OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM **April 30, 2012**

TO: Phillip Fielder, P.E., Permits and Engineering Group Manager

THROUGH: Kendal Stegmann, Senior Environmental Manager

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

THROUGH: Peer Review, Herb Neumann, P.E., ROAT

THROUGH: Peer Review, Anthony Maxwell, E.I., ROAT

FROM: David Pollard, ROAT

SUBJECT: Evaluation of Permit Application No. **2008-100-C (M-2) (PSD)**
Pryor Chemical Company
Pryor Mid-America Industrial Park (Lat. 36.242761º; Long. - 95.278481º)
Directions: From Highways 412 and 412B, go approximately 5 miles north on 412B to main plant entrance.

SECTION I. INTRODUCTION

Pryor Chemical Company (PCC or applicant) submitted an application dated April 6, 2011 to the Oklahoma Department of Environmental Quality's (ODEQ) Air Quality Division (AQD) to start up previously idled production units at its synthetic fertilizer manufacturing plant (SIC 2873) located at Pryor Mid-America Industrial Park near Pryor, Oklahoma. Permit No. 2008-100-C PSD was issued to restart production units at the plant that had been idle since Wil-Gro shut down and abandoned the plant. The new owner has additional business opportunities and requests to place certain remaining idled sources that had not been included in the original permitting action in service. This will include the startup of Ammonia Plant #1, Ammonia Plant #3, and Urea Plant #1 to be included in this permit. Ammonia Plant #2 (Reformer, Desulfurization, etc.) and Nitric Acid Plant #2 will remain out of service.

Permit No 2008-100-C (M-1) PSD, addressed a burner replacement that triggered the requirements for PSD (Prevention of Significant Deterioration) analysis and a construction modification permit. Changes to accommodate emissions calculations and applicable regulations were also made. EPA submitted comments on Permit No 2008-100-C (M-1) PSD, one issue concerning aggregation. Aggregation issues are discussed under "SECTION IV. EMISSIONS", in the subsection titled "Emissions Summary and NSR". Technology transfer issues are addressed under Section V, Prevention of Significant deterioration. DEQ will submit a separate response to the remainder of EPA's questions, including a recapitulation of these two issues. To maintain compliance with the National Ambient Air Standards for nitrogen dioxide (NO_2), the

applicant requested a trial BACT limit for the Ammonia Plant #4 Primary Reformer and requests the same for the Ammonia Plants #1 and #3 Primary Reformers.

SECTION II. EQUIPMENT

The facility consists of a complex network of process vessels, dryers, and piping. The following table categorizes the processes at the facility by emission unit group (EUG) and emission point identification.

EMISSION UNITS			
EU/EUG ID	**Point ID**	**EU Name/Model**	**Construction Date**
EUG 1		**Ammonia Plants**	
1	101	Ammonia Plant #4 Primary Reformer - 225 MMBTUH	1995
1	102	Ammonia Plant #4 Condensate Steam Flash Drum	1995
1	103	Ammonia Plant #1 Primary Reformer - 60 MMBTUH Waste Heat Boiler w/28 MMBTUH Auxiliary Heater	1965
1	104	Ammonia Plants #1 and #3 Condensate Steam Flash Drum	1965
1	105	Ammonia Plant #3 Primary Reformer - 64 MMBTUH Waste Heat Boiler w/ 28 MMBTUH Auxiliary Heater	1975
1	106 106a 106b 106c	Ammonia Plants #1 and #3 Purge Gas Vents Ammonia Plant #1 Purge Gas Vent Ammonia Plant #3 Purge Gas Vent Ammonia Plants #1 and #3 Combined Purge Gas Vent	 1965 1975 1975
EUG 2		**Urea Plants**	
2	201	Urea Plant #1	1995 [1]
	202	Urea Plant #2	
EUG 3		**Nitric Acid Plants**	
3	301	Nitric Acid Plant #1 - Fumeabator Unit	1966
3	302	Nitric Acid Plant #3 - Fumeabator Unit	1966
3	303	Nitric Acid Plant #4 - SCR Unit	2008 [2]
EUG 4		**Nitric Acid Plants Preheaters**	
4	401	Nitric Acid Preheater #1 - 20 MMBTUH	1966
4	402	Nitric Acid Preheater #3 - 20 MMBTUH	1966
4	403	Nitric Acid Preheater #4 - 20 MMBTUH	1964
EUG 5		**Carbon Dioxide Vents**	
5	501a	Ammonia Plant #4 – CO_2 Tower Vent	1995
5	501b	Carbon Dioxide Plant – CO_2 Vent	1965
5	501c	Ammonia Plant #1 – Regenerator Tower Vent	1965
5	502	Ammonia Plant #3 - CO_2 Vent	1975
EUG 6		**Ammonium Nitrate Plants**	
6	601	Ammonium Nitrate Plant #1 Neutralizer Vent	1966
6	602	Ammonium Nitrate Plant #2 Neutralizer Vent	1995
EUG 7		**Granulator Scrubbers**	

EMISSION UNITS			
EU/EUG ID	**Point ID**	**EU Name/Model**	**Construction Date**
7	701	Granulator Scrubber #1	1975
7	702	Granulator Scrubber #2	1975
7	703	Granulator Scrubber #3	1975
		Boilers	
8	801	53 MMBTUH Boiler #1	1978
8	802	80 MMBTUH Boiler #2	1995
EUG 9		**Cooling Towers**	
9	901	Cooling Tower #1	1966
9	902	Cooling Tower #2	1995
EUG 10	1002	1,000-gallon Gasoline Storage Tank	1965
NA	NA	**Insignificant Emissions Sources**	Various

NA - Not Applicable.

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

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.

SECTION III. PROCESS DESCRIPTION

Pryor Plant Chemical Company (Pryor) is an integrated inorganic fertilizer plant located at the Mid-America Industrial District in Pryor, Oklahoma. The facility consists of several production plants as described below.

EUG No. 1 - Ammonia Plant #1, Ammonia Plant #3, and Ammonia Plant #4

Ammonia Plant #4 operates at a maximum capacity rate of 770 tons of ammonia per day, or 281,050 tons per year. The plant is equipped with a gas-fired primary reformer with a maximum heat input capacity of 225 MMBtu/hr. The reformer is 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).

The plants produce 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:

- Natural gas desulfurization
- Catalytic steam reforming
- Carbon monoxide shift

• Carbon dioxide removal
• Methanation
• Ammonia synthesis ($3H_2 + N_2$ ---> $2NH_3$)

PCC will operate two additional ammonia plants at this facility (Ammonia Plants #1 and #3), each plant having a maximum production capacity of 110 tons of ammonia per day. Ammonia Plants #1 and #3 are equipped with gas-fired primary reformers with maximum heat input capacities of 60 MMBtu/hr and 64 MMBtu/hr, respectively. The reformers will be fired on a combination of pipeline quality natural gas, desulfurization waste gas (routed from the carbon regeneration process), and process off-gas (or purge gas). Ammonia Plant #1 utilizes a waste heat boiler equipped with a gas-fired auxiliary heater having a maximum heat input capacity of 28 MMBtu/hr. Ammonia Plant #3 also utilizes a waste heat boiler with a gas-fired auxiliary heater, having a maximum heat input capacity of 28 MMBtu/hr.

The purge gas at Ammonia Plant #4 is scrubbed prior to its introduction to the primary reformer, reducing the ammonia content. At times, the scrubbed purge gas from Ammonia Plant #4 is vented prior to the primary reformer. The small amount of ammonia emitted during those times when the scrubbed purge gas is vented is designated as an insignificant activity in the permit. Un-scrubbed purge gas from Ammonia Plant #4 can be used as fuel gas for the fumeabator units at Nitric Acid Plants #1 and #3. The purge gas, produced as an off-gas from the ammonia production process, is a good fuel source rich in hydrogen. PCC uses this purge gas to supplement fuel inputs to the primary reformers and to the fumeabators in lieu of purchasing natural gas. Purge gas does not provide all of the fuel input needed to operate the combustion sources at desired capacity, so natural gas is used to make up the difference. 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. Using un-scrubbed purge gas in the fumeabators at Nitric Acid Plants #1 and #3 can generate some additional fuel NO_X, but PCC is still able to meet its BACT limits for NO_X (i.e., 1.6 lb-NO_X /ton acid). The reason they do not scrub this purge gas is that a weak AN solution is produced in the scrubbing process that cannot be totally reintroduced to the process because of the large volume. This weak AN solution then has to be handled as a waste product, creating other environmental concerns.

Regarding the purge gas coming from Ammonia Plant #4, this purge gas is scrubbed prior to its introduction to the primary reformer there; however, when they use it at the fumeabators, they send it over un-scrubbed. The reason for this is the significant distance across the plant involved in the transfer. They cannot maintain the needed pressure over that distance when coming from the scrubber. The purge gas pressure can be maintained when transferred directly from the ammonia plant process step where it is generated to the scrubber and then to the primary reformer for combustion purposes.

The purge gas from Ammonia Plants #1 and #3 is scrubbed prior to being sent to their respective primary reformers. Un-scrubbed purge gas from Ammonia Plants #1 and #3 can also be used as fuel gas for the fumeabator units at Nitric Acid Plants #1 and #3. At times, the un-scrubbed purge gas from Ammonia Plants #1 and #3 is vented. Because this un-scrubbed purge gas has a higher ammonia concentration, the applicant requests that its venting be permitted as a point source emission rather than an insignificant activity. The applicant has requested a limit based

on 208 hours per year of venting, as proposed in the emissions calculations contained in the permit application.

The auxiliary heaters on the waste heat boilers at Ammonia Plants #1 and #3 will be fired with pipeline quality natural gas and process off-gas (or purge gas).

According to the applicant, a purge gas analysis off the flow outlet of the scrubber on June 13, 2010 yielded: hydrogen-67.87%, nitrogen-21.55%, argon-5.77%, and methane-5.12%. Water content is considered to be less than 100ppm. Methane and argon content vary between 5.0 and 7.0 %, which changes the hydrogen and nitrogen contents accordingly.

Natural Gas Desulfurization

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.

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 lbs/hr steam to remove volatile gases. Condensate from the Ammonia Plant #1 and Ammonia Plant #3 knockout drums are flashed in the Ammonia Plants #1 and #3 Condensate Steam Flash Drum (EU ID 104) at a rate of approximately 517 lbs/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 process gas by sending the synthesis gas 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. This will be the same scenario for all three plants. 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.

Carbon Dioxide Regenerator

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. 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. 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 the separator. The 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 a separator. Ammonia sent to the separator is flashed to remove impurities. The ammonia rich flashed vapor is then condensed in a chiller, where anhydrous ammonia is removed and stored as a liquid at low temperature.

EUG No. 2 - Urea Plants

Pryor currently operates one urea production plant with a maximum production capacity of 480 tons of urea per day, or 175,200 tons per year. Pryor 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. One insignificant emission source does exist as the #2 Urea Plant Ammonia Recovery Tank vent. Here, process off-gases from Urea Plant #2 are vented below the liquid in the #2 Urea Plant Ammonia Recovery Tank, resulting in minimal NH_3 emissions from the tank vent. Urea Plant #1 is a totally closed loop process, i.e., no process off-gases from this plant are vented.

EUG No. 3 - Nitric Acid Plants

Pryor operates three nitric acid plants at the facility. Nitric Acid Plant #1 produces a maximum of 240 tons of 100% nitric acid per day, or 73,000 tons per year; Nitric Acid Plant #3 produces a maximum of 180 tons of 100% nitric acid per day, or 54,750 tons per year; and Nitric Acid Plant #4 produces a maximum of 400 tons of 100% nitric acid per day, or 127,750 tons per year. Nitric acid (HNO_3) is produced in three steps:

- Ammonia oxidation
- Condensation
- Absorption

<u>Ammonia Oxidation</u>

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.

<u>Condensation</u>

The nitric acid 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.

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.

EUG No. 4 - Nitric Acid Plants Preheaters

The Nitric Acid Plants Preheaters are used to preheat the process air from 300 ^{o}F to 500 ^{o}F for startup 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. As implied by the EUG name, these emissions units have only combustion related emissions.

EUG No. 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 No. 6 - Ammonium Nitrate Plants

Pryor 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 Plant #1 and Ammonium Nitrate Plant #2

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 No. 7 - Granulator Scrubbers

Granulated ammonium nitrate 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, and then 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 venturi, 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 No. 8 - Steam Generation Boilers

PCC operates two natural gas fired boilers at this facility. Boiler #1 has a maximum heat input rate of 53 MMBtu/hr. Boiler #2 has a maximum heat input rate of 80 MMBtu/hr. The boilers provide the steam needed to operate the various pieces of equipment at the facility.

EUG No. 10 – Gasoline Storage Tank

PCC has a 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.

Out of Service Equipment

Ammonia Plant #2 (Reformer, Desulfurization, etc.)
Nitric Acid Plant #2

Fugitives and Insignificant activities are detailed in following sections.

SECTION IV. EMISSIONS

Emissions calculation methods are carried forward from the existing permit. Emissions are based on the anticipated maximum production rates. Changes are explained in the applicable section.

Permit limits are based on these calculations and are justified through PSD analysis, including BACT analysis and modeling to document compliance with the NAAQS.

EUG No. 1 - Ammonia Plants

Permit No. 2008-100-C (M-1) PSD increased the maximum ammonia production capacity of Ammonia Plant #4 from 700 tons per day (TPD) to 770 TPD. This permit adds combined ammonia production of 220 tons per day, of which 110 tons is from Ammonia Plant #1 and 110 tons is from Ammonia Plant #3. Emissions generated at the ammonia plants primarily include products of combustion from the Primary Reformers (EU IDs 101, 103, 105), emissions of volatile organic compounds (VOC) generated from the Condensate Steam Flash Drums (EU ID 102 for Plant #4 and EU ID 104 for Plants #1 and #3), and purge gas from Ammonia Plants #1 and #3, which consists of unregulated gases including hydrogen, nitrogen, argon, and methane. As previously noted, these purge gases can also be routed to Nitric Acid Plants #1 and #3 for combustion in the fumeabator control units.

<u>Primary Reformers</u>

The maximum heat input ratings of the reformers are 60 MMBtu/hour – Ammonia Plant #1, 64 MMBtu/hour – Ammonia Plant #3, and 225 MMBtu/hour – Ammonia Plant #4. Except for emissions of SO_2 and NO_X, calculations for combustion emissions in the existing permit were based on AP-42 emission factors, a gross calorific value of 1,020 Btu/scf for commercial natural gas, fuel demand, and annual operating hours of 8,760. Actual emissions were assumed to be the same as potential to emit (PTE). NO_X emissions for Ammonia Plant #4 are based on the trial BACT limit of 0.12 lbs-NO_X/MMBtu. NO_X emissions for Ammonia Plants #1 and #3 are based on the trial BACT limit of 0.085 lbs-NO_X/MMBtu. The basis for the Ammonia Plant #4 trial BACT limit and the justification are addressed in the memorandum of Permit No. 2008-100-C (M-1) PSD. The limit for Ammonia Plants #1 and #3 was reduced from 0.12 lbs-NO_X/MMBtu to 0.085 lbs-NO_X/MMBtu for this permit as a result of refined modeling during the application process; i.e., to ensure compliance with the applicable NAAQS.

SO_2 emissions result from the combustion of a mixture of two fuel sources, namely pipeline natural gas and waste gas from the desulfurization unit. The ammonia process uses approximately 21,250 standard cubic feet of natural gas per ton of ammonia produced. For Plants #1 and #3, at a production rate of 110 TPD each, this equates to 853 MMscf/yr per plant. For Plant #4, at a production rate of 770 TPD, this equates to 5,972 MMscf/yr. The facility estimates, based on data from past operations, that fuel sulfur content of the fuel gas mixture to the primary reformers can be as high as 20 grains/100 scf when the desulfurization unit is in operation. This would include some natural gas as there is not enough waste gas to run the primary reformers at desired capacity. Using 20 grains/100 scf, the maximum hourly rates of SO_2 emissions are calculated. The annual emissions for Ammonia Plant #1 and #3 are the sum of the primary fuel emissions (i.e., natural gas) and the waste gas fuel emissions at the primary reformers and the fuel emissions (i.e., natural gas) at the auxiliary heaters. Note that Ammonia Plant #4 does not have a waste heat boiler with an auxiliary heater. For Ammonia Plant #1, this results in 0.31 TPY (waste gas fuel) + 0.18 TPY (natural gas fuel) + 0.18 TPY (natural gas fuel at auxiliary heater) = 0.67, rounded to 0.7 TPY. For Ammonia Plant #3, this results in 0.31 TPY (waste gas

fuel) + 0.20 (natural gas fuel) + 0.18 TPY (natural gas fuel at auxiliary heater) = 0.69, rounded to 0.7 TPY. For Ammonia Plant #4, this results in 0.69 (natural gas fuel) + 2.13 (waste gas fuel) = 2.82, rounded to 2.9 TPY. The calculations assume 100% conversion of sulfur to SO_2.

For all following illustrations of emissions, calculations carried out to the 2nd decimal place for criteria pollutants are rounded up to the next decimal place (whole 1/10th) for augmented fractions of 0.01 and higher and calculations carried out to the 3rd decimal place for hazardous air pollutants are rounded up to the next decimal place (whole 1/100th) for augmented fractions of 0.001 and higher.

60 MMBtu/hour Primary Reformer – Ammonia Plant #1

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs-CO/MMscf	AP-42; Table 1.4-1	5.0	21.7
NO_X	0.085	lbs-NO_x/MMBtu	One-Year Trial BACT Limit	5.1	22.4
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	0.5	2.0
PM_{10}	5.7	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	0.4	1.5
SO_2 primary fuel	0.25	gr-sulfur/100 scf (avg)	Supplier Data	NA [1]	0.2
SO_2 waste gas	20.0	gr-sulfur/100 scf (max)	Site Specific Test Data (Hourly) Supplier Data (Annual)	3.4 [1]	0.4
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	0.4	1.5
Formaldehyde	0.075	lbs-Form./MMscf	AP-42; Table 1.4-3	0.01	0.02

[1] Hourly limit based on worst case when burning natural gas and waste gas from desulfurization unit.

Ammonia Plant #1 uses a waste heat boiler boiler equipped with a 28 MMBTUH auxiliary heater. The following calculations are based on firing the auxiliary heater on natural gas. No waste gas fuel is burned.

