OhioEPA

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

11/22/2013

Certified Mail

No	TOXIC REVIEW
Yes	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
Yes	CEMS
Yes	MACT/GACT
Yes	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
No	MODELING SUBMITTED
Yes	MAJOR GHG
Yes	SYNTHETIC MINOR TO AVOID MAJOR GHG

Michael Resar
PCS Nitrogen Ohio, L.P.
2200 Fort Amanda Road
Lima, OH 45804

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0302020370
Permit Number: P0115063
Permit Type: Initial Installation
County: Allen

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install for the referenced facility has been issued for the emissions unit(s) listed in the Authorization section of the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the permit. A public notice will appear in the Ohio Environmental Protection Agency (EPA) Weekly Review and the local newspaper, The Lima News. A copy of the public notice and the draft permit are enclosed. This permit can be accessed electronically on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab. Comments will be accepted as a marked-up copy of the draft permit or in narrative format. Any comments must be sent to the following:

Andrew Hall
Permit Review/Development Section
Ohio EPA, DAPC
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, Ohio 43216-1049

and

Ohio EPA DAPC, Northwest District Office
347 North Dunbridge Road
Bowling Green, OH 43402

Comments and/or a request for a public hearing will be accepted within 30 days of the date the notice is published in the newspaper. You will be notified in writing if a public hearing is scheduled. A decision on issuing a final permit-to-install will be made after consideration of comments received and oral testimony if a public hearing is conducted. Any permit fee that will be due upon issuance of a final Permit-to-Install is indicated in the Authorization section. Please do not submit any payment now. If you have any questions, please contact Ohio EPA DAPC, Northwest District Office at (419)352-8461.

Sincerely,

Michael W. Ahern

Michael W. Ahern, Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 *-Via E-Mail Notification*
Ohio EPA-NWDO; Indiana

Allen County

PUBLIC NOTICEPUBLIC HEARING
OHIO ENVIRONMENTAL PROTECTION AGENCY
ISSUANCE OF A DRAFT PERMIT-TO-INSTALL TO
PCS Nitrogen Ohio, L.P.
2200 Fort Amanda Road
Lima, Ohio 45804

Public notice is hereby given that the Ohio EPA - Division of Air Pollution Control (DAPC) has issued, on ***November 22 , 2013***, a draft Permit-to-Install (PTI) to
PCS Nitrogen Ohio, L.P. (Permit Number: P0115063). The draft PTI involves a proposed modification of existing plant operations to increase the facility's production capacity of ammonia and urea. The proposed project is subject to PSD review requirements for greenhouse gas emissions. No modeling of the ambient air impact was triggered.

The proposed project is for the PCS Nitrogen Ohio, L.P. facility located at 2200 Fort Amanda Road, Lima, Ohio 45804.

Copies of the draft PTI are available for review at Ohio EPA's Northwest District Office, 347 North Dunbridge Road, Bowling Green, Ohio, (419) 352-8461. The draft permit may also be accessed through Ohio EPA's website at the following link:

http://www.epa.ohio.gov/dapc/newpermits/issued.aspx

An Ohio EPA information session and public hearing concerning the draft PTI will be held on ***January 9, 2014***at the ***Lima City Council Chambers, 50 Town Square, Lima, Ohio 45801***. The information session will begin at ***6:30*** pm. The public hearing will follow immediately and continue until all persons have had the opportunity to provide testimony related to the proposed permit.

All interested persons are entitled to attend or be represented and give written or oral comments on the draft permit at the hearing. Written comments must be received by Ohio EPA at the close of the business day on ***January 15, 2014***. Comments received after this date will not be considered to be a part of the official record. Written comments may be submitted at the hearing or sent to: Jeff Skebba, Division of Air Pollution, Ohio EPA's Northwest District Office, 347 North Dunbridge Road, Bowling Green, Ohio 43402.

