternative date as specifically identified in a subsequent Part 70 operating permit, the permittee shall submit to AQD a report of the results of any required monitoring. All instances of deviations from permit requirements since the previous report shall be clearly identified in the report. Submission of these periodic reports will satisfy any reporting requirement of Paragraph E below that is duplicative of the periodic reports, if so noted on the submitted report. [OAC 252:100-8-6(a)(3)(C)(i) and (ii)]

D. If any testing shows emissions in excess of limitations specified in this permit, the owner or operator shall comply with the provisions of Section II (Reporting Of Deviations From Permit Terms) of these standard conditions. [OAC 252:100-8-6(a)(3)(C)(iii)]

E. In addition to any monitoring, recordkeeping or reporting requirement specified in this permit, monitoring and reporting may be required under the provisions of OAC 252:100-43, Testing, Monitoring, and Recordkeeping, or as required by any provision of the Federal Clean Air Act or Oklahoma Clean Air Act. [OAC 252:100-43]

F. Any Annual Certification of Compliance, Semi Annual Monitoring and Deviation Report, Excess Emission Report, and Annual Emission Inventory submitted in accordance with this permit shall be certified by a responsible official. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

[OAC 252:100-8-5(f), OAC 252:100-8-6(a)(3)(C)(iv), OAC 252:100-8-6(c)(1), OAC 252:100-9-7(e), and OAC 252:100-5-2.1(f)]

G. Any owner or operator subject to the provisions of New Source Performance Standards ("NSPS") under 40 CFR Part 60 or National Emission Standards for Hazardous Air Pollutants ("NESHAPs") under 40 CFR Parts 61 and 63 shall maintain a file of all measurements and other information required by the applicable general provisions and subpart(s). These records shall be maintained in a permanent file suitable for inspection, shall be retained for a period of at least five years as required by Paragraph A of this Section, and shall include records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of an affected facility, any malfunction of the air pollution control equipment; and any periods during which a continuous monitoring system or monitoring device is inoperative.

[40 C.F.R. §§60.7 and 63.10, 40 CFR Parts 61, Subpart A, and OAC 252:100, Appendix Q]

H. The permittee of a facility that is operating subject to a schedule of compliance shall submit to the DEQ a progress report at least semi-annually. The progress reports shall contain dates for achieving the activities, milestones or compliance required in the schedule of compliance and the dates when such activities, milestones or compliance was achieved. The progress reports shall also contain an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted. [OAC 252:100-8-6(c)(4)]

I. All testing must be conducted under the direction of qualified personnel by methods approved by the Division Director. All tests shall be made and the results calculated in accordance with standard test procedures. The use of alternative test procedures must be approved by EPA. When a portable analyzer is used to measure emissions it shall be setup, calibrated, and operated in accordance with the manufacturer's instructions and in accordance with a protocol meeting the requirements of the "AQD Portable Analyzer Guidance" document or an equivalent method approved by Air Quality.

[OAC 252:100-8-6(a)(3)(A)(iv), and OAC 252:100-43]

J. The reporting of total particulate matter emissions as required in Part 7 of OAC 252:100-8 (Permits for Part 70 Sources), OAC 252:100-19 (Control of Emission of Particulate Matter), and OAC 252:100-5 (Emission Inventory), shall be conducted in accordance with applicable testing or calculation procedures, modified to include back-half condensables, for the concentration of particulate matter less than 10 microns in diameter (PM_{10}). NSPS may allow reporting of only particulate matter emissions caught in the filter (obtained using Reference Method 5).

K. The permittee shall submit to the AQD a copy of all reports submitted to the EPA as required by 40 C.F.R. Part 60, 61, and 63, for all equipment constructed or operated under this permit subject to such standards. [OAC 252:100-8-6(c)(1) and OAC 252:100, Appendix Q]

SECTION IV. COMPLIANCE CERTIFICATIONS

A. No later than 30 days after each anniversary date of the issuance of the original Part 70 operating permit or alternative date as specifically identified in a subsequent Part 70 operating permit, the permittee shall submit to the AQD, with a copy to the US EPA, Region 6, a certification of compliance with the terms and conditions of this permit and of any other applicable requirements which have become effective since the issuance of this permit.