28 MMBtu/hour Auxiliary Heater – Ammonia Plant #1

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs-CO/MMscf	AP-42; Table 1.4-1	2.4	10.3
NO_X	50.0	lbs-NO_x/MMscf	AP-42; Table 1.4-1	1.4	6.2
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	0.3	1.0
PM_{10}	5.7	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	0.2	0.7
SO_2 primary fuel	1.5	lbs- SO_2/MMscf	AP-42; Table 1.4-2	0.1	0.2
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	0.2	0.7
Formaldehyde	0.075	lbs-Form./MMscf	AP-42; Table 1.4-3	0.01	0.01

64 MMBtu/hour Primary Reformer – Ammonia Plant #3

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs-CO/MMscf	AP-42; Table 1.4-1	5.3	23.1
NO_X	0.085	lbs-NO_x/MMBtu	One-Year Trial BACT Limit	5.5	23.9
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	0.5	2.1

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
PM_{10}	5.7	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	0.4	1.6
SO_2 primary fuel	0.25	gr-sulfur/100 scf (avg)	Supplier Data	NA [1]	0.2
SO_2 waste gas	20.0	gr-sulfur/100 scf (max)	Site Specific Test Data (Hourly) Supplier Data (Annual)	3.6 [1]	0.4
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	0.4	1.5
Formaldehyde	0.075	lbs-Form./MMscf	AP-42; Table 1.4-3	0.01	0.02

[1] Hourly limit based on worst case when burning natural gas and waste gas from desulfurization unit.

Ammonia Plant #3 uses a waste heat boiler equipped with a 28 MMBTUH auxiliary heater. The following calculations are based on firing the auxiliary heater on natural gas. No waste gas fuel is burned.

28 MMBtu/hour Auxiliary Heater – Ammonia Plant #3

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs-CO/MMscf	AP-42; Table 1.4-1	2.4	10.3
NO_X	50.0	lbs-NO_x/MMscf	AP-42; Table 1.4-1	1.4	6.2
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	0.3	1.0
PM_{10}	5.7	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	0.2	0.7
SO_2 primary fuel	1.5	lbs- SO_2/MMscf	AP-42; Table 1.4-2	0.1	0.2
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	0.2	0.7
Formaldehyde	0.075	lbs-Form./MMscf	AP-42; Table 1.4-3	0.01	0.01

225 MMBtu/hour Primary Reformer – Ammonia Plant #4

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Max. (lb/hr)	Annual (ton/yr)
CO	84.0	lbs-CO/MMscf	AP-42; Table 1.4-1	18.6	81.2
NO_X	0.085	lbs-NO_x/MMBtu	One-Year Trial BACT Limit	27	118.3
PM	7.6	lbs-PM/MMscf	AP-42; Table 1.4-2	1.7	7.4
PM_{10}	5.7	lbs-PM_{10}/MMscf	AP-42; Table 1.4-2	1.3	5.6
SO_2 primary fuel	0.25	gr-sulfur/100 scf (avg)	Supplier Data	NA [1]	0.7
SO_2 waste gas	20.0	gr-sulfur/100 scf (max)	Site Specific Test Data (Hourly) Supplier Data (Annual)	12.6 [1]	2.2
VOC	5.5	lbs-VOC/MMscf	AP-42; Table 1.4-2	1.3	5.4
Formaldehyde	0.075	lbs-Form./MMscf	AP-42; Table 1.4-3	0.02	0.07

[1] Hourly limit based on worst case when burning waste gas and natural gas from desulfurization unit.

Condensate Steam Flash Drum - Ammonia Plant #4

PCC requests to retain an enforceable permit limit of 9.5 ton/yr methanol from the existing permit to maintain its minor source status for HAPs. To ensure compliance with this limit, in addition to initial stack test requirements, a plan for monitoring process conditions using parameters such as temperature, pressure, condensate throughput, and periodic measurement of

methanol in the condensate is required. The referenced Monitoring Plan was submitted electronically to ODEQ in November 2010.

The following table illustrates the requested limits for this permit, which are a mass balance calculation derived in the application and memorandum of Permit No. 2008-100-C (M-1) PSD with the following revisions.. Permit No. 2008-100-C (M-1) increased condensate throughput from 80,064 lbs/hr to 90,472 lbs/hr (10,848 gallons per hour). From Permit No. 2008-100-C PSD, limits for VOC, methanol, and ammonia were based on the concentration of the pollutant in the condensate. This was believed to be a conservatively high method to ensure that the facility had an adequate margin of compliance. However, because stack measurement (stack testing and/or continuous emissions monitoring) is the preferable method of determining compliance with a limit, DEQ required PCC to develop a means of measuring emissions at the vent of the condensate flash drum. Permit No. 2008-100-C required post operation testing, which was conducted in December 2011. While testing revealed that VOC and methanol emissions could easily comply with the limits, ammonia emissions could not. The results of the tests are included in this memorandum in the section titled "Testing". The calculations continue to assume a 50% release of methanol and a 100% release of VOC and ammonia.

Permit Limits - Condensate Steam Flash Drum - Ammonia Plant #4

Pollutant	Concentration	Condensate Throughput	Emissions	
	ppmw	lbs/hr	lbs/hr	tons/yr
VOC	115	90,472	10.4	45.6
Methanol	42.7**	90,472	3.86	9.5*
		Steam Discharge		
NH_3	5,140	1,050	5.4	23.7

* PTE for this source is 16.9 TPY. It will share the 9.5 TPY limit with the Ammonia Plants #1 and #3 Condensate Steam Flash Drum.

** Reflects 50% release.

As noted above, because stack measurement (stack testing and/or continuous emissions monitoring) is the preferable method of determining compliance with a limit, DEQ required PCC, via Permit No. 2008-100-C, to develop a means of measuring emissions emitted at the vent of the condensate flash drum. However, this type of emissions measurements requires a stack flow rate measurement and the emissions flow media is steam, which is not amenable to flow rate measurements because of excess condensation forming in the testing device. Therefore, in accordance with the requirement to develop a compliance monitoring method, PCC measures pollutant concentrations in the steam discharge and calculates the emissions rates based on the equipment design output flow rate of 1,050 lbs/hr.

Condensate Steam Flash Drum - Ammonia Plants #1 and #3

Following the methodology for the Ammonia Plant #4 Condensate Steam Flash Drum, requested permit limits for Condensate Steam Flash Drum - Ammonia Plants #1 and #3 were calculated and the results illustrated in the table below. Ammonia and VOC concentrations were assumed to be the same as those measured for the Ammonia Plant #4 Condensate Steam Flash Drum.

EU ID 104 – Ammonia Plants #1 and #3 - Condensate Steam Flash Drum

Pollutant	Concentration	Condensate Throughput	Emissions	
	ppmw	lbs/hr	lbs/hr	tons/yr
VOC	115	39,482	4.5	19.9
Methanol	42.7	39,482	1.68	9.5**
		Steam Discharge		
NH_3	5,140	517*	2.7	11.7

* Based on a similar plant's design of 470 lbs/hr and a contingency of 10%.

** PTE for this source is 7.4 TPY. It will share the 9.5 TPY limit with the Ammonia Plant #4 Condensate Steam Flash Drum.

Ammonia Plants #1 and #3 - Purge Gas Vent

The following calculations are based on venting purge gas 208 hours per year, purge gas flow rate of 1.6 MMscf-gas/day, an emissions factor of 3.5%$_V$-NH_3/scf-gas, molecular weight of 17.03 lbs/lb-mole for NH_3, and a molar volume of 379.5 scf/lb-mole. The applicant states that the non-published data, i.e. the gas flow rate and the concentration of NH_3, are based on measured data plus a conservative contingency to arrive at the worst case maximum concentration of NH_3.

$$\frac{1.6\ \text{MMscf-gas}}{\text{Day}} \times \frac{10^6\ \text{scf}}{\text{MMscf}} \times \frac{1\ \text{Day}}{24\ \text{hrs}} \times \frac{0.035\ \text{scf-NH}_3}{1\ \text{scf-gas}} \times \frac{\text{lb-mole}}{379.5\ \text{scf}} \times \frac{17.03\ \text{lb-NH}_3}{\text{lb-mole}}$$

Pollutant	Emissions Factor	Purge Gas Flow	Emissions	
	Purge Gas Flow	cubic feet/hour	Lbs/hr	TPY
NH_3	3.5%	66,667	104.71	10.89

Desulfurization Unit Regeneration

Desulfurization of natural gas used as a raw material in the process is done using carbon adsorption. Each ammonia plant has its own associated desulfurization unit. Regeneration of the carbon is accomplished by flushing the carbon bed with natural gas heated to temperatures near 350 ^oF. Off-gases from the Desulfurization Unit Regeneration are routed to the reformer of each associated ammonia plant and combined with the natural gas fuel gas.

Carbon Dioxide Regenerator

Off-gases from the Carbon Dioxide Regenerator of each ammonia plant are routed back to the Carbon Dioxide Plant and/or the Urea Plants as needed, and excess amounts are vented.

EUG No. 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 resulting from infrequent venting through pressure relief valves are vented subsurface to the #2 Urea Plant Ammonia Recovery Tank. The #2 Urea Plant Ammonia Recovery Tank uses water as an absorption media to recover ammonia. The applicant states that significant releases of ammonia to the atmosphere would only occur in the event absorption capacity was exceeded. PCC monitors

the ammonia percentage daily to ensure that the saturation point has not been reached/exceeded. This monitoring is incorporated into the insignificant source compliance documentation required by the permit.

EUG No. 3 – Nitric Acid Plants

PCC operates three nitric acid plants – Nitric Acid Plant #1, Nitric Acid Plant #3, and Nitric Acid Plant #4. The application for Permit No. 2008-100-C (M-1) PSD states that a review of process design concluded that the capacities of these plants are 240 tons per day (10 tons per hour), 180 tons per day (7.5 tons per hour), and 400 tons per day (16.7 tons per hour), respectively, for a total of 820 tons per day. Emissions of NO_X are generated as tail gas from the acid absorption towers from all three plants. NO_X is the end result of a three-step reaction. First, ammonia and air are heated and oxidized using a catalyst to form nitric oxide and water. Second, the nitric oxide reacts with residual oxygen under high pressure to form nitrogen dioxide. Finally, the nitrogen dioxide is sent through an absorption tower, where it reacts with water to form aqueous nitric acid (HNO_3). Secondary air is introduced into the tower to re-oxidize NO (nitrogen II oxide) that is formed in the absorption process resulting in emissions of air and NO_X (NO_2 and NO). Tail gases exiting the top of the absorption towers on Nitric Acid Plant #1 and Nitric Acid Plant #3 pass through non-selective catalytic reduction (NSCR) units, referred to as fumeabators, prior to discharge to the atmosphere to control NO_X emissions. These two nitric acid plants utilize extended adsorption design technology to reduce NO_X emissions prior to further treatment in the fumeabators. Part of the NO_X reduction process in the fumeabators involves the introduction of natural gas into the fumeabators. The introduction of natural gas and its associated combustion in the fumeabators on Nitric Acid Plants #1 and #3 results in collateral CO emissions. A review of NSCR technical guidance performed by the applicant during preparation of the application for this permit indicated that CO emissions are present at NSCR control units. To calculate CO emissions, a site specific factor of 0.4 lb/ton 100% acid produced was used. This factor is based on site specific data from previous operations at the plant. The factor will be verified during the initial performance testing.

The applicant submits the following from technical guidance:

"Non-Selective Catalytic Reduction (NSCR) involves partial combustion of a hydrocarbon fuel to first generate reaction heat followed by reaction of the hydrocarbon with NO_X to form elemental nitrogen and carbon dioxide. As in virtually all hydrocarbon combustion processes, some carbon monoxide (CO) is formed by incomplete combustion. High levels of NO_X reduction can be achieved by increasing the fuel concentration relative to the available oxygen. However, the CO concentration increases dramatically. To achieve NO_X reduction levels comparable to SCR, NSCR would result in CO emissions of 350 ppmdv or greater. Consequently, even though NSCR may be able to achieve a similar degree of NO_X reduction to SCR, this collateral pollutant CO emission is an undesirable consequence not experienced in the use of SCR."

Tail gas from Nitric Acid Plant #4 is controlled by a selective catalytic reduction (SCR) control system. Emissions of NO_X and NH_3 are exhausted to the atmosphere from the SCR. This is the new Nitric Acid Plant #4 SCR Unit that was constructed under Permit No. 2008-100-C PSD. According to a technical bulletin titled "*Platinum Catalysts And Systems For Pollution Control,*

by J. B. Hunter, Matthey Bishop, Inc." included with PCC's response to AQD's Notice Of Deficiency issued October 2, 2008, the tail gas discharged from nitric acid plants is the main source of emissions from nitric acid plants. As shown in the emissions summary of this permit memorandum, it is the main source of NO_X emissions from this facility. In addition to NO, NO_2, and O_2, tail gas contains trace amounts of acid mist or vapor. According to the referenced bulletin, the total of NO and NO_2 may range from 0.1 to 0.6 percent by volume.

Nitric Acid Plant #1 has a fumeabator manufactured by Engelhard, which uses a platinum/rhodium/palladium catalyst and a Al_2O_3 substrate catalyst pack. The packs are 30" in diameter and 18" deep. Originally, the fumeabator had one pack in it, but in 1994, it was modified to hold two. The fumeabator now has one pack of Engelhard PR3 catalyst and one pack of Engelhard PR5 catalyst. Methane (natural gas) or purge gas is added to the tail gas upstream from the fumeabator. The gas mixture results in an exothermic reaction on the catalyst heating to temperatures around 980 °F near the inlet to the fumeabator and increasing to 1,400 °F near the outlet going into the gas cooler boiler. The gas mixture exits the boiler to the expander at temperatures near 1,100 °F. The gas passes through the expander, and is then exhausted out of the stack to the atmosphere. Nitric Acid Plant #3 uses a fumeabator manufactured by S & AT Company. It is designed much like the one used in Nitric Acid Plant #1 and also employs a two-stage catalyst. However, the catalyst used in the Nitric Acid Plant #3 fumeabator is a nickel/platinum/aluminum-oxide material.

Emissions of NO_X from Nitric Acid Plants #1 and #3 are based on an emission factor of 1.6 lbs/ton of nitric acid production, 12-month rolling cumulative average and 3.0 lbs/ton, 7-day average, considering the extended absorption process and NSCR control technology and are based on emissions testing conducted prior to the facility shutdown mentioned in Section I of this Memorandum. The accuracy of this factor and thus compliance with the emissions limit will be determined by stack testing. Once startup has occurred, an initial performance test will be performed at each plant pursuant to Specific Condition 10 of this permit. As previously noted, tail gas from Nitric Acid Plant #4 is treated in a SCR unit before discharge to the atmosphere.

Emissions calculations for Plant #4 are based on the SCR manufacturer's guarantee of 2.5 lbs/ton of nitric acid production, 12-month rolling cumulative average and 3.0 lbs/ton, 7-day average. Emissions of NH_3 slip from the SCR result from an incomplete reaction of NH_3 and NO_X. Emissions of NH_3 are based on an emissions factor provided by the SCR manufacturer of 10 ppmv in the exhaust gas. An exhaust rate of 33,000 scfm is assumed by PCC based on the anticipated air injection rate into the absorption tower. Because all calculations are based on continuous operation (8,760 hours annually), actual emissions are the same as PTE.

NO_X Emissions – Nitric Acid Plants #1, #3, #4

NO_X Emissions	**Controlled NO_X Emissions Factor (lb/ton-100% HNO_3) 12-month/7-day**	**Control Efficiency (%)**	**Nitric Acid Produced (ton/hr)**	**Controlled NO_X Emissions**	
				lb/hr 12-month/7-day	**ton/yr**
Plant #1 – EU Point 301	1.6/3.0	90	10.0	16.0/30.0	58.4*
Plant #3 – EU Point 302	1.6/3.0	90	7.5	12.0/22.5	43.8*
Plant #4 – EU Point 303	2.5/3.0	95	16.7	41.8/50.1	159.7*
Totals				**102.5**	**261.9**

* Requested enforceable limit.

The existing permit requires tracking nitric acid throughput to demonstrate compliance with the emissions limits and installation of continuous emissions monitoring systems (CEMS) to meet the requirements of compliance assurance monitoring (CAM). The CEMS units have been installed and the applicant requests to be relieved of the requirement to track throughput and rely on the CEMS to demonstrate compliance with the emissions limits.

CO Emissions – Nitric Acid Plants #1 and #3

CO Emissions	Controlled CO Emissions Factor (lb/ton)	Nitric Acid Produced (ton/hr)	Controlled CO Emissions	
			lb/hr	ton/yr
Plant #1 – EU Point 301	0.4	10.0	4.0	14.6*
Plant #3 – EU Point 302	0.4	7.5	3.0	11.0*
Totals			**7.0**	**25.6**

* Requested enforceable limit.

NH_3 Emissions – Nitric Acid Plant 4

NH_3 Emissions	Controlled NH_3 Emissions Factor (ppm)	Nitric Acid Produced (ton/hr)	Controlled NH_3 Emissions	
			lb/hr	ton/yr
Plant #4 – EU Point 303	10.0	16.7	0.9	3.8

$$\frac{33{,}000 \text{ scf-gas}}{\text{Minute}} \times \frac{10 \text{ ppmv-}NH_3}{10^6 \text{ ppmv-gas}} \times \frac{60 \text{ minutes}}{1 \text{ hr}} \times \frac{\text{lb-mole}}{379.5 \text{ scf}} \times \frac{17.03 \text{ lb-}NH_3}{\text{lb-mole}} = 0.89 \text{ lbs-}NH_3\text{/hr}$$

There are no controls for CO emissions from the fumeabators. The CO emissions are collateral to the NSCR (i.e., fumeabator) operations at Nitric Acid Plants #1 and #3, similar to the NH_3 slip from the SCR operations on Nitric Acid Plant #4 to control NO_X emissions. A BACT analysis for CO emissions is included in Section V of this memorandum.

For demonstration of compliance with the proposed CO and NH_3 permit limits, the applicant proposes initial performance testing at 90% of the short term maximum capacity to verify the emissions factors/rates.

EUG No. 4 – Nitric Acid Preheaters

Nitric Acid Plants #1, #3, and #4 – Preheaters

The preheaters at each of the three nitric acid plants are identical in heat input rating. Emissions generated from the Nitric Acid Plant Preheaters are primarily emissions of combustion. The maximum heat input rating of each heater is 20 MMBtu/hour. Operating 8,760 hours annually equates to a fuel demand of 175,200 MMBtu/year for each one. Calculations of combustion emissions are based on the emission factors listed in the table below and the fuel demand of 175,200 MMBtu/year, which equates to a natural gas fuel input of 171.76 MMscf/year based on a gross calorific value of 1,020 Btu/scf. Actual emissions are the same as potential to emit (PTE).

The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the three preheaters.