Permit Strategy Write-Up

1. Check all that apply:

   _X_ Synthetic Minor Determination

   Netting Determination

2. Source Description:

   PCS Nitrogen Ohio, L.P. (PCS) operates a fertilizer manufacturing plant in Lima, Ohio (Allen County) that mainly produces ammonia and urea based fertilizer products. This permit to install (PTI) is for a proposed ammonia and urea expansion project at the existing facility. The purpose of this project is to produce more ammonia to be used for: 1) additional shipment of anhydrous ammonia offsite to other PCS facilities and/or customers, and 2) additional urea synthesis to produce more urea solutions, such as diesel exhaust fluid (DEF) for additional shipment offsite to customers.

3. Facility Emissions and Attainment Status:

   PCS is a major stationary source of multiple criteria and regulated pollutants for purposes of both Prevention of Significant Deterioration (PSD) and Title V permitting.

   The area where PCS is located (Allen County) is classified as attainment or unclassifiable for all criteria pollutants, particulate matter 10 microns and less in diameter (PM_{10}), particulate matter 2.5 microns and less in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb).

4. Source Emissions:

   The ammonia and urea expansion project involves the installation of 3 new air emissions units, shutdown of 1 emissions unit, and several other emissions units will be "modified" (9 units) or "affected" (12 units). The following table identifies emission increases for the proposed project:

PROJECT EMISSION INCREASES

Operations, Property, and/or Equipment Description	Emissions Unit ID	Emissions Unit Project Status	Pollutant Increases (tons/year)[a]							
			PM	PM10	PM2.5	SO2	NOx	VOC	CO	Carbon dioxide equivalent (CO2e)
Boiler #2 (227 mmBtu/hr – natural gas)	B502	Affected	1.30	1.30	1.30	0.10	23.96	0.94	14.37	20,577.52
Primary Reformer (750.1 mmBtu/hr – natural gas and tail, flash, purge and regenerative fuel gas)	B503	Modified	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ammonia Load Heater (product area) (40 mmBtu/hr – natural	B507	Affected	0.24	0.24	0.24	0.02	3.17	0.17	2.66	3827.58

gas)										
Boiler #3 (227 mmBtu/hr – natural gas)	B509	Replacement	1.86	1.86	1.86	0.15	4.57	1.34	20.54	29,399.43
Urea Water or UAN Solution Truck/Railcar Loading	J001	Modified								
DEF Urea Water Solution Truck/Railcar Loading	J002	New								
Reforming Section (Ammonia Unit)	P520	Modified						0.24	2.50	
Purification Section (Ammonia Unit)	P521	Modified						1.25	6.67	
Synthesis Section (Ammonia Unit)	P522	Modified							0.46	
CO2 Stripper Section (Ammonia Unit)	P523	Modified						0.00	0.67	156,778.46
Synthesis Section (Urea Plant)	P526	Modified					0.54	9.95		
Concentrator Section (Urea Plant)	P529	Affected						4.87	0.16	
Ammonia (Anhydrous) Truck Loading	P554	Affected								
Ammonia (Anhydrous) Railcar Loading	P554	Affected								
Reactor Feed Section (Urea Plant)	P563	Modified						1.24		
UTI Hotwell Section (Urea Plant)	P564	Modified	0.04	0.04	0.04			7.59	0.89	
Ammonia (Anhydrous) Storage Tanks (T-d, T-6)	T518	Affected								
Ammonia (Anhydrous) Storage Spheres (S-1, S-3)	T537	Affected								
Ammonia (Anhydrous) Storage Drums (D-4, D-5)	T551	Affected								
DEF Urea Water 50% Storage/Blend Tank (T-324)	T622	Affected								
50% Urea Liquor Storage Tank	T623	New								
Natural Gas Feed Heater (3 mmBtu/hr – natural gas)		Affected	0.03	0.03	0.03		0.35	0.02	0.30	427.00
Diesel Fuel Storage Tank – Truck Mobiles		Affected						0.02		
DEF Urea Water 32.5% Storage Tank (T-325)										
Total Project Emission Increases			3.47	3.47	3.47	0.27	32.59	27.63	49.22	**210587.26**
PSD Significant Emissions Threshold Levels			25	15	10	40	40	40	100	75,000

[a]Modifications to CO2 Stripper Section will result in an actual decrease in VOC emissions while modifications to the Primary Reformer will result in an actual decrease in all pollutants. Because this project will not involve or require a determination of contemporaneous net emissions increases, a value of 0.00 was applied to the decreases indicated above for purposes of calculating the project emission increases.