[OAC 252:100-8-6(c)(5)(A), and (D)]

B. The compliance certification shall describe the operating permit term or condition that is the basis of the certification; the current compliance status; whether compliance was continuous or intermittent; the methods used for determining compliance, currently and over the reporting period. The compliance certification shall also include such other facts as the permitting authority may require to determine the compliance status of the source.

[OAC 252:100-8-6(c)(5)(C)(i)-(v)]

C. The compliance certification shall contain a certification by a responsible official as to the results of the required monitoring. This certification shall be signed by a responsible official, and shall contain the following language: "I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete." [OAC 252:100-8-5(f) and OAC 252:100-8-6(c)(1)]

D. Any facility reporting noncompliance shall submit a schedule of compliance for emissions units or stationary sources that are not in compliance with all applicable requirements. This schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirements for which the emissions unit or stationary source is in noncompliance. This compliance schedule shall resemble and be at least as stringent as that contained in any judicial consent decree or administrative order to which the emissions unit or stationary source is subject. Any such schedule of compliance shall be supplemental to, and shall not sanction noncompliance with, the applicable requirements on which it is based, except that a compliance plan shall not be required for any noncompliance condition which is corrected within 24 hours of discovery.

[OAC 252:100-8-5(e)(8)(B) and OAC 252:100-8-6(c)(3)]

SECTION V. REQUIREMENTS THAT BECOME APPLICABLE DURING THE PERMIT TERM

The permittee shall comply with any additional requirements that become effective during the permit term and that are applicable to the facility. Compliance with all new requirements shall be certified in the next annual certification. [OAC 252:100-8-6(c)(6)]

SECTION VI. PERMIT SHIELD

A. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC 252:100-8) shall be deemed compliance with the applicable requirements identified and included in this permit. [OAC 252:100-8-6(d)(1)]

B. Those requirements that are applicable are listed in the Standard Conditions and the Specific Conditions of this permit. Those requirements that the applicant requested be determined as not applicable are summarized in the Specific Conditions of this permit. [OAC 252:100-8-6(d)(2)]

SECTION VII. ANNUAL EMISSIONS INVENTORY & FEE PAYMENT

The permittee shall file with the AQD an annual emission inventory and shall pay annual fees based on emissions inventories. The methods used to calculate emissions for inventory purposes shall be based on the best available information accepted by AQD.
[OAC 252:100-5-2.1, OAC 252:100-5-2.2, and OAC 252:100-8-6(a)(8)]

SECTION VIII. TERM OF PERMIT

A. Unless specified otherwise, the term of an operating permit shall be five years from the date of issuance. [OAC 252:100-8-6(a)(2)(A)]

B. A source's right to operate shall terminate upon the expiration of its permit unless a timely and complete renewal application has been submitted at least 180 days before the date of expiration. [OAC 252:100-8-7.1(d)(1)]

C. A duly issued construction permit or authorization to construct or modify will terminate and become null and void (unless extended as provided in OAC 252:100-8-1.4(b)) if the construction is not commenced within 18 months after the date the permit or authorization was issued, or if work is suspended for more than 18 months after it is commenced. [OAC 252:100-8-1.4(a)]

D. The recipient of a construction permit shall apply for a permit to operate (or modified operating permit) within 180 days following the first day of operation. [OAC 252:100-8-4(b)(5)]

SECTION IX. SEVERABILITY

The provisions of this permit are severable and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
[OAC 252:100-8-6 (a)(6)]

SECTION X. PROPERTY RIGHTS

A. This permit does not convey any property rights of any sort, or any exclusive privilege.
[OAC 252:100-8-6(a)(7)(D)]

B. This permit shall not be considered in any manner affecting the title of the premises upon which the equipment is located and does not release the permittee from any liability for damage to persons or property caused by or resulting from the maintenance or operation of the equipment for which the permit is issued. [OAC 252:100-8-6(c)(6)]