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	4.95	21.7
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	2.94	12.9
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.45	2.0
PM_{10}	5.7	lbs/MMscf	AP-42; Table 1.4-2	0.33	1.5
SO_2	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.09	0.4
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.33	1.5

EUG No. 5 – Carbon Dioxide Vents 501a, 501b, 501c, and 502

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). CO_2 produced from any of the three Ammonia Plants (#1, #3, and #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 vents located at Ammonia Plant #4 CO_2 Tower Vent (EU ID 501a), the Carbon Dioxide Plant Vent (EU ID 501b), the Ammonia Plant #1 Regenerator Tower Vent (EU ID 501c), or the Ammonia Plant #3 CO_2 Vent, EU ID 502. Considering these vent locations, the possible venting scenarios are:

Ammonia Plant #1	Can vent to EU IDs 501b or 501c
Ammonia Plant #3	Can vent to EU IDs 501b or 502
Ammonia Plant #4	Can vent to EU IDs 501a, 501b, or 501c

CO limits for Plant #4 were adjusted in permit No. 2008-100-C (M-1) PSD to account for the revision of the Ammonia Plant #4 production rate from 700 TPD to 770 TPD. This permit adds the Ammonia Plant #3 CO_2 Vent, EU ID 502, and the additional CO_2 and CO emissions to account for Ammonia Plants #1 and #3. The method of calculating CO emissions has not changed with bringing the two idled plants on line. Carbon dioxide is produced at a ratio of 1.25 ton/ton of ammonia production. 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. Bringing the two additional ammonia plants on line is expected to increase emissions as follows.

Permit No. 2008-100-C (M-1) PSD

CO/CO_2 Venting Scenarios	Emissions Factor	Carbon Dioxide Vented	Carbon Monoxide Emissions	
	lb/ton	ton/hr	lb/hr	ton/yr
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c	0.1	40.1	4.0	17.6
Total			**4.0**	**17.6**

Permit No. 2008-100-C (M-2) PSD

CO/CO_2 Venting Scenarios	Emissions Factor	Carbon Dioxide Vented	Carbon Monoxide Emissions	
	lb/ton	ton/hr	lb/hr	ton/yr
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c	0.1	40.1	4.0	17.6
Ammonia Plant #3 to EU ID #s: 501b, 502	0.1	5.7	0.6	2.5
Ammonia Plant #1 to EU ID #s: 501b, 501c	0.1	5.7	0.6	2.5
Total			**5.2**	**22.6**

EUG No. 6 - Ammonium Nitrate Plants

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers

Ammonium Nitrate Plant #1 and Plant #2 Neutralizers are identical in throughput capacity. Each plant is rated at an hourly liquid ammonium nitrate production capacity of 23.8 tons per hour and an annual liquid ammonium nitrate production capacity of 208,488 tons per year. 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 as opposed to the previously estimated 20% considered prior to PCC's decision to implement a closed vent process. This results in reduced emissions. Therefore, for this permit, calculations for emissions of ammonia and ammonium nitrate are based on the liquid ammonium nitrate production rate, emission factors used during 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. The reason that the hourly concentrations are different from the annual concentrations is because this is a batch process. 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 the total combined emissions from the two neutralizers.

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Max. (lb/hr)	Annual (ton/yr)
Non-PM Emissions				
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 Emissions				
PM/PM_{10} (hourly)	0.0499*	0.4985 x ton/ton x 0.5% x 1% x 2,000 lbs/ton	1.2	NA
PM/PM_{10} (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 applicant states that permitted emissions are for the neutralizer 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); these tanks are proposed 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, or PM_{10}. 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 PM emissions from condensation would be double counting.

EUG No. 7 - Granulator Scrubbers

Granulator Scrubbers #1, #2, and #3

Granulator Scrubbers #1, #2, and #3 are identical in throughput capacity. Each scrubber is rated to handle emissions from the production of 16.7 tons per hour (146,292 tons per year) of dry ammonium nitrate. Emissions of ammonia and particulate matter are based on AP-42 emission factors and annual operating hours of 8,760. Actual emissions are the same as PTE. The following table summarizes the methodology used to calculate emissions and the results of the calculations for the total combined emissions for the three scrubbers.

Pollutant	Emission Factor	Source of Emission factor	Emissions	
	lbs/ton NH_4NO_3		Maximum (lb/hr)	Annual (ton/yr)
PM	0.04	AP-42, Table 8.3-2, pan granulators	2.1	8.8
PM_{10}	0.04	AP-42, Table 8.3-2, pan granulators	2.1	8.8
NH_3	0.14	AP-42, Table 8.3-2, pan granulators	7.1	30.8

EUG No. 8 - Boilers

Boiler #1 and Boiler #2

The application for this permit revises the rating for Boiler #1 from 80.0 MMBtu/hr in the existing permit down to 53 MMBtu/hr. The heat input rating of Boiler #2 remains at 80.0 MMBtu/hour. Calculations of combustion emissions are based on the emission factors listed in the table below, fuel having a gross calorific value of 1,020 Btu/scf, and annual operating hours of 8,760. Actual emissions are the same as potential to emit (PTE). The following tables summarize the methodology used to calculate emissions and the results of the calculations for each boiler.

Boiler #1, EU ID 801

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	4.4	19.2
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	2.6	11.4
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.4	1.8
PM_{10}	5.7	lbs/MMscf	AP-42; Table 1.4-2	0.3	1.3
SO_2 *	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.1	0.4
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.3	1.3
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.01	0.02

Boiler #2, EU ID 802

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
CO	84.0	lbs/MMscf	AP-42; Table 1.4-1	6.6	28.9
NO_X	50.0	lbs/MMscf	AP-42; Table 1.4-1	4.0	17.2
PM	7.6	lbs/MMscf	AP-42; Table 1.4-2	0.6	2.7
PM_{10}	5.7	lbs/MMscf	AP-42; Table 1.4-2	0.5	2.0
SO_2 *	1.5	lbs/MMscf	AP-42; Table 1.4-2	0.2	0.6
VOC	5.5	lbs/MMscf	AP-42; Table 1.4-2	0.5	1.9
Formaldehyde	0.075	lbs/MMscf	AP-42; Table 1.4-3	0.01	0.03

* See discussion above under Primary Reformer emissions for derivation of emission factor.

EUG No. 9 - Cooling Towers

Cooling Tower #1 has a circulation capacity of 1,470,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only pollutant emitted is particulate matter. This permit provides for an increase in the circulation rate to 2,592,000 gallons per hour and the associated increase in particulate matter emissions necessary to support cooling cell upgrades to support operation of Ammonia Plants #1 and #3. For Permit Nos. 2008-100-C PSD and 2008-100-C (M-1) PSD, calculations of emissions are based on information provided by the manufacturer and the AP-42, Chapter - 13.4 method of using the product of total liquid drift (TLD) and total dissolved solids (TDS) to obtain a conservatively high estimate of PM_{10} emissions. The manufacturer's TLD of 0.008%, a site-specific total dissolved solids (TDS) of 1,200 ppmw, and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. Increases in emissions are presented below using both factors.

Actual emissions are the same as potential to emit (PTE), and all PM is assumed to be PM_{10} or below. The following table summarizes the methodology used to calculate emissions and the results of the calculations for Cooling Tower #1.

Cooling Tower #1

Pollutant	Emission Factor			Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
PM_{10} Before	0.001	lbs/10^3 gal		1.2	5.2
PM_{10} After	0.001	lbs/10^3 gal		2.1	9.1
Increase					3.9

Cooling Tower #2 has a circulation capacity of 2,400,000 gallons per hour and uses an induced draft system. It uses no chromium additives, and the only emission is particulate matter. Calculations of emissions are based on information provided by the manufacturer. A manufacturer's TLD of 0.008%, a TDS of 1,200 ppmw, and annual operating hours of 8,760 were used to calculate the emissions indicated in the table below. Cooling Tower #2 has been upgraded to meet the proposed drift elimination values. Actual emissions are the same as potential to emit (PTE). The following table summarizes the methodology used to calculate emissions and the results of the calculations for Cooling Tower #2.

Cooling Tower #2

Pollutant	Emission Factor		Source of Emission factor	Emissions	
	Value	Units		Maximum (lb/hr)	Annual (ton/yr)
PM	0.001	lbs/10^3 gal	Manufacturer's Data	2.0	8.5
PM_{10}	0.001	lbs/10^3 gal	Manufacturer's Data	2.0	8.5

EUG No. 10 - Fugitives – Valves/Seals/Flanges/Connections

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)	(ton/yr)
Valves	Gas	325	0.0132	4.3	18.8
	Light Liquid	63	0.0089	0.6	2.5
Pump Seals/ Compressor Seals	Light Liquid	2	0.0439	0.1	0.4
	Gas	10	0.5027	5.1	22.1
Pressure Relief Valves	Gas	62	0.2293	14.3	62.3
Connectors	All	225	0.0041	1.0	4.1
Open-ended Lines	All	0	0.0038	N/A	N/A
Sampling Connections	All	0	0.0331	N/A	N/A
Total				**20.4**	**110.2**

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)	(ton/yr)
Valves	Gas	0	0.002112	N/A	N/A
	Light Liquid	684	0.001424	1.0	4.3
Pump Seals/ Compressor Seals	Light Liquid	24	0.007024	0.2	0.8
	Gas	0	0.080432	N/A	N/A
Pressure Relief Valves	Gas	0	0.036688	N/A	N/A
Connectors	All	656	0.000656	0.5	1.9
Open-ended Lines	All	13	0.000608	0.1	0.1
Sampling Connections	All	25	0.005296	0.2	0.6
Total				**1.9**	**7.6**

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

Component Type	Type of Service	Count	Emissions Factors (lb/hr-component)	Potential Emissions	
				(lb/hr)	(ton/hr)
Valves	Gas	60	0.002112	0.2	0.6
	Light Liquid	0	0.001424	N/A	N/A
Pump Seals/ Compressor Seals	Light Liquid	0	0.007024	N/A	N/A
	Gas	4	0.080432	0.4	1.4
Pressure Relief Valves	Gas	9	0.036688	0.4	1.5
Connectors	All	59	0.000656	0.1	0.2
Open-ended Lines	All	0	0.000608	N/A	N/A
Sampling Connections	All	0	0.005296	N/A	N/A
Total				**1.1**	**3.7**

Emissions Summary and NSR

Project Aggregation Review

PCC has submitted three different permit actions related to the re-starting of production equipment at the existing site. Following is ODEQ's review of project aggregation.

Action	Date	Comment
PSD Construction Permit, 2008-100-C PSD	3/27/2008	Original construction permit to re-start portions of facility
2008-100-C PSD	2/23/2009	Permit Issued
PSD Construction Permit modification request, 2008-100-C (M-1) PSD	12/20/2010	Request to alter some equipment/permit conditions of the original PSD permit
PSD Construction Permit, 2008-100-C (M-2) PSD	4/6/2011	PSD Construction permit request to re-start additional equipment

ODEQ issued Permit No. 2008-100-C PSD to restart an out-of-service fertilizer manufacturing plant on February 23, 2009. All emissions units to be placed into service were treated as new sources and underwent a complete NSR/PSD review including modeling and BACT analysis. In 2010, PCC replaced burners in the Primary Reformer of Ammonia Plant #4 resulting in an increase in NO_X. In late 2010, PCC self-reported a significant increase in NO_X that exceeded the permit/BACT limits and subsequently submitted an application for a permit modification to address the increase in Permit No. 2008-100-C (M-1). PCC also included various "clean-up" items related to the start-up. Since these items were essentially changes to the original project ODEQ considered this permit action a re-opening of the existing PSD permit and required PCC to re-evaluate all combined emissions for PSD purposes. Basically, the permit requests associated with Permit No. 2008-100-C (M-1) PSD were considered part of the original project to re-start the facility.

PCC submitted a PSD Construction Permit application (2008-100-C (M-2)) to re-start additional equipment on April 6, 2011. A review was completed to assure this proposal should not be aggregated with the original project. The major review items include project timing, company operational statements or intent, and funding. Information related to these items was requested from PCC. PCC provided statements on Security and Exchange Commission (SEC) quarterly and annual filings and conference call documents which state the intent to start only the equipment associated with the original permit. Also provided were Authorization of Expenditures (AFE's) which indicate approval dates of March, 2011 for the additional equipment associated with this permit action, 2008-100-C (M-2) PSD. Concerning project timing, the original permit application and this permit application were submitted approximately 3 years apart.

Based on the following information, ODEQ has determined that this project can be considered separate from the original PSD construction project:

1. Statements concerning SEC filings
2. AFE approvals
3. Project Timing

The following tables illustrate a condensed summary of the calculated emissions added by this permit and the facility wide emissions. Since Oklahoma rules require reporting the back half of the sampling train when testing for PM_{10}, the value for PM is used as PM_{10} in setting the permit limits.

Emissions Increase

EUG/EU	**NO_X (TPY)**	**CO (TPY)**	**PM_{10} (TPY)**	**$PM_{2.5}$ (TPY)**	**VOC (TPY)**	**SO_2 (TPY)**	**NH_3 (TPY)**
EUG No. 1 – Ammonia Plants							
Ammonia Plant #1 to EU IDs 501b and/or 501c*		2.5					
Ammonia Plant #3 to EU IDs 501b and/or 502*		2.5					
Ammonia Plant #1 – 60 MMBTUH Primary Reformer	22.4	21.7	1.5	0.9	1.5	0.6	

EUG/EU	NO_X (TPY)	CO (TPY)	PM_{10} (TPY)	$PM_{2.5}$ (TPY)	VOC (TPY)	SO_2 (TPY)	NH_3 (TPY)
Ammonia Plant #1 – 28 MMBTUH Waste Heat Boiler Auxiliary Heater	6.2	10.3	0.7	0.5	0.7	0.2	
Ammonia Plant #3 – 64 MMBTUH Primary Reformer	23.9	23.1	1.6	0.9	1.5	0.6	
Ammonia Plant #3 – 28 MMBTUH Waste Heat Boiler Auxiliary Heater	6.2	10.3	0.7	0.5	0.7	0.2	
Ammonia Plants #1 and #3 - Condensate Steam Flash Drum				0	19.9		11.7
EUG No. 9 - Cooling Towers							
Cooling Tower No. 1 **			3.9	3.9			
Totals	58.7	70.4	8.4	6.7	24.3	1.6	11.7

* These are the CO emissions associated with venting CO_2. Vent 501b is an existing vent that is in use for Ammonia Plant #4.

** This is an existing emissions unit that had an emissions increase as shown. Using a worst case increase as in a new source, an actual-to-potential comparison would not exceed the PTE which is 9.1 TPY. The additional 5.2 TPY of PM_{10} and $PM_{2.5}$ would not result in an exceedance of the significance level.

The above table illustrates that the new sources added are significant for NO_X. Since the Ammonia Plants #1 and #3, the associated reformers, heaters, condensate steam flash drum, and CO_2 vents are all new sources, the baseline for netting is zero.

Relative to emissions increases of criteria pollutants associated with the reactivation of Ammonia Plants #1 and #3 and Urea Plant #1, the applicant has evaluated the possibility for increases in emissions from associated emissions units and offers the following explanation, paraphrased herein.

Urea Plant #1 is in itself a closed unit. The use of ammonia produced at Ammonia Plants #1 and #3 is expected to be used interchangeably with that from existing Ammonia Plant #4. Ammonia from any of the three ammonia plants can be sold directly to customers, it can be used as a feedstock in either the existing Urea Plant #2 or the proposed Urea Plant #1, it can be used in the three existing nitric acid production processes, and it can be used in the two existing liquid ammonium nitrate (AN) processes. AN can be sold directly to customers and it can be sent to the pan granulators or prill tower to be processed into solid, or granulated, AN fertilizer. Finally, it follows that any increases in throughput/capacity in nitric acid, which is another ingredient in ammonia nitrate, as a result of increased availability of ammonia could also be assumed to participate in an increase in ammonia nitrate.

The applicant's primary position on the matter is that there is not a 24-month period of operation between the initial permit issuance and the proposed modification, therefore a potential-to-potential comparison is allowed versus an actual-to-potential comparison relative to any possible increase in criteria pollutant emissions. Then, because PCC did not request any change in the permitted, or potential, emission rates for the existing sources, the net change between the existing limits and the new limits is zero. Thus, even if associated emissions are considered, there is no PSD review trigger. In justifying this position, the applicant has included the startup dates of the existing emissions units as well as reference to applicable regulations. This information is included in the applicant's e-mail submittal dated February 28, 2012. The idled source permit application was submitted on April 6, 2011.

Additionally, the applicant submits that because Ammonia Plant #4 is capable on its own of supplying enough ammonia to operate any of the existing emissions units (the nitric acid plants, Urea Plant #2, and Ammonium Nitrate Plants #1 and #2) that could be considered to have emissions associated with the new ammonia plants, then the reactivation of Ammonia Plants #1 and #3 does not increase emissions from the existing emissions units. Ammonia Plant #4, when operating at 700 TPD rate, is capable of supplying ammonia feedstock to the existing sources listed above when they are operating at their maximum design capacities. The combined ammonia feedstock required to supply the existing sources is approximately 690 TPD. The maximum design capacity of Ammonia Plant #4 was increased to 770 TPD in the (M-1) permit. This was accomplished without a physical change or a significant increase in emissions.