Emission increases associated only with the proposed project exceed PSD significant emission threshold levels for CO2e and triggers a PSD review for greenhouse gases (GHG).

This permit establishes federally enforceable requirements for the following emissions units contained in this permit:

B503 .....Ammonia Unit - Primary Reformer
B507 .....Ammonia Load Heater (product area)
B509 ……..Ammonia Unit - Boiler #3
P520 .....Ammonia Unit - Reforming Section
P521 .....Ammonia Unit - Purification Section
P522 .....Ammonia Unit - Synthesis Section
P523 .....Ammonia Unit - CO2 Stripper Section
P526 .....Urea Plant - Synthesis Section
P563 .....Urea Plant - Reactor Feed Section
P564 .....Urea Plant - UTI Hotwell Section

Federally enforceable requirements are being established to:

- Restrict operations of the Ammonia Unit - Reforming Section (P520) including start-up and shutdown to limit emissions of CO and VOC;
- Restrict methanol usage (as an anti-freeze) in Ammonia Unit - Synthesis Section (P522) to limit emissions of VOC;
- Restrict start-up operations of the Urea Plant - Synthesis Section (P526) to limit emissions of NOx;
- Establish mass emission limitations to represent potential to emit (PTE) based on maximum capacity under physical and operation design of emission units.

5. Conclusion:

   Federally enforceable restrictions and limitations are being established mainly to reinforce and ensure the level of criteria pollutant emissions contained in this permit will indisputably represent the PTE and the resulting calculated emission increases associated with this project will be below PSD significant thresholds.

6. Please provide additional notes or comments as necessary:

   None

STAFF DETERMINATION FOR THE APPLICATION TO CONSTRUCT UNDER BOTH THE PREVENTION OF SIGNIFICANT DETERIORATION FOR PCS NITROGEN OHIO, L.P. LIMA, OHIO (ALLEN COUNTY) PERMIT NUMBER P0115063

Ohio Environmental Protection Agency
Division of Air Pollution Control
Lazarus Government Center
50 West Town St., Suite 700
Columbus, Ohio 43215

The Clean Air Act and regulations promulgated thereunder require that major air pollution sources undergoing construction or modification comply with all applicable Prevention of Significant Deterioration (PSD) provisions and nonattainment area New Source Review (NSR) requirements. The federal PSD rules govern emission increases in attainment areas for major stationary sources, which are facilities with the potential to emit 250 tons per year or more of any pollutant regulated under the Clean Air Act, or 100 tons per year or more if the source is included in one of 28 source categories. In nonattainment areas, the definition of major stationarysource is one having at least 100 tons per year potential emissions. A major modification is one resulting in a contemporaneous netincrease in emissions which exceeds the significance level of one or more pollutants. Any changes in actual emissions within this five- or ten-year period are considered to be contemporaneous. In addition, Ohio has incorporated the PSD and NSR requirements by rule under OAC 3745-31, and currently has a program that is fully approved by USEPA. For PM2.5, Ohio will have to use the requirements established in 40 CFR Part 51, Appendix S until the Ohio Administrative Code regulations are modified to include PM2.5 emissions.

Both PSD and nonattainment NSR rules require that certain analyses be performed before a facility can obtain a permit authorizing construction of a new source or major modification to a major stationary source. The principal requirements of the PSD regulations are:

1) Best Available Control Technology (BACT) review - A detailed engineering review must be performed to ensure that BACT is being installed for the pollutants for which the new source is a major stationary source.

2) Ambient Air Quality Review - An analysis must be completed to ensure the continued maintenance of the National Ambient Air Quality Standards (NAAQS) and that any increases in ambient air pollutant concentrations do not exceed the incremental values set pursuant to the Clean Air Act.

For nonattainment areas, the requirements are:

1) Lowest Achievable Emission Rate (LAER)

   a) The most stringent emission limitation that is contained in the implementation plan of any state for such class or category of emissions unit, unless the owner or operator of the proposed emissions unit demonstrates that such limitations are not achievable; or,

   b) The most stringent emission limitation that is achieved in practice by such class or category of emissions unit.