SECTION XI. DUTY TO PROVIDE INFORMATION

A. The permittee shall furnish to the DEQ, upon receipt of a written request and within sixty (60) days of the request unless the DEQ specifies another time period, any information that the DEQ may request to determine whether cause exists for modifying, reopening, revoking, reissuing, terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the DEQ copies of records required to be kept by the permit.
[OAC 252:100-8-6(a)(7)(E)]

B. The permittee may make a claim of confidentiality for any information or records submitted pursuant to 27A O.S. § 2-5-105(18). Confidential information shall be clearly labeled as such and shall be separable from the main body of the document such as in an attachment.
[OAC 252:100-8-6(a)(7)(E)]

C. Notification to the AQD of the sale or transfer of ownership of this facility is required and shall be made in writing within thirty (30) days after such sale or transfer.
[Oklahoma Clean Air Act, 27A O.S. § 2-5-112(G)]

SECTION XII. REOPENING, MODIFICATION & REVOCATION

A. The permit may be modified, revoked, reopened and reissued, or terminated for cause. Except as provided for minor permit modifications, the filing of a request by the permittee for a permit modification, revocation and reissuance, termination, notification of planned changes, or anticipated noncompliance does not stay any permit condition.
[OAC 252:100-8-6(a)(7)(C) and OAC 252:100-8-7.2(b)]

B. The DEQ will reopen and revise or revoke this permit prior to the expiration date in the following circumstances: [OAC 252:100-8-7.3 and OAC 252:100-8-7.4(a)(2)]

(1) Additional requirements under the Clean Air Act become applicable to a major source category three or more years prior to the expiration date of this permit. No such reopening is required if the effective date of the requirement is later than the expiration date of this permit.
(2) The DEQ or the EPA determines that this permit contains a material mistake or that the permit must be revised or revoked to assure compliance with the applicable requirements.
(3) The DEQ or the EPA determines that inaccurate information was used in establishing the emission standards, limitations, or other conditions of this permit. The DEQ may revoke and not reissue this permit if it determines that the permittee has submitted false or misleading information to the DEQ.
(4) DEQ determines that the permit should be amended under the discretionary reopening provisions of OAC 252:100-8-7.3(b).

C. The permit may be reopened for cause by EPA, pursuant to the provisions of OAC 100-8-7.3(d). [OAC 100-8-7.3(d)]

D. The permittee shall notify AQD before making changes other than those described in Section XVIII (Operational Flexibility), those qualifying for administrative permit amendments, or those defined as an Insignificant Activity (Section XVI) or Trivial Activity (Section XVII). The notification should include any changes which may alter the status of a "grandfathered source," as defined under AQD rules. Such changes may require a permit modification.
[OAC 252:100-8-7.2(b) and OAC 252:100-5-1.1]

E. Activities that will result in air emissions that exceed the trivial/insignificant levels and that are not specifically approved by this permit are prohibited. [OAC 252:100-8-6(c)(6)]

SECTION XIII. INSPECTION & ENTRY

A. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow authorized regulatory officials to perform the following (subject to the permittee's right to seek confidential treatment pursuant to 27A O.S. Supp. 1998, § 2-5-105(17) for confidential information submitted to or obtained by the DEQ under this section):

(1) enter upon the permittee's premises during reasonable/normal working hours where a source is located or emissions-related activity is conducted, or where records must be kept under the conditions of the permit;
(2) have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
(3) inspect, at reasonable times and using reasonable safety practices, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and
(4) as authorized by the Oklahoma Clean Air Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit.

[OAC 252:100-8-6(c)(2)]

SECTION XIV. EMERGENCIES

A. Any exceedance resulting from an emergency shall be reported to AQD promptly but no later than 4:30 p.m. on the next working day after the permittee first becomes aware of the exceedance. This notice shall contain a description of the emergency, the probable cause of the exceedance, any steps taken to mitigate emissions, and corrective actions taken.