Facility-Wide Summary EUG/EU	NO_X (TPY)	CO (TPY)	PM_{10} (TPY)	VOC (TPY)	SO_2 (TPY)	NH_3 (TPY)
EUG No. 1 – Ammonia Plants						
Ammonia Plant #4 – 225 MMBTUH Primary Reformer*	118.3*	81.2	5.6	5.4	2.9	
Ammonia Plant #4 Condensate Steam Flash Drum				45.6		23.7
Ammonia Plant #1 – 60 MMBTUH Primary Reformer	22.4	21.7	1.5	1.5	0.6	
Ammonia Plant #1 – 28 MMBTUH Waste Heat Boiler Auxiliary Heater	6.2	10.3	0.7	0.7	0.2	
Ammonia Plant #3 – 64 MMBTUH Primary Reformer	23.9	23.1	1.6	1.5	0.6	
Ammonia Plant #3 – 28 MMBTUH Waste Heat Boiler Auxiliary Heater	6.2	10.3	0.7	0.7	0.2	
Ammonia Plants #1 and #3 - Condensate Steam Flash Drum				19.9		11.7
EUG No. 3 – Nitric Acid Plants						
Plant #1 – EU Point 301	58.4	14.6				
Plant #3 – EU Point 302	43.8	11.0				
Plant #4 – EU Point 303	159.7					3.8
EUG No. 4 – Nitric Acid Heaters						
Plant #1, #3, and #4 – Preheaters	12.9	21.7	1.5	1.5	0.4	
EUG No. 5 – Carbon Dioxide Vents						
Ammonia Plant #4 to EU ID #s: 501a, 501b, 501c		17.6				
Ammonia Plant #3 to EU ID #s: 501b, 502		2.5				
Ammonia Plant #1 to EU ID #s: 501b, 501c		2.5				
EUG No. 6 - Ammonium Nitrate Plants						
Plant #1 and Plant #2			0.6			0.6
EUG No. 7 - Granulator Scrubbers						
Granulator Scrubber #1, #2, and #3			8.8			30.8
EUG No. 8 - Boilers						
Boiler #1	11.4	19.2	1.3	1.3	0.4	
Boiler #2	17.2	28.9	2.0	1.9	0.6	
EUG No. 9 - Cooling Towers						
Cooling Tower No. 1			9.1			

Facility-Wide Summary EUG/EU	NO_X (TPY)	CO (TPY)	PM_{10} (TPY)	VOC (TPY)	SO_2 (TPY)	NH_3 (TPY)
Cooling Tower No. 2			8.5			
EUG No. 10 – Fugitives						121.5
Totals	**480.4**	**264.7**	**41.8**	**80.0**	**6.0**	**192.1**

***** Limits for NO_X are effective through 1-year trial BACT.

Assessment of PM2.5 Emissions

The applicant has provided an assessment of $PM_{2.5}$ emissions using a ratio method, with values obtained from Appendix B-2 (9/90 reformatted 9/95), Generalized Particle Size Distribution, (AP 42, *Compilation of Air Pollutant Emission Factors*), pages B.2-12 and B.2-19. For processes where the applicant was not able to find a suitable particle size ratio, a worst case scenario of 100% of PM as $PM_{2.5}$ is assumed.

EID #	Source	PM (lb/hr)	PM (TPY)	PM_{10} (lb/hr)	PM_{10} (TPY)	$PM_{2.5}$ Ratio (%)	$PM_{2.5}$ (lb/hr)	$PM_{2.5}$ (TPY)
101	Ammonia Plant #4	1.7	7.4	1.3	5.6	45.0%	0.8	3.3
103	Ammonia Plant #1	0.8	3.0	0.6	2.2	45.0%	0.4	1.4
105	Ammonia Plant #3	0.8	3.1	0.6	2.3	45.0%	0.4	1.4
401	Nitric Acid Plant Preheater #1	0.2	0.7	0.1	0.5	45.0%	0.1	0.3
402	Nitric Acid Plant Preheater #3	0.2	0.7	0.1	0.5	45.0%	0.1	0.3
403	Nitric Acid Plant Preheater #4	0.2	0.7	0.1	0.5	45.0%	0.1	0.3
601/602	Ammonium Nitrate Plants #1 and #2	1.2	0.6	1.2	0.6	78.0%	0.9	0.5
701	Granulator Scrubber #1	0.7	2.9	0.7	2.9	100.0%	0.7	2.9
702	Granulator Scrubber #2	0.7	2.9	0.7	2.9	100.0%	0.7	2.9
703	Granulator Scrubber #3	0.7	2.9	0.7	2.9	100.0%	0.7	2.9
801	Boiler #1	0.4	1.8	0.3	1.3	45.0%	0.2	0.8
802	Boiler #2	0.6	2.6	0.5	2.0	45.0%	0.3	1.2
901	Cooling Tower #1	2.1	9.1	2.1	9.1	100.0%	2.1	9.1
902	Cooling Tower #2	2	8.5	2	8.5	100.0%	2.0	8.5
Totals							9.5	35.8

Greenhouse Gases (GHG)

Following the guidelines of EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases", EPA-457/B-11-001 (March 2011), the equipment to be placed into service under this permit was evaluated following the procedure of Appendix B, GHG Applicability Flow Chart for New Sources having the permit issued on or after July 1, 2011.

1) Permit is for a new source issued after July 1, 2011.

2) Determine the source's PTE in tons per year for each of the six GHG pollutants, taking into account enforceable limits.

EUG/EU	**CO_2 (TPY)**	**N_2O (TPY)**	**CH_4 (TPY)**	**HFC (TPY)**	**PFC (TPY)**	**SF_6 (TPY)**
Ammonia Plant #1 – Primary Reformer and Waste Heat Boiler Auxiliary Heater	42,128.9	0.1	0.8	None Emitted	None Emitted	None Emitted
Ammonia Plant #3 – Primary Reformer and Waste Heat Boiler Auxiliary Heater	42,128.9	0.1	0.8	None Emitted	None Emitted	None Emitted
Ammonia Plant #3 to EU ID #s: 501b, 502	28,039.6			None Emitted	None Emitted	None Emitted
Ammonia Plant #1 to EU ID #s: 501b, 501c	28,039.6			None Emitted	None Emitted	None Emitted
Combined Total	**140,337.0**	**0.2**	**1.6**	None Emitted	None Emitted	None Emitted

3) Calculate the GHG CO_{2e} equivalent.

EUG/EU	**CO_2 (TPY)**	**N_2O CO_2e (TPY)**	**CH_4 CO_2e (TPY)**	**HFC CO_2e (TPY)**	**PFC CO_2e (TPY)**	**SF_6 CO_2e (TPY)**
Ammonia Plant #1 – Primary Reformer and Waste Heat Boiler Auxiliary Heater	42,128.9	24.7	16.7	None Emitted	None Emitted	None Emitted
Ammonia Plant #3 – Primary Reformer and Waste Heat Boiler Auxiliary Heater	42,128.9	24.7	16.7	None Emitted	None Emitted	None Emitted
Ammonia Plant #3 to EU ID #s: 501b, 502	28,039.6			None Emitted	None Emitted	None Emitted
Ammonia Plant #1 to EU ID #s: 501b, 501c	28,039.6			None Emitted	None Emitted	None Emitted
Subtotals	**140,337.0**	**49.4**	**33.4**	None Emitted	None Emitted	None Emitted
Combined Total CO_2e	**140,419.8**					

4) Total GHG emissions on a CO_{2e} basis are greater than 100,000 TPY, therefore, proceed to next step.

5) From step 2), total GHG emissions on a mass basis is 140,378.8 TPY. Note that this number is 35,000 TPY less than the uncontrolled PTE as illustrated later in this memorandum in the evaluation of BACT.

6) GHG PTE on a mass basis is more than 100 TPY.

7) This is a new source subject to PSD for a regulated NSR pollutant other than GHG,

8) GHG PTE is greater than 75,000 TPY; therefore PSD analysis is required.

SECTION V. PREVENTION OF SIGNIFICANT DETERIORATION ANALYSIS

This PSD (Prevention of Significant Deterioration) analysis addresses the startup of idled sources at PCC. The sources that are included are directly or indirectly associated with placing the Ammonia Plants #1 and #3 into service. Regulated pollutants, which now include greenhouse gases (GHG), are carbon dioxide (containing carbon monoxide) from process vents, emissions of VOC/methanol/ammonia from the additional condensate steam flash drum serving the two new ammonia plants, and products of combustion from the primary reformers and waste heat boilers. The following table summarizes the emission changes resulting from this modification.

Pollutant	Proposed Rate (TPY)	PSD Significance Level (TPY)
PM	6.1	25
PM_{10}	4.5	15
$PM_{2.5}$	6.7	10
SO_2	1.5	40
NO_X	58.6	40
CO	65.4	100
VOC	24.3	40
CO_2	140,337.0	75,000
CO_2e	140,419.8	75,000

The tabular summary above indicates that the proposed addition of Ammonia Plants #1 and #3 and associated equipment results in emissions that are PSD significant for NO_X. As noted earlier, the project also requires PSD analysis for GHG. An ambient air quality analysis and BACT analysis are required for the non-GHG pollutants. Greenhouse gases are addressed in Part C of this section.

A. NO_X - Best Available Control Technology Analysis

Pursuant to the Prevention of Significant Deterioration (PSD) regulations, a Best Available Control Technology (BACT) analysis is a required part of a PSD permit application for each new emission unit and for each affected emission unit that is undergoing a physical change or change in the method of operation that results in a significant increase in emissions. The BACT analysis is a case-by-case analysis that takes into account technical feasibility, energy and environmental impacts, and cost. An integral part of the BACT analysis is a search of the US EPA's RACT/BACT/LAER Clearinghouse (RBLC).

The BACT analysis follows the "top-down" approach. Following are the five basic steps of a "top-down" BACT analysis:

Step 1. Identify all control technologies.
Step 2: Eliminate technically infeasible options.
Step 3: Rank remaining control technologies by control effectiveness.
Step 4: Evaluate most effective controls and document results.
Step 5: Select BACT and document the selection as BACT.

Ammonia Plants #1 and #3 Primary Reformers – NO_X Emissions

Background

After startup of the facility during 2010 under Permit No. 2008-100-C PSD, and after the burners in Ammonia Plant #4 Primary Reformer were replaced, it was discovered that the manufacturer's guarantee on NO_X emissions of 0.059 lbs-NO_X/MMBtu could not be met. PCC believes that burner manufacturer's guarantees cannot be met in a primary reformer because burner guarantees are more representative of performance in a boiler, and there are fundamental differences in the two combustion processes and resulting emissions. PCC self disclosed the emissions exceedance and submitted an application for Permit No. 2008-100-C (M-1) PSD, requesting approval to conduct a post-operation trial BACT analysis over a period of one year that would be used to determine a final permitted emissions rate. The justification for this request with supportive documentation is contained in the applicant's submittals titled "Operating Permit Application – Supplemental Regulatory Determination, Pryor Chemical Company, Mid-America Industrial park, Pryor, Mayes County, Operating Permit No. 2008-100-TV (PSD)" and "Pryor Chemical Company Part 70 Construction permit Consolidation Application". PCC proposed a one-year trial BACT limit to be effective while conducting various engineering studies in conjunction with emissions testing to determine an economically feasible means of minimizing NO_X emissions.

Requested BACT Analysis Approach

As indicated in previous discussion above, the applicant believes that a BACT analysis for these primary reformers based on boiler combustion leads to a BACT limit that is not representative of primary reformers at ammonia plants and is not requesting it again. Although the applicant did update the previous analysis to include the additional boilers that have been input in the Clearinghouse database, it is not repeated here. The applicant has stated that they took that approach first for the Ammonia Plant #4 Primary Reformer because they were unable to find any BACT limits specifically for ammonia plant primary reformers in the RACT/BACT/LAER Clearinghouse, and that the EPA's existing guidance for PSD analysis for ammonia plants suggested that primary reformer operations would emit similarly to other combustion type sources; i.e., boilers.

DEQ believes, and EPA indicated in their comments on draft Permit 2008-100-C (M-1) PSD, that PCC should evaluate controls used on primary reformers from other industries. EPA had the following comments concerning draft Permit No. 2008-100-C (M-1) PSD:

s. *Producing Hydrogen by the catalytic steam reforming of methane is the "Steam Methane Reformer" [SMR] process that is used in other industries such as refineries. SMR produces Hydrogen and Carbon Monoxide out of Natural Gas which contains a high percentage of Methane.*
   - i) *Clarification is necessary as to why the technologies used in other SMR cannot be used by PCC.*
   - ii) *Clarification is necessary as to why PCC is requesting 0.15NO_X lbs/MMBtu when other SMR run at much lower values.*
   - iii) *Similar clarification is necessary with regard to the higher values requested for CO and PM.*

As part of Permit No. 2008-100-C (M-1) PSD, DEQ is requiring that PCC analyze add-on controls used in other industries to reduce NO_X emissions, for example but not limited to, Selective Catalytic Reduction, Non-Selective Catalytic Reduction as well as methods of lowering exhaust temperatures to reduce thermal NO_X emissions. Because of the "technically feasible" aspect of add-on controls that must be addressed in a BACT analysis, the applicant needs a trial BACT period like the one provided for Ammonia Plant #4 by Permit No. 2008-100-C (M-1) PSD to research the operating parameters of the primary reformers at their ammonia plants, so that they can assess the "availability" and "applicability" to the particular source type under review; design, installation, and operating costs; technical feasibility of operation; efficiency, etc. Therefore, the approach taken by DEQ is to expand the scope of the trial BACT analysis from Permit No. 2008-100-C (M-1) PSD into this permit to include Ammonia Plants #1 and #3. The trial BACT limit for the Ammonia Plant #4 Primary reformer that was published during the public noticing of that draft permit was 0.15 lbs-NO_X/MMBtu. It is planned to reduce that limit to 0.12 lbs-NO_X/MMBtu for the final version of that permit. These are the values used to demonstrate compliance with the NAAQS modeling for this permit. The proposed trial BACT limit for the Ammonia Plants #1 and #3 Primary reformers is 0.085 lbs-NO_X/MMBtu. Concerning CO and PM, a PSD analysis was not required for those pollutants, because there was not a significant increase.

B. Modeling Summary

Overview of the Project

The following discussion of air dispersion modeling and BACT analysis was provided by the applicant, PCC and is offered substantially verbatim with minor revisions by DEQ.

On February 19, 2009, the Pryor Chemical Company (PCC) was issued a Prevention of Significant Deterioration (PSD) construction permit (Permit No. 2008-100-C (PSD) by the Oklahoma Department of Environmental Quality (ODEQ) to place into operation a synthetic fertilizer manufacturing plant located in the Mid-America Industrial Park at Pryor, Oklahoma. Facility operations authorized by the construction permit include an ammonia plant, three nitric acid plants, two ammonium nitrate plants, two boilers, two cooling towers, and various process-related ancillary equipment.

Since the time of construction and subsequent operation of the previously approved sources, PCC has determined that economic conditions in the synthetic fertilizer industry are at a level that it is advantageous to obtain a construction permit for additional sources. These sources include the Ammonia Plant #1 (including a primary reformer), Ammonia Plant #3 (also with a primary reformer), and Urea Plant #1. Because the NO_X emissions from these sources exceeds 40 TPY, a PSD modeling analysis must be conducted. The following are the results of the analysis.

<u>Ammonia Plants #1 and #3 Primary Reformers – NO_X Emissions</u>

Due to challenges that the new 1-hour National Ambient Air Quality Standard (NAAQS) for NO_2 presents for facilities with significant levels of NO_X emissions, it has become necessary to

utilize the tiered screening methods in conducting ambient air impact analyses that the EPA allows for in their Guideline on Air Quality Models. The tiered modeling methods consider the amount of NO_2 in the overall NO_X release and/or the conversion of NO to NO_2 in the ambient air. More specifically, the Tier 1 methodology assumes a total conversion of NO to NO_2, while the Tier 2 methodology assumes that only 80% of the NO released is converted to NO_2, which is the annual national default value. The Tier 3 methodology allows for a detailed case-by-case analysis of the sources at the facility, which may include the site specific in-stack NO_2/NO_X ratios at each source. The use of a Tier 3 methodology, because it is case-by-case, requires approval by the EPA before it can be used in an ambient air impact analysis. Prior to the promulgation of the 1-hour NAAQS for NO_2, the use of the Tier 2 method typically provided an adequate adjustment, or reduction in NO_2 emissions, such that modeling results were below the annual NAAQS for NO_2. However, with the introduction of the 1-hour NO_2 standard, it has become necessary to consider a Tier 3 method as an option in demonstrating compliance with the NAAQS. PCC has examined the NO_2/NO_X ratios at the sources that are currently operating and has utilized the Plume Volume Molar Ratio Method (PVMRM) for this modeling analysis.

The following table provides the PCC sources that were included in the NO_2 modeling analyses, as well as the requested NO_2/NO_X ratios that were used (i.e., as obtained from PCC personnel).

Emission Source	**Requested NO_X Emission Rate (lb/hr)**	**In-Stack NO_2/NO_X Ratio**
Ammonia Plant #1	6.5*	0.15
Ammonia Plant #3	6.8*	0.15
Ammonia Plant #4	27.0*	0.15
Nitric Acid Plant #1	30.0**	0.20
Nitric Acid Plant #3	22.5**	0.20
Nitric Acid Plant #4	50.1**	0.20
Nitric Acid #1 Preheater	0.98	0.20
Nitric Acid #3 Preheater	0.98	0.20
Nitric Acid #4 Preheater	0.98	0.20
NA #4 SCR Preheater	1.47	0.20
Boiler #1	2.60	0.20
Boiler #2	3.92	0.20

* Includes auxiliary heaters.

**Hourly emission rate based on proposed maximum ton/hr acid production rate and 3.0 lb/hr, 7-day average limit in Construction Permit No. 2008-100-C.

Models Utilized

For the NO_X modeling analysis at PCC, AERMOD was used to estimate the maximum ground level concentrations. Specifically, Lakes AERMOD View (i.e., Version 7.3.0) was used in

modeling all pollutants at all averaging times. Because this is a revised analysis, two model scenarios have been included. Both analyses utilized the emission rates outlined in the table above. The first analysis was compared to the annual NO_X significance level to determine if additional NAAQS or PSD Increment modeling is required. The second modeling analysis was evaluated against the new 1-hour NAAQS standard for NO_2. For each of these modeling analyses, an updated five year meteorological data set was used, which includes data from 2006 through 2010 for Tulsa, Oklahoma.

Air Quality Monitoring

The applicant did not anticipate that any on-site air quality monitoring will be required prior to facility operation. Standardized rural background data was used for the NAAQS analysis as provided by the ODEQ.

Receptors

For the investigation, the significance analysis consisted of receptors placed along the property boundary along with a fine grid with receptors spaced at 100 meters extending out approximately two kilometers, a spacing of 250 meters out to 4 kilometers, a spacing of 500 meters out to 6 kilometers and a spacing of 1 kilometer out to 15 kilometers. The NAAQS and PSD Increment modeling analysis utilizes a discrete property boundary grid and a similar grid described above. The magnitude of the grid was determined by the area of impact radius that was determined in the significance analysis.

Building Wake Effects

Each of the sources included in the model were evaluated in terms of their relation to nearby structures. Predominant structures at the facility were included as buildings in the model and building downwash was integrated into the analysis. The U.S. EPA Building Point Input Program (BPIP) was used to determine the direction specific downwash dimensions.

Area Impact Visibility Analysis

As instructed in the ODEQ's Air Dispersion Modeling Guidelines, PCC utilized VISCREEN to address the visibility impacts of the sources at the facility. However, there are no Class II "sensitive areas" located within 40 kilometers of PCC that would otherwise require consideration of the sensitive area boundaries.

Summary of NO_X Significance Modeling Results

The net emissions increase of NO_X at PCC was modeled at an annual and 1-hour averaging periods. The only sources that were included in this model were Ammonia Plants #1 and #3. The following results were obtained from the significance modeling for NO_X.

NO_X Significance Modeling Results

Year	Averaging Period	Maximum Concentration (µg/m^3)	Area of Impact Radius (km)	Modeling Significance Level (µg/m^3)
2006	Annual	6.3	2.9	1
2007		5.9	2.8	
2008		6.7	2.6	
2009		6.5	1.9	
2010		5.7	3.2	

The results indicate that the maximum annual average ground level NO_X concentrations exceed the modeling significance levels. As a result, a full modeling analysis is required for NO_X.

NO_X NAAQS Modeling Summary

Due to the significance analysis results, the NO_X emissions at PCC, as well as the surrounding facilities, were modeled at an annual and 1-hour averaging periods. The following results were obtained from the NAAQS modeling for NO_X.

NO_X NAAQS Modeling Results

Averaging Period	Maximum Average Concentration (µg/m^3)	Background Concentration (µg/m^3)	NAAQS (µg/m^3)
Annual	15.3	8	100

The results indicate that the maximum annual average ground level NO_X concentrations are below the NAAQS for NO_X emissions.

In addition to the analysis comparing to the annual standard, modeling was conducted to obtain the annual 98th percentile one hour daily maximum concentrations, which were then compared to the NAAQS 1-hour standard of 188.7 µg/m^3. The result of the model was a maximum ground level concentration of 156.5 µg/m^3, which after including a background concentration of 20.8 µg/m^3 results in a total concentration of 177.3 µg/m^3, which is below the 1-hour NAAQS.

NO_X PSD Increment Modeling Summary

Due to the significance analysis results, the NO_X emissions at PCC, as well as those at the surrounding facilities, were modeled at an annual averaging period. Because the NAAQS modeling results are below the 25 µg/m^3 Increment Limit for each of the five years, it was not necessary to conduct an increment analysis to reduce the model inputs and thus reduce the modeling results. The following table contains the results of the NAAQS analysis in comparison to the PSD Increment levels.

NO_X PSD Increment Modeling Results

Averaging Period	Maximum Average Concentration (µg/m^3)	PSD Increment (µg/m^3)
Annual	15.3	25

The results indicate that the proposed permit change at PCC does not result in an exceedance in the consumption of the PSD Increment.

C. GHG - Best Available Control Technology Analysis

Step 1: Identify All Control Technologies

Greenhouse gas (GHG) emissions, expressed in terms of carbon dioxide equivalent emissions (CO_2e), from ammonia plants are generated in two ways, from the catalytic steam reforming of natural gas and its conversion to synthesis gas, which generates carbon dioxide, or CO_2, and the combustion process taking place in the primary reformers and the auxiliary heaters in the waste heat boilers, which generate CO_2, methane (CH_4), and nitrous oxide (N_2O). A search of the RBLC and other resources included in the EPA's "PSD and Title V Permitting Guidance for Greenhouse Gases" was conducted to identify technologies for the reduction and/or control of GHG emissions from ammonia plants. There were no entries in the RBLC for GHG emissions from ammonia plants. In the case of the ammonia plants at PCC, other available resources and the EPA's GHG guidance (i.e., BACT guidance for combustion sources and processes having high purity CO_2 exit streams) indicated that potential emission reduction/control options would include:

1) Improvements to combustion efficiency, including, as applicable to primary reformer burners:

   - Burner tune-ups
   - Oxygen trim;

2) The capture and containment of the CO_2 emissions; and,
3) The potential use of biomass fuels to reduce carbon output.

In accordance with the EPA's GHG BACT guidance, any technologies that are identified for the control of GHG pollutants need not consider options that would redefine the nature of the source or project under review.

Step 2: Eliminate Technically Infeasible Options

It is currently not possible to eliminate any of the control technologies based on their usage at other facilities, in that there were no entries in the RBLC for control of GHG emissions from ammonia plants. Based on the control technologies listed in Step 1, the use of biomass fuel can be eliminated as technically infeasible. The primary reformer at each of the ammonia plants does not operate like a typical fossil fuel-fired boiler. Each reformer has numerous burners, and each burner can have a direct effect on the combustion characteristics of the burner next to it. These burners were designed to combust natural gas, and a switch in fuel type would require a massive amount of re-engineering with no guarantee that there would be a reduction in GHG emissions, or consequently, an increase in other criteria pollutants. The remaining control options of efficient combustion to control CO_2, CH_4, and N_2O emissions from the primary reformers and capture and containment of CO_2 emissions resulting from the production of synthesis gas are both feasible options.

Step 3: Rank Remaining Control Technologies by Control Effectiveness

The most effective control of GHG emissions at the ammonia plants is capture and further processing (i.e., containment) of the CO_2 emission stream from the production of synthesis gas. At PCC, the CO_2 is removed from the process gas by sending the synthesis gas through an absorption tower. There, the CO_2 is stripped out of the gas using methyl diethanolamine (MDEA). CO_2 is removed from the MDEA in a stripper column, where it is then routed as needed to the Carbon Dioxide (CO_2) Plant and/or Urea Plant #1 or Urea Plant #2. At the CO_2 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 the CO_2 to the CO_2 and/or urea plants directly reduces the total amount of CO_2 that would otherwise have been emitted to the atmosphere.

The second control option is proper and efficient combustion at the primary reformers. Efficient energy consumption, in terms of the amount of natural gas used, is ensured as PCC will be installing new, fuel efficient low-NO_X burners and associated operational controls (e.g., oxygen trim) on the primary reformers to comply with NO_X related BACT requirements. Additionally, work practice controls will be implemented to ensure that the proper fuel-to-air ratios are maintained, and that fuels with excess carbon content are not introduced into the combustion device. Combustion efficiency will also be ensured through burner tune-ups, which will be conducted at least annually.

Step 4: Evaluate Most Effective Controls and Document Results

Capture and containment of the CO_2 emission stream is the most effective control of CO_2 emissions followed by efficient combustion at the ammonia plants. The applicant is proposing that this is accomplished through the utilization of approximately 35,000 TPY of CO_2e in the Urea and CO_2 plants as illustrated in calculations below.

Step 5: Select BACT

Based on the effectiveness and the process benefit obtained by capturing the CO_2 emissions and routing them to the Carbon Dioxide Plant and/or the Urea Plants, carbon capture and containment is chosen as BACT. Additionally, due to the necessity to ensure proper combustion at the primary reformers to minimize CO and NO_X emissions, efficient fuel consumption and combustion practices, including those specific practices described in Step 3 above, will also be utilized at the ammonia plants to limit CO_2, CH_4, and N_2O emissions.

To develop the BACT emission limit for Ammonia Plants #1 and #3 in terms of CO_2e, the following factors must be considered:

- The amount of CO_2, generated at Ammonia Plants #1 and #3, that is transferred to the CO_2 Plant and Urea Plants #1 and #2, considering those individual plant production capacities; and,
- The inter-plant operational priorities and the resultant plant production scheduling in meeting the economic needs (i.e., costs, sales, etc.) of the facility as a whole;

The CO_2 transferred for CO_2 and urea plant production can be provided by Ammonia Plants #1, #3, and/or #4. Depending on the production needs of the facility in marketing ammonia and urea products and the operational economic considerations that affect the viability of the facility, any one or all of the individual ammonia plants could be in operation at any given time. Also, considering the large CO_2 generation potential of Ammonia Plant #4, certain operational scenarios exist where the needed supply of CO_2 to the CO_2 and urea plants could come strictly from that source. With these considerations, PCC proposes that the amount of CO_2 transferred from Ammonia Plants #1 and #3 be "bubbled" across the two ammonia plants and set at a minimum of 35,000 tons per year for BACT compliance purposes. Consequently, PCC is proposing a "bubbled" BACT limit across Ammonia Plants #1 and #3, which is calculated as follows:

Plant ID	**Product**	**Maximum Capacity (TPD/TPY)**	**CO_2 Produced (TPY)**	**CO_2 Required (TPY)**
Ammonia Plant #1	NH_3	110 / 40,150	91,079[1]	N/A
Ammonia Plant #3	NH_3	110 / 40,150		
Ammonia Plant #4	NH_3	770 / 281,050	318,777[2]	N/A
CO_2 Plant	CO_2	280 / 102,200	N/A	280 / 102,200[3]
Urea Plant #1	Urea	80 / 29,200	N/A	72 / 26,280[3]
Urea Plant #2	Urea	480 / 175,200	N/A	432 / 147,825[3]

[1] See GHG calculations in Appendix H of Idled Source Application dated April 6, 2011; this value represents the amount of CO_2 produced during production of synthesis gas at Ammonia Plants #1 and #3, which is available to the CO_2 and Urea Plants or vented to the atmosphere.
[2] Using calculation methodology consistent with that for Ammonia Plants #1 and #3, this value represents the amount of CO_2 produced during production of synthesis gas at Ammonia Plant #4, which is available to the CO_2 and Urea Plants or vented to the atmosphere.
[3] From PCC staff, 0.9 tons of CO_2 is needed to make one ton of ammonia.

<u>BACT Limit Development</u>

Given:

Pre-Control PTE:
PTE CO_2e - Ammonia Plants #1 and #3: 175,420 TPY (Appendix H of the application)

PTE CO_2e includes the amount of CO_2 generated from the production of synthesis gas and that generated from the combustion process at the primary reformers. In contrast to the the calculations for controlled PTE of 140,420 TPY, this number reflects an uncontrolled PTE for purposes of illustrating the effectiveness of BACT controls, which the applicant proposes to be capture and control through the Urea and CO_2 plants.

CO_2 Transferred to CO_2 and/or Urea Plants: 35,000 TPY (PCC staff)

Combined Production Rate - Ammonia Plants #1 and #3: 220 TPY / 80,300 TPY (Table Above)

For BACT Limit:

((175,420 TPY CO_2e – 35,000 TPY CO_2e) x 2,000 lb/ton) ÷ 80,300 TPY = 3,497 lb CO_2e /ton NH_3 produced

SECTION VI. COMPLIANCE ASSURANCE MONITORING EVALUATION

Background

Compliance Assurance Monitoring (CAM) applies to any pollutant-specific emissions unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses "large emissions units," or any application that addresses "large emissions units" as a significant modification to an operating permit, or for any application for renewal of an operating permit, if the emissions unit meets all of 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, after the control device, of the applicable regulated air pollutant of 100 TPY or 10/25 TPY of a HAP

Compliance Assurance monitoring will be addressed in the application for the operating permit. Everything else addressed in this section is the same as in Permit No. 2008-100-C (PSD) and is not repeated here.

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. Annual Emissions Inventories for the years 2009 and 2010 have been 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 permit application, 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 affirmative defense, 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. In a letter dated September 3, 2010, Kendal Stegmann with ODEQ authorized PCC to report excess emissions associated with startup and shutdown of Nitric Acid Plant #4 on a quarterly basis. This alternative reporting allowance was extended plant-wide by Ms. Stegmann in an email to PCC dated September 20, 2010.

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 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. Table 1.4-2 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. The following table summarizes equipment subject to this rule, the Appendix C limits, and the potential emissions. As illustrated in the table, all emission units are in compliance with this rule.

Equipment	**Maximum Heat Input (MMBTUH)**	**Appendix C Emission Limit (lbs/MMBTU)**	**Potential Emission Rate (lbs/MMBTU)**
Ammonia Plant #1 Primary Reformer	60	0.37	0.34
Waste Heat Boiler 28-MMBTUH Auxiliary	28	0.45	0.20

Equipment	**Maximum Heat Input (MMBTUH)**	**Appendix C Emission Limit (lbs/MMBTU)**	**Potential Emission Rate (lbs/MMBTU)**
Heater			
Ammonia Plant #3 Primary Reformer	64	0.37	0.36
Waste Heat Boiler 28-MMBTUH Auxiliary Heater	28	0.45	0.20
Ammonia Plant #4 Primary Reformer	225	0.29	0.0076
Nitric Acid Preheater #1	20	0.51	0.0076
Nitric Acid Preheater #3	20	0.51	0.0076
Nitric Acid Preheater #4	20	0.51	0.0076
Boiler #1	53	0.37	0.0076
Boiler #2	80	0.37	0.0076
Ammonia Storage Flare Pilot	0.0152	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 in the following table, all emission points are in compliance with Subchapter 19.

EUG	**Process Rate (TPH)**	**Appendix G Emission Limit (lbs/hr)**	**PTE (lbs/hr)**
Granulator Scrubber #1	16.7	27.0	2.1
Granulator Scrubber #2	16.7	27.0	2.1
Granulator Scrubber #3	16.7	27.0	2.1
Cooling Tower #1	10.809	112.8	2.1
Cooling Tower #2	10,008	111.5	1.9

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 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 20 grains TRS/100 scf to ensure compliance with Subchapter 31. As discussed in the memorandum, the primary reformers burn waste gas containing waste sulfur (H_2S) from the Desulfurization Units. Waste sulfur recovered from the Desulfurization Units is simply the H_2S recovered from the natural gas used as a raw material in the ammonia production process. The total sulfur content burned in the reformers will be the sulfur in natural gas fuel required plus the sulfur in the waste gas recovered from the Desulfurization Units. From the "Emissions" section, the highest calculated SO_2 emissions of 3.4 lbs/hr – 60 MMBtu/hr (Ammonia Plant #1 Reformer), 3.6 lbs/hr – 64 MMBtu/hr (Ammonia Plant #3 Reformer), and 12.6 lbs/hr – 225 MMBtu/hr (Ammonia Plant #4 Reformer), all of which equate to 0.006 lbs-SO_2/MMBTU, are in compliance. These are peak emissions, which would not likely span the three-hour averaging period.

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 0.20 lbs of NO_X per MMBTU, three-hour average. The following table summarizes equipment subject to this rule and the potential emissions expressed in units of lbs/MMBtu. As illustrated in the table, all emission units will be in compliance with this rule.

Fuel-Burning Equipment Rated at ≥ 50 MMBTUH	**Heat Input Rating (MMBTUH)**	**Emission Factor (lbs/MMBtu)**	**Source of Emission factor**
Ammonia Plant #1 Primary Reformer	60	0.085	Trial BACT Limit
Ammonia Plant #3 Primary Reformer	64	0.085	Trial BACT Limit
Ammonia Plant #4 Primary Reformer	225	0.12	Trial BACT Limit
Boiler #1 and #2	53 and 80	0.049 *	AP-42; Table 1.4-1 Low NO_X burners

* Based on AP-42 factor of 50 lbs/MMscf converted to lbs/scf using a GCV for natural gas of 1,020 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. It requires removal of 93% or more of CO by "complete secondary combustion" from new sources and also from existing sources located in or significantly impacting a non-attainment area for CO. 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 and predates this rule.

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. The following combustion equipment is subject to this rule and is designed to provide essentially complete combustion of organic materials.

EMISSION UNITS			
EU/EUG ID	**Point ID**	**EU Name/Model**	**Construction Date**
EUG 1		**Ammonia Plants**	
1	101	225 MMBTUH Ammonia Plant #4 Primary Reformer	1995
1	102	Ammonia Plant #4 Condensate Steam Flash Drum	1995
1	103	Ammonia Plant #1 Primary Reformer - 60 MMBTUH Waste Heat Boiler w/28 MMBTUH Auxiliary Heater	1965
1	104	Ammonia Plants #1 and #3 Condensate Steam Flash Drum	1965
1	105	Ammonia Plant #3 Primary Reformer - 64 MMBTUH Waste Heat Boiler w/28 MMBTUH Auxiliary Heater	1975
EUG 4		**Nitric Acid Heaters**	
4	401	20 MMBTUH Nitric Acid Preheater #1	1966
4	402	20 MMBTUH Nitric Acid Preheater #3	1966
4	403	20 MMBTUH Nitric Acid Preheater #4	1995
EUG 8		**Boilers**	
8	801	53 MMBTUH Boiler #1	1978
8	802	80 MMBTUH Boiler #2	1995
NA		**Insignificant Sources**	
NA	1001	0.0152 MMBTUH Ammonia Storage Flare Pilot	1996

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.

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.

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

OAC 252:100-7	Permits for Minor Facilities	not in source category
OAC 252:100-11	Alternative Emissions Reduction	not requested
OAC 252:100-15	Mobile 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	PM from Grain, Feed, or Seed Operations	not in source category
OAC 252:100-39	Nonattainment Areas	not in subject area
OAC 252:100-47	Landfills	not in source category

SECTION VIII. FEDERAL REGULATIONS

PSD, 40 CFR Part 52 [Applicable]
This is a PSD major existing source with a significant increase of NO_X emissions from the two additional ammonia plants and associated waste heat boiler auxiliary heaters. Therefore, this memorandum requires a full evaluation of BACT, modeling vs. NAAQS, monitoring requirements, increment consumption, public review, and the impacts to visibility, Class I Areas, soils, vegetation, and community growth. Additionally, PSD review must be done for Greenhouse gases. PSD review has been completed in Section V.

NSPS, 40 CFR Part 60 [Subpart Dc and Subpart G Applicable]
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. Boiler #1 was constructed prior to the effective date and is not subject to Subpart Dc. Boiler #2 is subject to the rule. Because Boiler #2 will not burn coal, oil, or wood fuels, the emissions

standards of this subpart are not applicable. Only the recordkeeping and reporting requirements of 40 CFR 60.48c, as further described in 40 CFR 60.7, are applicable.

Subpart G, Standards of Performance for Nitric Acid Plants, affects any nitric acid production unit that commences construction or modification after August 17, 1971 and 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 application for Permit No. 2008-100-C (PSD) states that Nitric Acid Plant #1 and #3 were installed in 1966 and are not subject to Subpart G.

Plant #4 was constructed in Illinois in 1964 and relocated to the Wil-Gro facility in 1995. §60.14(e)(6) provides that the relocation or change in ownership of an existing facility is not by itself, considered a modification under this part. In an applicability determination issued by EPA on April 22, 2005 (Control No. 0700028), concerning relocation of an NSPS boiler constructed (manufactured) prior to the effective date and relocated after the effective date, EPA states "EPA agrees with the findings of ADEC, that Trident's Boiler #6 is not subject to Subpart Dc, provided that Trident's statements that the boiler has not been rebuilt, reconstructed, or modified since its original installation are accurate. If it is found that any modifications to Boiler # 6 are or have been made, that will invalidate this determination." Therefore, provided Nitric Acid Plant #4 was not rebuilt, reconstructed, or modified since its original installation date, then it is not subject to Subpart G.

Subparts K, Ka, Kb, Petroleum Liquids and VOL Storage Vessels. The 1,000-gallon gasoline storage tank at this facility is less than the storage capacity thresholds for these subparts and therefore is not an affected facility.

Subpart VV, Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry. The equipment is not in a SOCMI plant.