[OAC 252:100-8-6 (a)(3)(C)(iii)(I) and (IV)]

B. Any exceedance that poses an imminent and substantial danger to public health, safety, or the environment shall be reported to AQD as soon as is practicable; but under no circumstance shall notification be more than 24 hours after the exceedance. [OAC 252:100-8-6(a)(3)(C)(iii)(II)]

C. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under this permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. [OAC 252:100-8-2]

D. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that: [OAC 252:100-8-6 (e)(2)]

(1) an emergency occurred and the permittee can identify the cause or causes of the emergency;
(2) the permitted facility was at the time being properly operated;

(3) during the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit.

E. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof. [OAC 252:100-8-6(e)(3)]

F.Every written report or document submitted under this section shall be certified as required by Section III (Monitoring, Testing, Recordkeeping & Reporting), Paragraph F.
[OAC 252:100-8-6(a)(3)(C)(iv)]

SECTION XV. RISK MANAGEMENT PLAN

The permittee, if subject to the provision of Section 112(r) of the Clean Air Act, shall develop and register with the appropriate agency a risk management plan by June 20, 1999, or the applicable effective date. [OAC 252:100-8-6(a)(4)]

SECTION XVI. INSIGNIFICANT ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate individual emissions units that are either on the list in Appendix I to OAC Title 252, Chapter 100, or whose actual calendar year emissions do not exceed any of the limits below. Any activity to which a State or Federal applicable requirement applies is not insignificant even if it meets the criteria below or is included on the insignificant activities list.

(1) 5 tons per year of any one criteria pollutant.
(2) 2 tons per year for any one hazardous air pollutant (HAP) or 5 tons per year for an aggregate of two or more HAP's, or 20 percent of any threshold less than 10 tons per year for single HAP that the EPA may establish by rule.

[OAC 252:100-8-2 and OAC 252:100, Appendix I]

SECTION XVII. TRIVIAL ACTIVITIES

Except as otherwise prohibited or limited by this permit, the permittee is hereby authorized to operate any individual or combination of air emissions units that are considered inconsequential and are on the list in Appendix J. Any activity to which a State or Federal applicable requirement applies is not trivial even if included on the trivial activities list.

[OAC 252:100-8-2 and OAC 252:100, Appendix J]

SECTION XVIII. OPERATIONAL FLEXIBILITY

A. A facility may implement any operating scenario allowed for in its Part 70 permit without the need for any permit revision or any notification to the DEQ (unless specified otherwise in the permit). When an operating scenario is changed, the permittee shall record in a log at the facility the scenario under which it is operating. [OAC 252:100-8-6(a)(10) and (f)(1)]

B. The permittee may make changes within the facility that:

(1) result in no net emissions increases,
(2) are not modifications under any provision of Title I of the federal Clean Air Act, and
(3) do not cause any hourly or annual permitted emission rate of any existing emissions unit to be exceeded;

provided that the facility provides the EPA and the DEQ with written notification as required below in advance of the proposed changes, which shall be a minimum of seven (7) days, or twenty four (24) hours for emergencies as defined in OAC 252:100-8-6 (e). The permittee, the DEQ, and the EPA shall attach each such notice to their copy of the permit. For each such change, the written notification required above shall include a brief description of the change within the permitted facility, the date on which the change will occur, any change in emissions, and any permit term or condition that is no longer applicable as a result of the change. The permit shield provided by this permit does not apply to any change made pursuant to this paragraph. [OAC 252:100-8-6(f)(2)]

SECTION XIX. OTHER APPLICABLE & STATE-ONLY REQUIREMENTS

A. The following applicable requirements and state-only requirements apply to the facility unless elsewhere covered by a more restrictive requirement:

(1) Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in the Open Burning Subchapter. [OAC 252:100-13]