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 CCCCCC Applicable]

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. As stated earlier in this memorandum, the permittee will take an enforceable limit to maintain its status as a minor source of HAP emissions. PCC has requested that the enforceable limit on methanol of 9.5 TPY from the Ammonia Plant #4 - Condensate Steam Flash Drum will include the Ammonia Plants #1 and #3 - Condensate Steam Flash Drum. Emissions and continued compliance will be verified with initial stack testing and parametric monitoring, respectively. Compliance with the minor source limit was demonstrated with the testing for the Ammonia Plant #4 - Condensate Steam Flash Drum.

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 and are therefore not subject to the requirements of this subpart.

Subpart FFFF (Miscellaneous Organic Chemical Manufacturing [MON]) affects miscellaneous organic chemical process manufacturing units (MCPU) that are major or are located at major sources, as major is defined in 40 CFR 63.2 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 has a urea manufacturing plant, satisfying the first criterion. Urea ($CO(NH_2)_2$) is produced by combining ammonia (NH_3) with carbon dioxide (CO_2), but the urea plant itself does not process, use, or generate any of the organic HAPs listed in section 112(b). Production of urea requires ammonia, and the facility has an ammonia plant that provides ammonia. As discussed in the Process Description, ammonia production results in emissions of methanol, a 112(b)-listed organic HAP. However, on-site production of ammonia is not necessary to the manufacture of urea, so the ammonia production equipment is not considered to be part of "all equipment which collectively function to produce a product or isolated intermediate that are materials described in §63.2435(b)" as a MCPU, as defined in §63.2550. That definition also states that ancillary activities are not considered a process or part of any process. Criteria one and criteria two are not satisfied, therefore the urea plant is not subject to MON.

The ammonia plant meets criteria 2) and 3), but not 1) and is therefore not subject. There are no other emissions units at the facility subject to this rule.

Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters at major sources of HAPs. EPA has published various actions regarding implementation of this rule as detailed following:

- September 13, 2004 EPA promulgated standards for major sources
- June 19, 2007 US Court of Appeals for the district of Columbia vacated and remanded the standards
- March 21, 2011 EPA promulgated new standards
- May 18, 2011 EPA published notice of delay of the effective dates until judicial review or EPA reconsideration is completed, whichever is earlier
- January 9, 2012 DC Circuit Court vacated EPA's May 18, 2011, stay of the regulation. The vacatur means the Boiler MACT is effective immediately. Compliance dates are given in 40 CFR 63.7495. EPA will use its enforcement discretion to send new and existing sources a "no action assurance letter" indicating that they are not required to submit administrative notifications to permitting agencies signifying that they are subject to the Boiler MACT as issued on March 21, 2011.

Section 112(j) of the Clean Air Act addresses situations where EPA has failed to promulgate a standard as required under 112(e) (1) and (3). 112(j) requires case-by-case MACT determination

applications to be submitted to the permitting authority within specified time frames. Since 112(j) appears to only address situations where EPA has failed to promulgate standards and not situations in which complete rules are subsequently vacated, confusion existed as to the requirements for these sources. On March 30, 2010, EPA proposed a rule to amend 112(j) to clarify what applies under 112(j). In the proposed rule, EPA clarifies that the intent was that vacated sources should be treated similar to sources where EPA has failed to promulgate a standard. The rule, as proposed, will require case-by-case MACT applications to be submitted to the permitting authority within 90 days after promulgation of these amendments or by the date which the source's permitting authority requests such application. Compliance with this subpart will be determined based on the requirements of the amended 112(j).

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.

The 1,000-gallon gasoline storage tank at PCC 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.

CAM, 40 CFR Part 64 [Applicable]

This part applies to any pollutant-specific emissions unit at a major source that is required to obtain an operating permit, for any application for an initial operating permit submitted after April 18, 1998, that addresses "large emissions units," or any application that addresses "large emissions units" as a significant modification to an operating permit, or for any application for renewal of an operating permit, if it meets all of 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

Because the application for an initial operating permit will be received on or after April 18, 1998, the "large emissions units" are subject to CAM. Other emissions units having potential emissions of 100 TPY or greater, but only prior to the control device, would be subject to this rule upon permit renewal. However, the applicant has elected to accept CAM requirements on these emissions units for this permit to establish the required monitoring criteria. Based on this, the emissions having CAM requirements are listed in the following table. These emissions units are subject to permit limits for pollutants that must be controlled to maintain compliance with the NAAQS.

EU ID#	Point ID#	Source Description	Pollutant	Uncontrolled Emissions (ton/yr)	Control Efficiency (%)	Controlled Emissions (ton/yr)
3	301	Nitric Acid Plant #1	NO_X	913	94	58.4
3	302	Nitric Acid Plant #3	NO_X	684	94	43.8
3	303	Nitric Acid Plant #4	NO_X	3,198	95	159.7
7	701	Granulator Scrubber #1	PM	193	98.5	2.9
7	702	Granulator Scrubber #2	PM	193	98.5	2.9
7	703	Granulator Scrubber #3	PM	193	98.5	2.9

Monitoring for Nitric Acid Plants #1, #3, and #4 essentially mirrors what would be required if they were subject to NSPS Subpart G. Monitoring of NO_X per the standards of NSPS Subpart G is considered presumptively acceptable monitoring for Nitric Acid Plants #1, #3, and #4, Point ID #301, #302, and #303, respectively, in accordance with 40 CFR 64.4(b)(4). The required explanation of the applicability is in the applicability discussion for NSPS Subpart G. For the Granulator Scrubbers, Point ID #701, #702, and #703, respectively, 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. CAM for the Ammonia Plant #4 Primary Reformer, if required based on the new BACT emissions limit to be determined, will be included in the operating permit.

Chemical Accident Prevention Provisions, 40 CFR Part 68 [Applicable]
This facility will not process or store more than the threshold quantity of any regulated substance (Section 112r of the Clean Air Act 1990 Amendments). The facility has one 389,243 gallon nitric acid storage tank, one 62,563 gallon nitric acid storage tank, five 78,800 gallon ammonia storage tanks, and one 5,640,000 gallon ammonia storage tank. The ammonia tanks are subject to this rule. The facility is required to have a risk management plan for storing the ammonia. More information on this federal program is available on the web page: *www.epa.gov/ceppo*.

Acid Rain, 40 CFR Part 72 (Permit Requirements) [Not Applicable]
This facility is not an affected source.

Stratospheric Ozone Protection, 40 CFR 82 [Not Applicable]
These standards require phase out of Class I & II substances and reductions of emissions of Class I & II substances to the lowest achievable level. This facility does not utilize any Class I & II substances.

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. COMMENTS ON DRAFT PERMIT

Comments were received from the EPA and from the applicant.

A. Applicant Comments

1) Numerous miscellaneous non-significant changes and corrections, including such as correcting a boiler rating to reflect a lower heat input capacity, grammatical and typographical corrections, minor changes to clarify process descriptions, and formatting changes were submitted by the applicant (PCC).

   DEQ Response:
   Changes were made as requested.

2) Specific Condition 1.D, applicant requests to specify the compliance averaging period by adding the following language: "Compliance with the BACT limit of this permit shall be demonstrated monthly, based on a 12-month rolling average."

   DEQ Response:
   Changes were made as requested.

3) Specific Conditions 1.A and 1.G, applicant requested that ammonia production limits be removed from the permit on the grounds that demonstration of compliance with the ammonia production limits is only necessary to ensure compliance with the CO emission limits. Applicant proposes annual stack testing for CO at EUG No. 5 – Carbon Dioxide Vents in lieu of having limits on ammonia production.

   DEQ Response:
   The proposed changes included deleting the methodology of calculating CO_2 emissions, which is needed to calculate CO emissions as well as to document compliance with the compliance averaging period that applicant requested be installed as part of Specific Condition No. 1.D. DEQ does not have enough information to evaluate this request at this time but will consider it in the operating permit provided adequate information is provided for the evaluation.

4) Specific Conditions 7.D applicant requested deletion of this condition with states "Permittee shall operate purge gas scrubbers at all times when purge gas is utilized in the primary reformers as fuel. Scrubbers shall be operated and maintained properly. Permittee shall develop operational parameters to be used to assure proper operation and shall submit with the Title V operating permit application", due to the fact that unscrubbed gas may be used.

   DEQ Response:
   Changes were made as requested.

B. EPA Comments

ODEQ received comments on April 20th, 2012 concerning the Pryor Chemical Company, Permit No. 2008-100-C (M-2) (PSD). The following is a response to those comments.

Aggregation Analysis for two applications

EPA has requested a detailed analysis to justify why the two projects should be treated as separate and not as a single PSD project.

DEQ Response:
This detailed review was conducted during the permit review. These details were provided on pg. 25 and 26. Since this review consisted of the primary elements as suggested by EPA, it is unclear what other information is needed.

NSPS Applicability Comments/Concerns

ODEQ & Pryor assert that the restarting of nitric acid plants are exempt from new source performance standards (NSPS) because the Nitric Acid Plant #1 and #3 were installed in 1966 and are not subject to Subpart G. Plant #4 was constructed in Illinois in 1964 and relocated to the Wil-Gro facility in 1995. Pryor further claims that the §60.14(e)(6) provides that the relocation or change in ownership of an existing facility is not by itself, considered a modification under this part.

EPA Region 6 has not been able to locate ODEQ's basis for drawing this conclusion in its proposed permit, nor does it appear as though Pryor provided sufficient information in its permit application to support this conclusion. At this time, EPA has insufficient information to review the NSPS applicability since the emission changes from restarting, reconstructing and relocating of the nitric acid plants have not been evaluated to determine whether the source triggers NSPS Subpart G for nitric acid plants. Also, please clarify with details if the acid plants were modified or reconstructed to bring them online after being idle for about 10 years, as defined in 40 CFR 60.14 and 15, respectively.

DEQ Response:

Issues related to NSPS G applicability were not required to be included with the application for this permit because the proposal under this permit action does not include a nitric acid plant. Nitric acid plants #1 and #3 were addressed in a previous permitting action. Reference to these plants are included in this permit just for completeness.

DEQ's basis for drawing the conclusion that Nitric Acid Plants #1 and #3 are not subject to NSPS G is on Page 45 of the memorandum under the heading Subpart G. The plants have been permitted in previous permits dating back to ownership of the facility under WilGro. It was accepted at the time those permits were issued that the nitric acid plants had been constructed prior to the effective date of NSPS G and had not been modified subsequent to relocation to Oklahoma from other states.

It was DEQ's understanding, at the issuance of Permit 2008-100-C PSD to the new owner to restart the plants, that the plants would not be reconditioned to the extent that would be anything more than maintenance, repair, and replacement which would typically be considered routine for this source category.

However, ODEQ will work with PCC through the permitting processes or our compliance inspections to confirm whether NSPS G has become applicable.

General Comments/Concerns

Comment #1

1. While reviewing this proposed permit we relied on the permit application. The Process Flow Diagram provided by Hanner, Spence & Green on Project No. P6200-10-030 revised on 3/25/2011 shown in Appendix B of the Part 70 Construction Permit Application dated on April 6, 2011 appears to be inadequate. The Process Flow Diagram should start from raw material input and end with finished product output. It should include the connections to all the equipment in the facility used or not used under the current operations. Furthermore, it does not show the six step process of catalytic steam reforming of methane and related activities such as Natural Gas Desulfurization. It does not show the different processes in the Nitric Acid Plants. It does not show the Granulator Scrubbers and many other process units. Please provide a complete process flow diagram to EPA to assist us with continuing our review of the permit.

DEQ Response:

Attached is an amendment to the Process Flow Diagram, illustrating additional detail for the processes that are pertinent to this permit [No. 2008-C (M-2) PSD]. The applicant is working on providing information for the other processes and will be submitted as soon as it is available.

Comment #2

2. Please explain why there are differences between the "emission changes" given in Appendix G of the application and the "Emissions Increase" given on PDF Page 26/80 of the permit. With respect to NO_X, the emissions in the application amount to 159.7% of the emissions in the permit.

DEQ Response:

As indicated in the appendix, a trial BACT limit of 0.15 lb/mmbtu was originally proposed by PCC. After review, the trial BACT was lowered to 0.085 lb/mmbtu. Therefore, a more stringent level is being required for the trial BACT period. ODEQ is confused about the concern.

Comment #3

3. It is noted that only "emission changes" are given in Appendix G of the application and only an "Emissions Increase" is given on PDF Page 26/80 of the permit without showing how these were derived. Please provide the net emission increases showing how these were derived [40 CFR 51.166(b)(3)(i)].

DEQ Response:

The justifications for the emission numbers on page 26 are provided in this memo in the section titled "Emissions" and starting on page 11. Fine detail including every factor is provided.

Regarding net emissions increases, while determining the net emission increase is required for each regulated air pollutant for which the project is major, calculating this is not necessary for PSD applicability purposes because the facility subjected both significant pollutants to PSD review. The net emissions increase must be utilized to determine if project emissions are below a significant impact level (SIL) for modeling purposes. Again, this is not needed since the review contains a complete NAAQS review and did not rely on the SIL's.

Also, it should be noted that all other NOx emissions at the site were previously "relied upon" in a PSD permit.

Comment #4

4. Please respond to the previous comments made by EPA on Permit 2008-100-C (M-1) PSD regarding BACT alternatives and the trial BACT period.

   EPA C (M-1) comment:

   a) On Draft/Proposed Permit page 2/83, item 2 requires the establishment of a 1 year trial BACT limit on NO_x emissions from Ammonia Plant #4 Primary Reformer. 40 CFR 51.166(b)(12) defines BACT as *Best Available Control Technology means an emission limitation ….which would be emitted from any* ***proposed*** *….major modification.* There is no provision to grant a trial BACT limit in this regulation for a plant that is in operation. Please quote the citation that grants the authority to provide a trial BACT limit.

DEQ Response:

There is no specific citation that specifies a trial BACT period. However, EPA has determined where permitting authorities are faced with some uncertainty as to what emission limit was achievable the use of an adjustable limit, constrained by certain parameters and backed by worst case air quality modeling, is a reasonable approach. The uncertainty became evident when testing of the operating ammonia plant reformers were tested and no good existing BACT data related to these specific type of units was available or established. This process was found to be reasonable approach as determined by the Environmental Appeals Board of the United States

Environmental Protection Agency in the AES Puerto Rico opinion decided May, 27, 1999 and in the Hadson Power decision (EAB 1992).

ODEQ believes the proposed BACT limit of 0.085 lb/mmbtu, on-going testing/unit evaluation, and the requirement to review all relevant data as part of a permit modification for possible adjustment of the BACT level is a reasonable approach. In addition, the proposed BACT emission level has demonstrated that the facility is in compliance with the NAAQS and increment under PSD.

Comment #5

5. Emissions during the routine or predictable startup, shutdown, or scheduled maintenance (SSM) of process or air pollution control equipments are considered to be part of the normal operation of a source. Consequently, the application for a new or revised permit must include a consideration of these emissions in each applicable aspect of the permit. Please indicate for the permit records that they already included in the tpy emissions or not authorized.

DEQ Response:

The proposed emission limits for the idled sources included in PSD construction permit M-2 are based on the maximum short-term operational capacity of the equipment operating 8,760 hours per year. In developing the proposed limits, emissions during startup, shutdown, and scheduled maintenance (SSM) events were considered. PCC does not anticipate emission levels above the proposed permit limits during routine or predictable SSM events. Therefore, the limits apply during these events.

Comment #6

6. The Pryor plant has been in operation since 2009. Please verify that a Chemical Accident Prevention Plan has been submitted as required by 40 CFR Part 68.

DEQ Response:

The Risk Management Plan (RMP) required by 40 CFR Part 68 was submitted to the EPA, as postmarked on June 6, 2009. In its notification letter dated July 6, 2009, the EPA confirmed that PCC had submitted a complete RMP.

Air Modeling Analyses Comments/Concerns

Comment #1

1. As documented in the draft PSD permit memorandum, the proposed project to startup Ammonia Plant #1, Ammonia Plant #3, and Urea Plant #1 will result in an increase of 58.7 tons per year of NOx emissions, which is a precursor for ozone formation. This emission increase exceeds the PSD significance threshold for needing to address ambient ozone

impacts. It is unclear from the draft permit whether the applicant conducted any analysis to demonstrate the facility's compliance with the ozone NAAQS.

Independent of the aggregation determination for this project and the other pending PSD project at the Pryor Chemical Company facility, for the ozone impact analysis, it may be easiest to combine the emissions of the two PSD projects (M-1 and M-2) and conduct a cumulative assessment if the conclusion is the projects would not cause or contribute to an ozone exceedance. Please provide additional information regarding the applicant's ozone NAAQS demonstration.

DEQ Response:

Methods for evaluating single source impacts on ozone concentrations are not consistent, due to the lack of availability of data at a refined level, readily available tools and EPA guidance. DEQ has evaluated the impact of large emission increases from proposed projects using an existing air quality database generated for a SIP evaluation and the CAMx photochemical modeling system. DEQ conducted photochemical modeling for the neighboring Norit facility using the EAC modeling database (projected to 2007) and adding 529 tons per year of NOx. Maximum impacts from the proposed increases at the Norit facility were insignificant. A maximum 8-hour increase of 0.49 to 0.5 ppb was predicted from the site. As emissions from this project for Pryor Plant Chemical Company are nearly 1/10th those of the Norit facility, DEQ determined that no further analyses were necessary.

Comment #2

2. The draft permit memorandum indicated that the permit applicant submitted a Tier 3 modeling protocol for the NO2 modeling analysis to ODEQ on May 20, 2011, which was provided to EPA on June 3, 2011. The May 20, 2011 modeling protocol does not appear to include modeling information for the proposed project addressed in the draft PSD Permit No. 2008-100-C (M-2). Specifically, this modeling protocol does not provide source parameter information (e.g., in-stack ratio, emission rates) for the currently idle equipment to be started up as part of the proposed project. EPA Region 6 previously reviewed the May 20, 2011 modeling protocol as part of our review of the draft PSD Permit No. 2008-100-C (M-1), which proposed a revision of a BACT limit contained in the permit. We provided comments on the modeling protocol as part of the draft permit comment memorandum submitted on December 22, 2011. ODEQ has indicated a response is still being prepared to these comments.

DEQ Response:

Since the only difference between modeling that requires a protocol (Tier III – Use of PVMRM) and modeling that does not require a protocol (Tier I and Tier II) is use of in-stack NO/NO_2 ratios, ambient equilibrium ratio, and ozone data, a separate protocol for approval of those same items, which were previously approved by the AQD, for the second project did not seem like a necessity. Also, there is only one source specific parameter in-stack NO/NO_2 ratios which were detailed in the permit memo.

ODEQ is in the process of responding to modeling comments received during the draft permit review.

Comment #3

3. The 1-hour and annual NO_2 NAAQS modeling analyses submitted by the applicant were conducted using the Tier 3 PVMRM approach. The Region has the following comments/concerns regarding the PVMRM modeling approach utilized by the applicant:

    a. The modeling files submitted by the applicant to ODEQ on December 9, 2011 include an in-stack ratio of 0.15 for Ammonia Plant #1 and Ammonia Plant #3. EPA could not locate documentation (e.g., stack test, monitoring data) to support the in-stack ratios used in the 1-hour and annual NO_2 Tier 3 modeling analyses. This information is necessary for review and conclusion that the proposed in-stack ratios are acceptable and protective of the NAAQS based on the modeling analysis. Please also clarify the discrepancy of the in-stack ratio value for Ammonia Plant #1 and Ammonia Plant #3 contained in the draft PSD permit memorandum, which lists the modeled in-stack ratio for these sources as 0.05. If acceptable stack testing data is not available for an emissions unit or a like emission unit to support the modeled in-stack ratios, the permit should require testing to verify the in-stack ratios for the unit.

    b. Based on the modeling results summarized in the draft PSD permit memorandum, the applicant was required to conduct additional cumulative modeling based on the results of the significance modeling analysis. Based on our review of the modeling files submitted by the applicant to ODEQ on December 9, 2011, the applicant utilized in-stack ratios for the additional on-site and off-site sources ranging from 0.10 to 0.20. It is not clear how these in-stack ratios were determined. In the absence of source-specific data, EPA has specified a generally accepted default in-stack ratio of 0.50 that was described in the March 3, 2011 EPA memo. Justification for lower than 0.50 in-stack ratios is necessary for approval of the modeling. Stack testing data or other analyses are necessary to support these in-stack ratios for each source and should be provided by the applicant to ODEQ and EPA to review.

DEQ Response to a. and b.:

The memo indicating the use of a 0.05 in-stack ratio is a typographical error. The facility had originally proposed this level but ODEQ required the use of the 0.15 ratio.

The company has tested and will be required to test the sources with in-stack ratios less than 0.2.

Even though in the recent guidance EPA “recommends” “general acceptance of 0.50 as a default in-stack ratio,” AQD feels that 0.5 is overly conservative for all sources and that 0.2 is adequately conservative to be applied to 100% of all nearby sources as a default in-stack ratio and is justified based on the available in-stack data.

Even if a few sources did have an in-stack ratio higher than 0.20 in-stack ratios, the average in-stack ratio of all sources would be well under 0.2. There is a significant amount of conservatism in modeling reviews using PVMRM. PVMRM requires use of a highly conservative ambient equilibrium ratio of 0.9, a conservative ozone concentration based on the maximum monitored values, added nearby background data (design value) that represents impacts from area sources that were not modeled and nearby sources that were included in the model (double counting), and what AQD has determined is a conservative estimate of the average in-stack ratio of 0.2.

During review of nearby source data to provide to the applicant, AQD determined that use of a value of 0.10 for all small (<100 MMBTUH) prepackaged boilers (based on limited test data) and a value of 0.15 for the nearby turbines controlled with SCR (based on review of recent stack test) was appropriate.

> Note: Supporting data for justification of a generalized in-stack ratio of 0.50 for all sources was limited and was based on a maximum value with a significant safety factor.

c. Please provide additional information regarding the background hourly ozone concentration data file utilized in the PVMRM modeling analysis. Without this information, we are unable to determine the appropriateness of the ozone background data included in the modeling analyses.

<u>DEQ Response:</u>

The ozone data file was developed and provided by the AQD to the applicant. It consisted of the maximum hourly values for 2006 to 2010 from the following monitors:

Tulsa (40-143-1127)
Skiatook (40-143-0137)
Mannford (40-143-0177)
Glenpool (40-143-0174)

d. The draft PSD permit memorandum indicates that background NO_2 values of 8 $\mu g/m^3$ and 20.8 $\mu g/m^3$ were used in the annual and hourly NAAQS cumulative modeling demonstrations, respectively. The modeling summary does not provide information regarding the source of these background values. Please provide additional information regarding how these background NO_2 concentrations were determined.

<u>DEQ Response:</u>

The background data was based on the design values from the Cherokee Heights Monitor (40-097-9014) from 2007, 2008, and 2009. This monitor is located approximately 2.8 km southeast of the facility.

e. The comments included in this document are based upon ODEQ's current determination that the proposed project to restart idle sources at the Pryor Chemical

> Company (M-2) should not be aggregated with the other pending PSD project at the facility (M-1). Our comments are also based on the current modeling analysis results showing cumulative impacts below the NO_2 NAAQS. If based on public comments received on the draft PSD permit ODEQ determines that the modeling analysis needs to be updated to account for the aggregation of the two projects and/or revised Tier 3 model parameters (e.g., in-stack ratios), we may have additional comments on the updated modeling analysis. Please also note, if revised modeling analyses indicate modeled exceedances of the NO_2 NAAQS the contribution analysis for those exceedances should take into account impacts from both projects if it is determined that these projects should be aggregated.

DEQ Response:

The NO_2 modeling consisted of the entire facility. Therefore, for modeling purposes the projects were aggregated because a full NAAQS analysis was completed.

SECTION X. COMPLIANCE

Tier Classification and Public Review

This application has been determined to be a Tier II based on the request for a construction permit modification considered significant under 252:100-8-7.2(b)(2) and which is not classified under Tier III. The applicant has requested concurrent Public and EPA reviews.

PCC published a "Notice of Filing a Tier II Application" in *The Pryor Daily Times*, a daily newspaper published in the city of Pryor, Mayes County, on September 8, 11, and 13, 2011. The notice stated that the application was available for public review at the Pryor Chemical Company office located at 4463 Hunt Street, Pryor, Oklahoma, or at the DEQ Air Quality Division's main office in Oklahoma City, or on DEQ's webpage, and that DEQ will prepare either a draft or a denial. No comments were received on the application.

PCC published a "Notice of Draft Permit and Public Meeting" in *The Pryor Daily Times*, a daily newspaper published in the city of Pryor, Mayes County, on March 11, 2012. The notice stated that the draft permit was available for public review at the Pryor Chemical Company office located at 4463 Hunt Street, Pryor, Oklahoma, or at the Pryor Public Library located at 505 East Graham Avenue, or at DEQ Air Quality Division's main office in Oklahoma City, or on DEQ's webpage. No comments were received from the public. Comments received from EPA and the applicant are addressed in Section IX of this memorandum.

This facility is not located within 50 miles of the border of Oklahoma and any other state. 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. Information on all permit actions is available for review by the public in the Air Quality section of the DEQ Web page: www.deq.state.ok.us/.

Fee Paid

Fee paid: $1,500 for construction modification of a Part 70 source.

SECTION XI. SUMMARY

There are no active Air Quality compliance or enforcement issues that would affect the issuance of this permit. Issuance of the construction permit is recommended.

PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS

Pryor Chemical Company **Permit No. 2008-100-C (M-2) (PSD)**
Pryor - Mid America Industrial Park Facility

The permittee is authorized to construct in conformity with the specifications in the application for a construction permit submitted to Air Quality on April 6, 2011, with additional information received on October 11, November 22, December 5, and December 15, 2011, January 12, January 13, January 19, and January 31, 2012, and February 2, February3, February 9, and February 28, 2012. The Evaluation Memorandum dated April 30, 2012, explains the derivation of applicable permit requirements and the estimates of emissions; however, it does not contain operating limitations or permit requirements. Commencing construction or operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. Points of emission and emissions limitations. Permittee shall maintain and operate the facility in a manner to prevent the exceedance of ambient air quality standards contained in OAC 252:100-3 and the limitations established by this permit. Compliance with emissions limits shall be monitored and determined based on the following averaging periods:
[OAC 252:100-8-6(a)(1)], [OAC 252:100-7-15(d)]

   i. CO: 1-hour and 8-hour averages; all emissions units.
   ii. PM_{10}: 24-hour average; all emissions units.
   iii. NO_2: 1-hour average all emissions units.
   iv. All annual pollutant and throughput limits: Monthly and 12-month rolling cumulative, unless specified more frequently.

EUG NO. 1 - AMMONIA PLANTS #1, #3, and #4

A. Maximum production of ammonia from Ammonia Plants #1, #3, and #4 shall not exceed their permitted production capacities of 110 TPD – Ammonia Plant #1, 110 TPD – Ammonia Plant #3, and 770 tons per day - Ammonia Plant #4. The permittee shall follow good combustion practices as required by Specific Condition No. 7.C so as to limit hourly and annual emissions to the values specified in the following tables. Compliance with the SO_2 limit is determined by the fuel sulfur monitoring requirements of Condition No. 2.

EU ID 101 - Ammonia Plant #1 Primary Reformer (60 MMBTUH)

Pollutant	**Emissions**	
	Max. (lb/hr)	**Annual (ton/yr)**
CO	5.0	21.7
NO_X	5.1	22.4
PM	0.5	2.0
PM_{10}	0.4	1.5
$PM_{2.5}$	0.3	1.0

Pollutant	Emissions	
	Max. (lb/hr)	Annual (ton/yr)
SO_2 primary fuel	NA	0.2
SO_2 waste gas	3.4	0.4
VOC	0.4	1.5

EU ID 101 - Ammonia Plant #1 Auxiliary Heater (28 MMBTUH)

Pollutant	Emissions	
	Max. (lb/hr)	Annual (ton/yr)
CO	2.4	10.3
NO_X	1.4	6.2
PM	0.3	1.0
PM_{10}	0.2	0.7
$PM_{2.5}$	0.2	0.6
SO_2 primary fuel	0.1	0.2
VOC	0.2	0.7

EU ID 101 - Ammonia Plant #3 Primary Reformer (64 MMBTUH)

Pollutant	Emissions	
	Max. (lb/hr)	Annual (ton/yr)
CO	5.3	23.1
NO_X	5.5	23.9
PM	0.5	2.1
PM_{10}	0.4	1.6
$PM_{2.5}$	0.3	1.0
SO_2 primary fuel	NA	0.2
SO_2 waste gas	3.6	0.4
VOC	0.4	1.5

EU ID 101 - Ammonia Plant #3 Auxiliary Heater (28 MMBTUH)

Pollutant	Emissions	
	Max. (lb/hr)	Annual (ton/yr)
CO	2.4	10.3
NO_X	1.4	6.2
PM	0.3	1.0
PM_{10}	0.2	0.7
$PM_{2.5}$	0.2	0.6
SO_2 primary fuel	0.1	0.2
VOC	0.2	0.7

EU ID 101 – Ammonia Plant #4 Primary Reformer (225 MMBTUH)

Pollutant	Maximum (lb/hr)	Annual (ton/yr)
CO	18.6	81.2
NO_X	27.0	118.3

Pollutant	Maximum (lb/hr)	Annual (ton/yr)
PM	1.7	7.4
PM_{10}	1.3	5.6
$PM_{2.5}$	0.8	3.4
VOC	1.3	5.4
SO_2	12.6	2.9

i. SO_2 limits on the primary reformers at Ammonia Plants #1, #3, and #4 include waste fuels. See Specific Condition No. 2 for restrictions on natural gas.

ii. NO_X limits on the primary reformers at Ammonia Plants #1 and #3 are based on a trial BACT limit of 0.085 lbs/MMBtu to be effective during a 1-year BACT analysis, as set forth in the "Compliance Schedule" below, commencing on the issuance date of this permit.

B. Maximum steam discharge rates and emissions from the Ammonia Plants #1 and #3 Condensate Steam Flash Drum and the Ammonia Plant #4 Condensate Steam Flash Drum shall not exceed the limits specified in the following tables. Limits on methanol are combined for the two condensate steam flash drums at 9.5 TPY total. The permittee shall control process conditions as required by Specific Condition No. 7.A, so as to limit hourly and annual emissions to the values specified in the following table.

EU ID 1/EP 102 - Ammonia Plant #4 Condensate Steam Flash Drum

Pollutant	Stack Gas Discharge Rate	Emissions	
	lb/hr	Maximum (lb/hr)	Annual (ton/yr)
VOC	1,050	10.4	45.6
NH_3		5.4	23.7
CH_3OH		3.86	9.5*

EU ID 1/EP 104 – Ammonia Plants #1 and #3 - Condensate Steam Flash Drum

Pollutant	Stack Gas Discharge Rate	Emissions	
	lb/hr	Maximum (lb/hr)	Annual (ton/yr)
VOC	517	4.6	19.9
NH_3		2.7	11.7
CH_3OH		1.68	9.5*

* Combined total limit for the two condensate steam flash drums.

C. The purge gas vents for Ammonia Plants #1 and #3 shall not be operated more than 208 hours per year, collectively. The maximum NH_3 concentration and emissions from the purge gas vents at Ammonia Plants #1 and #3 shall not exceed the limits specified in the following tables. Records of venting hours shall be maintained at the facility.

EU ID 1/EPs 106a, b, & c – Ammonia Plants #1 and #3 – Purge Gas Vents

Pollutant	NH_3 Concentration	Emissions	
	Maximum (%)	Maximum (lb/hr)	Annual (ton/yr)
NH_3	3.5	104.8	10.9

D. Ammonia Plants #1 and #3 are subject to a CO_2e BACT limit of 3,497 CO_2e /ton NH_3 produced.

i. Compliance with this limit shall be demonstrated as follows:

$$\frac{[\text{Emissions } CO_2e \text{ - } CO_2 \text{ transferred to Urea Plants and } CO_2 \text{ Plant}]_{\text{Ammonia Plants \#1 and \#3}}}{\text{ton } NH_3 \text{ produced}}$$

Emissions of CO_2 and CO_2e shall be measured and calculated in accordance with the applicable rules under 40 CFR Part 98. Compliance with the BACT limit of this permit shall be demonstrated monthly, based on a 12-month rolling average.

EUG NO. 3 – NITRIC ACID PLANTS #1, #3, and #4

E. Maximum emissions from Nitric Acid Plant #1, Nitric Acid Plant #3, and Nitric Acid Plant #4 and emissions of ammonia from Nitric Acid Plant #4 shall not exceed the limits specified in the following tables. Compliance with the NO_X emission limits for Nitric Acid Plant #1, Nitric Acid Plant #3, and Nitric Acid Plant #4 shall be demonstrated per the monitoring requirements in Specific Condition 8.A. The permittee shall record the hourly emissions, the monthly emissions, the 12-month rolling cumulative emissions, the hourly production of 100% nitric acid, the monthly production of 100% nitric acid, the 12-month rolling cumulative production of 100% nitric acid, and the daily operating hours.

i. Annual Limit. Compliance with the annual CO and ammonia slip emissions limits (in tons per year) shall be determined by comparing the 12-month rolling cumulative emissions (in tons per year) to the annual limits (in tons per year) listed in the table below. CO emissions will be calculated based on the emission factor verified during initial performance testing and nitric acid production data. Ammonia emissions will be calculated based on initial performance test data and hours of operation. Compliance with the annual average NO_X emission factor (in pounds per ton) shall be determined by dividing the 12-month rolling cumulative emissions (in pounds) by the 12-month rolling cumulative production of 100% nitric acid (in tons) to obtain a value in pounds per ton, and comparing the result to the limits listed in the table below. Compliance shall be verified monthly, datum the same time on the first day of each month (or the following business day if the facility is not in operation on the designated day).

$$\text{Emissions}_{\text{12-Month Average}} = \frac{\text{12-Month Rolling Cumulative Emissions}}{\text{12-Month Rolling Cumulative 100\% Nitric Acid}}$$

ii. 7-day (168-hour) Average Limit. Compliance with the 7-day average NO_X limit (in pounds per ton) shall be determined by dividing the 7-day (168-hour) rolling cumulative emissions by the corresponding production of 100% nitric acid for the applicable 7-day (168-hour) period and comparing the result to the limit of 3.0 pounds per ton.

$$\text{Emissions}_{\text{7-Day Average}} = \frac{\text{7-Day (168-hour) Rolling Cumulative Emissions}}{\text{7-Day (168-hour) Rolling Cumulative 100\% Nitric Acid}}$$

EU ID 301, 302, 303 – Nitric Acid Plants #1, #3, and #4

Emissions Point	**NO_X Emissions**			**CO Emissions**	
	12-month rolling cumulative		**7-day Average**		
	Annual (ton/yr)	**Annual (lb/ton)**	**Maximum (lb/ton)**	**Maximum (lb/hr)**	**Maximum (lb/ton)**
Plant #1	58.4	1.6	3.0	4.0	14.6
Plant #3	43.8	1.6	3.0	3.0	11.0
Plant #4	159.7	2.5	3.0	N/A	N/A

iii. Hourly Limit for Ammonia Slip Emissions. Compliance shall be based on the manufacturer's guarantee of 10 ppmv in the exhaust gas of the SCR unit. Initial compliance with the limit shall be verified by the initial performance test required in Specific Condition No. 10. Continuous compliance shall be documented by means of continuous NO_X monitoring, 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.

EU ID 303 - Nitric Acid Plant #4

Emissions Point	**NH_3 Slip Emissions**	
	Maximum (lb/hr)	**Annual ton/yr**
Plant #4	0.9	3.8

EUG NO. 4 – NITRIC ACID PREHEATERS #1, #3, and #4

F. Emissions from each individual nitric acid preheater shall not exceed the limits specified in the following table. The permittee shall follow good combustion practices as required by Specific Condition No. 7.C to limit hourly and annual emissions to the values specified in the following table. Compliance with the SO_2 limit is determined by the fuel sulfur monitoring requirements of Condition No. 2.

EU ID 401, 402, 403 - Nitric Acid Preheaters #1, #3, and #4

Pollutant	**Emissions**	
	Maximum (lb/hr)	**Annual (ton/yr)**
CO	1.7	7.3

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
NO_X	1.0	4.3
PM	0.2	0.7
PM_{10}	0.2	0.5
$PM_{2.5}$	0.1	0.4
VOC	0.2	0.5
SO_2	0.1	0.2

EUG NO. 5 – CARBON DIOXIDE VENTS

G. PCC produces carbon dioxide as a saleable product. Carbon monoxide is a component of the carbon dioxide generated as an off-gas from the ammonia manufacturing process. Carbon dioxide venting is limited as indicated in the following table for the purpose of limiting the associated carbon monoxide emissions. Carbon monoxide emissions from the Carbon Dioxide Vents shall not exceed the limits specified in the following tables.