(2) No particulate emissions from any fuel-burning equipment with a rated heat input of 10 MMBTUH or less shall exceed 0.6 lb/MMBTU. [OAC 252:100-19]

(3) For all emissions units not subject to an opacity limit promulgated under 40 C.F.R., Part 60, NSPS, no discharge of greater than 20% opacity is allowed except for: [OAC 252:100-25]

(a) Short-term occurrences which consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity;
(b) Smoke resulting from fires covered by the exceptions outlined in OAC 252:100-13-7;
(c) An emission, where the presence of uncombined water is the only reason for failure to meet the requirements of OAC 252:100-25-3(a); or
(d) Smoke generated due to a malfunction in a facility, when the source of the fuel producing the smoke is not under the direct and immediate control of the facility and the immediate constriction of the fuel flow at the facility would produce a hazard to life and/or property.

(4) No visible fugitive dust emissions shall be discharged beyond the property line on which the emissions originate in such a manner as to damage or to interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards. [OAC 252:100-29]

(5) No sulfur oxide emissions from new gas-fired fuel-burning equipment shall exceed 0.2 lb/MMBTU. No existing source shall exceed the listed ambient air standards for sulfur dioxide. [OAC 252:100-31]

(6) Volatile Organic Compound (VOC) storage tanks built after December 28, 1974, and with a capacity of 400 gallons or more storing a liquid with a vapor pressure of 1.5 psia or greater under actual conditions shall be equipped with a permanent submerged fill pipe or with a vapor-recovery system. [OAC 252:100-37-15(b)]

(7) All fuel-burning equipment shall at all times be properly operated and maintained in a manner that will minimize emissions of VOCs. [OAC 252:100-37-36]

SECTION XX. STRATOSPHERIC OZONE PROTECTION

A. The permittee shall comply with the following standards for production and consumption of ozone-depleting substances: [40 CFR 82, Subpart A]

(1) Persons producing, importing, or placing an order for production or importation of certain class I and class II substances, HCFC-22, or HCFC-141b shall be subject to the requirements of §82.4;
(2) Producers, importers, exporters, purchasers, and persons who transform or destroy certain class I and class II substances, HCFC-22, or HCFC-141b are subject to the recordkeeping requirements at §82.13; and
(3) Class I substances (listed at Appendix A to Subpart A) include certain CFCs, Halons, HBFCs, carbon tetrachloride, trichloroethane (methyl chloroform), and bromomethane (Methyl Bromide). Class II substances (listed at Appendix B to Subpart A) include HCFCs.

B. If the permittee performs a service on motor (fleet) vehicles when this service involves an ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all applicable requirements. Note: The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term "MVAC" as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant. [40 CFR 82, Subpart B]

C. The permittee shall comply with the following standards for recycling and emissions reduction except as provided for MVACs in Subpart B: [40 CFR 82, Subpart F]

(1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to § 82.156;
(2) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to § 82.158;
(3) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to § 82.161;
(4) Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply

with record-keeping requirements pursuant to § 82.166;

(5) Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to § 82.158; and

(6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to § 82.166.

SECTION XXI. TITLE V APPROVAL LANGUAGE

A. DEQ wishes to reduce the time and work associated with permit review and, wherever it is not inconsistent with Federal requirements, to provide for incorporation of requirements established through construction permitting into the Source's Title V permit without causing redundant review. Requirements from construction permits may be incorporated into the Title V permit through the administrative amendment process set forth in OAC 252:100-8-7.2(a) only if the following procedures are followed:

(1) The construction permit goes out for a 30-day public notice and comment using the procedures set forth in 40 C.F.R. § 70.7(h)(1). This public notice shall include notice to the public that this permit is subject to EPA review, EPA objection, and petition to EPA, as provided by 40 C.F.R. § 70.8; that the requirements of the construction permit will be incorporated into the Title V permit through the administrative amendment process; that the public will not receive another opportunity to provide comments when the requirements are incorporated into the Title V permit; and that EPA review, EPA objection, and petitions to EPA will not be available to the public when requirements from the construction permit are incorporated into the Title V permit.