EU ID 1/EPs 501a, 501b, and 501c –
Ammonia Plants #1, #3, and/or #4 Carbon Dioxide Venting

Pollutant	Emissions Factor	Carbon Dioxide Vented	CO Emissions	
	lb/ton	ton/hr	Maximum (lb/hr)	Annual (ton/yr)
CO	0.1	45.9	5.2	22.6

EU ID 1/EP 502 – Ammonia Plant #3 Carbon Dioxide Venting

Pollutant	Emissions Factor	Carbon Dioxide Vented	CO Emissions	
	lb/ton	ton/hr	Maximum (lb/hr)	Annual (ton/yr)
CO	0.1	5.8	0.6	2.5

Ammonia Plant #1 can vent to EU ID 1/EP 501b or 501c.
Ammonia Plant #3 can vent to EU ID 1/EPs 501b or 502.
Ammonia Plant #4 can vent to EU ID 1/EPs 501a, 501b, or 501c.

EP 501a is the CO_2 Tower Vent located at Ammonia Plant #4.
EP 501b is the CO_2 Vent located at the CO_2 Plant.
EP 501c is the Regenerator Tower Vent located at Ammonia Plant #1.
EP 502 is the CO_2 Vent located at Ammonia Plant #3.

Compliance with the carbon dioxide venting and 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 an industry established 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. These values shall be verified during initial performance testing over a range of operational parameters expected to occur during normal operations.

EUG NO. 6 - AMMONIUM NITRATE PLANTS #1 and #2

H. Maximum liquid ammonium nitrate production shall not exceed the following individual rates.
   i. Ammonium Nitrate Plant #1 - 23.8 tons per hour
   ii. Ammonium Nitrate Plant #2 - 23.8 tons per hour

   PCC does not measure the hourly production rate for liquid ammonium nitrate. Therefore, compliance with the liquid ammonium nitrate production limits shall be demonstrated for each plant by dividing the actual daily liquid ammonium nitrate production total by the process equipment operating hours for that day.

I. Emissions shall not exceed the following limits from either neutralizer.

EU ID 601, 602 - Ammonium Nitrate Plant #1 and #2 Neutralizer Vents

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
NH_3	2.4	0.6
PM/PM_{10}	1.2	0.6
$PM_{2.5}$	0.9	0.5

EUG NO. 7 - GRANULATOR SCRUBBERS #1, #2, and #3

J. Maximum dry ammonium nitrate production shall not exceed 16.7 tons per hour from the granulator production system or prill tower controlled by either Granulator Scrubber #1, #2, or #3, 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.

K. Emissions from any individual granulator scrubber shall not exceed the following limits.

EU ID 701, 702, 703 - Granulator Scrubbers #1, #2, and #3

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM	0.7	2.9

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM_{10}	0.7	2.9
$PM_{2.5}$	0.7	2.9
NH_3	2.3	10.2

EUG NO. 8 – BOILERS #1 and #2

L. Emissions from each boiler shall not exceed the following limits.

EU ID 801 - Boiler #1

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
CO	4.4	19.2
NO_X	2.6	11.4
PM	0.4	1.8
PM_{10}	0.3	1.3
$PM_{2.5}$	0.2	0.8
SO_2	0.1	0.4
VOC	0.3	1.3

EU ID 802 – Boiler #2

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
CO	6.6	28.9
NO_X	4.0	17.2
PM	0.6	2.7
PM_{10}	0.5	2.0
$PM_{2.5}$	0.3	1.2
SO_2	0.2	0.6
VOC	0.5	1.9

M. NSPS Dc, §60.48c, Reporting and recordkeeping requirements. [40 CFR 60.72]
   i. Boiler #2. As an alternative to meeting the daily record keeping requirements of §60.48c(g)(1), the permittee may record and maintain records of the amount of each fuel combusted in each boiler each calendar month.

EUG NO. 9 - COOLING TOWERS #1 and #2

N. Maximum circulation rate of Cooling Tower # 1 shall not exceed 2,592,000 gallons per hour.
O. Maximum circulation rate of Cooling Tower No. 2 shall not exceed 2,400,000 gallons per hour.

P. No chromium-containing additives shall be used in the cooling towers.
Q. Emissions shall not exceed the following limits.

EU ID 901 – Cooling Tower No. 1

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM_{10}	2.1	9.1
$PM_{2.5}$	2.1	9.1

EU ID 902 – Cooling Tower No. 2

Pollutant	Emissions	
	Maximum (lb/hr)	Annual (ton/yr)
PM_{10}	2.0	8.5
$PM_{2.5}$	2.0	8.5

R. Compliance with the circulation and emission limits for each cooling tower shall be demonstrated by multiplying total pump capacity by the number of pumps operating during each hour. Pump capacity shall be demonstrated either by the manufacturer's visible capacity rating stamped on the equipment or by maintaining a copy of the manufacturer's performance data at the facility. In either event, the pump model or serial number must be identified on the pump.

EUG NO. 10 – GASOLINE STORAGE TANK

S. Emissions of VOC from the gasoline storage tank are limited to 0.2 tons per year. Compliance with this limit shall be demonstrated by limiting the annual throughput of gasoline to 12,000 gallons, 12-month rolling cumulative. Permittee shall maintain records of gasoline throughput.

2. The fuel-burning equipment shall be fired with pipeline natural gas having 0.25 grains/100 scf or less total sulfur. EU ID 1/EP 101 Ammonia Plant #4 Primary Reformer, EP 103 Ammonia Plant #1 Primary Reformer, and EP 105 Ammonia Plant #3 Primary Reformer may be fired on either natural gas or a combination of natural gas, waste gas generated from the Natural Gas Desulfurization Unit, and process off-gas (e.g., purge gas). Compliance with the sulfur limit on pipeline 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 annually. [OAC 252:100-8-6(a)(1)]

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

4. 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]

5. 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 63]

   §63.11111 Am I subject to the requirements in this subpart?
   §63.11112 What parts of my affected source does this subpart cover?
   §63.11113 When do I have to comply with this subpart?
   §63.11115 What are my general duties to minimize emissions?
   §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, §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.
   §63.11130 What parts of the General Provisions apply to me?
   §63.11132 What definitions apply to this subpart?
   Table 3 to Subpart CCCCCC of Part 63—Applicability of General Provisions

6. 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)]

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

   A. Ammonia Plants #1, #3, and #4 - Condensate Steam Flash Drums, Emission Point IDs #102 and #104. Permittee shall assume the maximum design discharge stack gas flows from the Condensate Steam Flash Drum exhausts of 1,050 pounds per hour for Emission Point ID #102 and 517 pounds per hour for Emission Point ID #104 in calculating the methanol emissions to ensure that emissions are at or below the combined limit of 9.5 tons per year. Permittee shall conduct testing of the Condensate Steam Flash Drum exhausts monthly using sampling protocols approved by the ODEQ and GC/FID standard analytical methods.
      i. Permittee shall maintain a plan for monitoring process conditions using parameters such as temperature, pressure, condensate throughput, and periodic measurement of methanol in the condensate to demonstrate continuous compliance with the methanol emission limits. The plan shall establish action levels corresponding to operating conditions which cannot be exceeded to ensure compliance with the permit limits, as well as the technical justification for selection of the selected monitoring parameters.

   B. By letter dated September 3, 2010, ODEQ authorized PCC to report excess emissions associated with startup and shutdown of Nitric Acid Plant #4 on a quarterly basis. This alternative reporting allowance was extended plantwide in an email to PCC dated September 20, 2010.

C. Good Combustion Practices shall be followed for the Ammonia Plants #1, #3, and #4 Primary Reformers, Boilers #1 and #2, Nitric Acid Preheaters #1, #3, and #4 Emission Point IDs #101, #801, #802, #401, #402, and #403, respectively.

i. The permittee shall maintain and operate combustion equipment to achieve optimum combustion efficiency and perform periodic maintenance necessary to maintain proper operation.

ii. 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).

iii. The permittee shall perform daily opacity measurements using EPA Method 9 and conduct initial performance testing to correlate the PM limit to an opacity action level.

D. Good Operation Practices – All Emission Point IDs.

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.

8. Compliance Assurance Monitoring (CAM). [OAC 252:100-8-6(a)(1)], [OAC 252:100-43]

A. Nitric Acid Plant #1, Nitric Acid Plant #3, Nitric Acid Plant #4, EU IDs 301, 302, and 303. The permittee shall implement compliance assurance monitoring (CAM) in accordance with 40 CFR Part 64 and shall install, calibrate, maintain, and operate continuous monitoring systems (CEMS) in accordance with Part 64 and any applicable referenced regulations therein.

i. The permittee shall install, calibrate, maintain, and operate a continuous emissions monitoring system for measuring nitrogen oxides (NO_X) in accordance with the provisions of 40 C.F.R. §60.13 and conduct initial performance testing.

B. Granulator Scrubbers #1, #2, and #3, EU IDs 701, 702, and 703. The permittee shall limit the hourly production rate of dry ammonium nitrate at the granulator or prill tower to 16.7 tons per hour. Compliance with the production limit shall be demonstrated by dividing the actual daily dry ammonium nitrate production total by the process equipment operating hours for that day. The permittee shall perform daily opacity measurements using EPA Method 9 and conduct initial performance testing to correlate the PM limit to an opacity action level. 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 daily 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.

C. The CEMS shall be fully functional and properly operating at startup of the nitric acid plants. Permittee shall follow the requirements 40 C.F.R. §60.13 including installation and calibration. [40 CFR 64.4(e)]

D. The permittee shall comply with all applicable requirements of CAM including but not limited to the following. [40 CFR 64.1 to 64.9]
   i. §64.7 Operation of approved monitoring;
   ii. §64.8 Quality improvement plan (QIP) requirements; and
   iii. §64.9 Reporting and recordkeeping requirements.

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

A. The air pollution control devices may be modified or replaced, upon prior approval of the AQD, provided that it can be demonstrated that the replacement equipment is at least as efficient as the previous pollution control device.

B. 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.

10. Within 60 days after achieving the maximum production rate at which the source will be operated, but not later than 180 days after initial startup, and at other such times as directed by the AQD, the permittee shall conduct performance testing as follows and furnish a written report to the AQD. Testing shall be conducted while a process unit is being operated at least 90% of maximum hourly capacity. A sampling protocol and notification of testing date(s) shall be submitted at least 30 days in advance of commencement of testing. The following USEPA methods shall be used for testing of emissions, unless otherwise approved by Air Quality:

[OAC 252:100-43]

Point ID	Description	Pollutants Tested	Test Methods Required
102	Ammonia Plant #4 - Condensate Steam Flash Drum	VOC, Methanol	1 – 4, 624, GC/FID 103GC120P030.M
104	Ammonia Plants #1 and #3 – Condensate Steam Flash Drum	VOC, Methanol	1 – 4, 624, GC/FID 103GC120P030.M
106 106a 106b 106c	Ammonia Plants #1 and #3 Purge Gas Vents	NH_3	350.2 or 350.3
301	Nitric Acid Plant # 1 - Fumeabator Unit	NO_X, CO	1 – 4, 7E, 10
302	Nitric Acid Plant # 3 - Fumeabator Unit	NO_X, CO	1 – 4, 7E, 10
303	Nitric Acid Plant # 4 - SCR Unit	NO_X, CO, NH_3	1 – 4, 7E, 10, 350.2 or 350.3
501a, 501b, 501c	Ammonia Plants #1, #3 and #4 - Carbon Dioxide Vents	CO	1 – 4, 10
502	Ammonia Plant #3 – Carbon Dioxide Vent	CO	1 – 4, 10
701	Granulator Scrubber #1	PM	1 – 5
702	Granulator Scrubber #2	PM	1 – 5
703	Granulator Scrubber #3	PM	1 – 5

11. The permittee shall keep records of operations as listed below to verify Insignificant Activities. These records shall be kept on-site for a period of at least five years following dates of recording and shall be made available to regulatory personnel upon request. No recordkeeping is required for those operations which qualify as Trivial Activities.

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

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

Name and Contents	Capacity (gallons)
Urea Plant Feed (Ammonia Head Tank)	15,857
#2 Urea Plant Ammonia Recovery Tank	9,406
CO2 Plant Ammonia Recovery Tank	1,128
Ammonium Nitrate Plant #1 Rundown Tank	950
Ammonium Nitrate Plant #2 Rundown Tank	950
AU & BU Urea Blend Tanks	10,000
OBT Mix Tank	36,500
Atmospheric Anhydrous Ammonia Storage Tank	5,640,000
Wastewater Storage Tank	1,000,000
2100 Nitric Acid Storage Tank	389,243
200 Nitric Acid Storage Tank	62,563
Ammonium Nitrate Storage Tank	267,314
U.A.N. Blend Tank	57,337

Name and Contents	Capacity (gallons)
2 – U.A.N. Storage Tanks (AS & DS)	3,760,346 each
2 – U.A.N. Storage Tanks (BS & CS)	116,471 each
RO Treated Water Storage Tank	50,000
5 – Pressurized Anhydrous Ammonia Storage Tanks	78,800 each

Granular Ammonium Nitrate Storage, Handling, and Loading/Unloading operations
Ammonia Truck and Railcar Loading
Ammonia Plant #4 Purge Gas Scrubber Vent
Ammonia Plants #1, #3, and #4 Fugitives
Nitric Acid Loading to Trucks and Railcars
Off-Specification UAN and AN Loading to Trucks and Railcars
Ammonia Plant #4 Desulfurization Unit – Carbon Regeneration Using Steam
Ammonia Plant #4 Hydrogen Recovery Unit – Mole Sieve Regeneration
Ammonia Storage Flare

12. 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. Total throughput of raw materials and products having limits specified in Condition No. 1; hourly, daily, 7-day, rolling cumulative monthly, and 12-month rolling cumulative total, as specified in the condition for each limit.
    b. Records of monitoring and inspection of all air pollution control equipment required by the conditions of this permit.
    c. Calculations showing compliance with all specific conditions that require calculations.
    d. For the fuel(s) burned, the appropriate document(s) as described in Specific Condition No. 2.
    e. Records required by NSPS Dc.
    f. Records required for CEMS operations.
    g. Records required for CAM.
    h. Records required by NESHAP CCCCCC and Specific Condition No. 1.Q.

13. The Permit Shield (Standard Conditions, Section VI) is extended to the following requirements that have been determined to be inapplicable to this facility.

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

    a. OAC 252:100-7 Permits for Minor Facilities
    b. OAC 252:100-11 Alternative Emissions Reduction
    c. OAC 252:100-15 Mobile Sources
    d. OAC 252:100-17 Incinerators
    e. OAC 252:100-23 Cotton Gins
    f. OAC 252:100-24 Particulate Emissions From Grain, Feed, or Seed Operations
    g. OAC 252:100-35 Carbon Monoxide
    h. OAC 252:100-39 Nonattainment Areas
    i. OAC 252:100-47 Landfills
    j. 40 CFR Part 72 Acid Rain

COMPLIANCE SCHEDULE

During the 1-year BACT analysis provided by Specific Condition Nos. 1.A.ii and 1.A.iii, Permittee shall:

1) Assess the design operating conditions and fuel characteristics that form the basis for the burner manufacturer's emissions guarantee, including the properties of the fuel gases.
2) Review the combustion and process controls affecting the Primary Reformer to identify potential methods to reduce/minimize NO_X emissions, including burner tuning and automation improvements.
3) Review facility operating procedures to identify potential techniques to reduce/minimize NO_X emissions.
4) Review any methods currently in place to minimize the components of waste fuels burned in the Primary Reformer that generate NO_X emissions and identification of any potential methods, procedures, work practices, techniques, controls, etc., that are available for the reduction/minimization of such fuel components.
5) Based on the findings in Item Nos. 1 through 4, implement economically feasible control options to attain best achievable NO_X emissions reductions.
6) Conduct all testing necessary to support the BACT analysis and to quantify emissions during any set of operational conditions including variations in fuel, and adequate to categorize increases in NO_X emissions above the current BACT limit as thermal NO_X, fuel NO_X or prompt NO_X.
7) Analyze add-on controls used in other industries to reduce NO_X emissions, for example but not limited to, Selective Catalytic Reduction, Non-Selective Catalytic Reduction as well as methods of lowering exhaust temperatures to reduce thermal NO_X emissions.
8) Submit bi-monthly progress reports during the BACT analysis.
9) Within 60 days of the termination of the one-year BACT analysis, submit an application for a permit which will include the final BACT analysis and BACT limit.
10) Include with the application an assessment of CAM and if needed, a CAM Plan.
11) Review the impacts of secondary formation of $PM_{2.5}$ resulting from the increase in NO_X emissions.

Failure to meet the requirements of this compliance schedule may result in withdrawal of the permit and/or potential enforcement actions by the Air Quality Division.

MAJOR SOURCE AIR QUALITY PERMIT
STANDARD CONDITIONS
(July 21, 2009)

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(18) 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.

[OAC 252:100-43-6]

Mr. John Carver, Vice President – Safety and Environmental Compliance
Pryor Chemical Company
P.O. Box 429
Pryor, Oklahoma 74361

RE: Operating Permit No. **2008-100-C (M-2) (PSD)**
Pryor Chemical Company
Pryor Plant, Mid America Industrial Park
Pryor, Mayes County

Dear Mr. Carver:

Enclosed is the permit authorizing construction of the referenced facility. Please note that this permit is issued subject to standard and specific conditions, which are attached. These conditions must be carefully followed since they define the limits of the permit and will be confirmed by periodic inspections.

Also note that you are required to annually submit an emission inventory for this facility. An emission inventory must be completed on approved AQD forms and submitted (hardcopy or electronically) every year by April 1st. Any questions concerning the form or submittal process should be referred to the Emission Inventory Staff at 405-702-4100.

Thank you for your cooperation in this matter. If we may be of further service, please contact David Pollard at (918) 293-1617 or by mail at DEQ Regional Office at Tulsa, 3105 East Skelly Drive, Suite 200, Tulsa, Oklahoma, 74105.

Sincerely,

Phillip Fielder, P.E., Permits and Engineering Group Manager
AIR QUALITY DIVISION

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-C (M-2) (PSD)

Pryor Chemical Company,

having complied with the requirements of the law, is hereby granted permission to construct the Idled Sources (consisting of Ammonia Plant #1, Ammonia Plant #3, Urea Plant #1 and associated emissions points), operate Ammonia Plant #1 and Ammonia Plant #3 in accordance with the approved 1-year trial BACT limit, and to increase the throughput capacity of Cooling Tower #1, at 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 July 21, 2009 and specific conditions, both attached.

Except as authorized under Section VIII of the Standard Conditions, this permit shall expire 14 months from the issuance date. This includes the 1-year trial BACT analysis and the 60-day submittal deadline for the operating application.

Director, Air Quality Division **Date**