(2) A copy of the construction permit application is sent to EPA, as provided by 40 CFR § 70.8(a)(1).

(3) A copy of the draft construction permit is sent to any affected State, as provided by 40 C.F.R. § 70.8(b).

(4) A copy of the proposed construction permit is sent to EPA for a 45-day review period as provided by 40 C.F.R.§ 70.8(a) and (c).

(5) The DEQ complies with 40 C.F.R. § 70.8(c) upon the written receipt within the 45-day comment period of any EPA objection to the construction permit. The DEQ shall not issue the permit until EPA's objections are resolved to the satisfaction of EPA.

(6) The DEQ complies with 40 C.F.R. § 70.8(d).

(7) A copy of the final construction permit is sent to EPA as provided by 40 CFR § 70.8(a).

(8) The DEQ shall not issue the proposed construction permit until any affected State and EPA have had an opportunity to review the proposed permit, as provided by these permit conditions.

(9) Any requirements of the construction permit may be reopened for cause after incorporation into the Title V permit by the administrative amendment process, by DEQ as provided in OAC 252:100-8-7.3(a), (b), and (c), and by EPA as provided in 40 C.F.R. § 70.7(f) and (g).

(10) The DEQ shall not issue the administrative permit amendment if performance tests fail to demonstrate that the source is operating in substantial compliance with all permit requirements.

B. To the extent that these conditions are not followed, the Title V permit must go through the Title V review process.

SECTION XXII. CREDIBLE EVIDENCE

For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any provision of the Oklahoma implementation plan, nothing shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed

DRAFT

PART 70 PERMIT

AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Permit No. 2008-100-TV

Pryor Chemical Company,

having complied with the requirements of the law, is hereby granted permission to operate all emissions sources located within the property boundaries of their Pryor Chemical Plant located in the Pryor – Mid America Industrial Park, Section 3, Township 20 N, Range 19 E, Mayes County, Oklahoma, subject to standard conditions dated June 21, 2016 and specific conditions, both attached.

This permit shall expire five (5) years from the date below, except as authorized under Section VIII of the Standard Condition

Director, Air Quality Division **Date**

Mr. John Carver, Vice President – Safety and Environmental Compliance
Pryor Chemical Company
P.O. Box 429
Pryor, OK 74362

SUBJECT: Evaluation of Permit No. 2008-100-TV
Pryor Chemical (Facility ID: 1736)
Section 3, Township 20N, Range 19E; Pryor, Mayes County, OK

Dear Mr. Carver:

Air Quality Division has completed review of your permit application for the above referenced facility. The application has been determined to be a Tier II. In accordance with 27A O.S. §2-14-302 and OAC 252:4-7-13(c), the draft permit is now ready for public review. Please note that you are required to publish a Notice of Filing a Tier II Application and that your permit may not be issued until we receive proof of publication of the filing notice. The requirements for public review of the draft permit include the following steps which you must accomplish:

1. Publish at least one legal notice (one day) in newspaper of general circulation ***within the county*** where the facility is located (see attached instructions).
2. Provide for public review (for a review period of **30-days** following the date of the news-paper announcement) a copy of this draft permit at a convenient location ***within the county*** of the facility (preferably at a public library).
3. Send AQD a written affidavit of public for the notice (Item #1 above), along with any additional comments or requested changes which you may have for the permit application ***within 20-days*** of publication.
4. At the end of the public review period, send the Air Quality Division a written notice of any public comments that you may have received.

After the draft permit completes public review, the proposed permit will be submitted to EPA review. Note that the time period for EPA review is 45-days. Contingent on public, state and EPA review, the permit will be issued. Thank you for your cooperation. If you have any questions, please refer to the permit number above and contact the permit writer at (918) 293-1600.

Sincerely,

Phillip Fielder, P.E.
Chief Engineer
AIR QUALITY DIVISION