   This limitation, when applied to a major modification, means lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new or modified emissions unit to emit any air pollutant in excess of the allowable amount under applicable new source standards of performance.

2) Compliance certification

The applicant must certify that all existing major stationary sources owned or operated by the applicant (or any entity controlling, controlled by, or under common control with the applicant) in Ohio as the proposed major stationary source or major modification are in compliance with all applicable emission limitations and standards under the Clean Air Act (or are in compliance with an expeditious schedule which is federally enforceable or contained in a court decree).

Site/Facility Description

The PCS Nitrogen Ohio, L.P. facility is located in Lima, Ohio, Allen County.

This area is classified as attainment or unclassifiable for all criteria pollutants, particulate matter 10 microns and less in diameter (PM_{10}), particulate matter 2.5 microns and less in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb).

PCS Nitrogen Ohio, L.P. operates a nitrogenous fertilizer manufacturing plant. The facility is a major stationary source of multiple criteria and regulated pollutants for purposes of both Prevention of Significant Deterioration (PSD) and Title V permitting.

Project Description

This permit to install (PTI) is for a proposed ammonia and urea expansion project at the existing facility. The purpose of this project is to produce more ammonia to be used for: 1) additional shipment of anhydrous ammonia offsite to other PCS facilities and/or customers, and 2) additional urea synthesis to produce more urea solutions, such as diesel exhaust fluid (DEF) for additional shipment offsite to customers. The additional ammonia production under this project will be accomplished through installation of a “KRES” unit, which essentially acts as a heat exchanger to recover excess heat from the exothermic reaction used in current ammonia production operations. The recovered excess heat will be used to react/produce additional ammonia without any additional fuel firing at the Primary Reformer (B503). As part of this project, PCS Nitrogen Ohio, L.P. will install 3 new air emissions units, shutdown 1 emissions unit, and several other emissions units will be “modified” (9 units) or “affected” (12 units). The air emissions units that are part of this project include the following:

1. B501 .....Ammonia Unit - Boiler #1 (227 mmBtu/hr - Natural Gas) ..... Shutdown
2. B509 ……..Ammonia Unit - Boiler #3 (227 mmBtu/hr - Natural Gas) ..... Replacement
3. B502 .....Ammonia Unit - Boiler #2 (227 mmBtu/hr - Natural Gas) ..... Affected
4. B503 .....Ammonia Unit - Primary Reformer (750.1 mmBtu/hr - .....Natural Gas and Tail & Flash & Purge & Regen. Fuel Gas) ..... Modified
5. B507 .....Ammonia Load Heater (product area) (40 mmBtu/hr - Natural Gas) ..... Affected
6. J001 .....Urea Water or UAN Solution Truck/Railcar Loading (previously DEF) ..... Modified
7. P520 .....Ammonia Unit - Reforming Section ..... Modified
8. P521 .....Ammonia Unit - Purification Section ..... Modified
9. P522 .....Ammonia Unit - Synthesis Section ..... Modified
10. P523 .....Ammonia Unit - CO2 Stripper Section ..... Modified
11. P526 .....Urea Plant - Synthesis Section ..... Modified
12. P529 .....Urea Plant - Concentrator Section ..... Affected
13. P554 .....Ammonia (Anhydrous) Truck Loading ..... Affected
14. P555 .....Ammonia (Anhydrous) Railcar Loading ..... Affected
15. P563 .....Urea Plant - Reactor Feed Section ..... Modified
16. P564 .....Urea Plant - UTI Hotwell Section ..... Modified

17. T518 .....Ammonia (Anhydrous) Storage Tanks (T-5, T-6) ..... Affected
18. T537 .....Ammonia (Anhydrous) Storage Spheres (S-1, S-3) ..... Affected
19. T551 .....Ammonia (Anhydrous) Storage Drums (D-4, D-5) .... Affected
20. Z508 .....Natural Gas Feed Heater (3 mmBtu/hr - Natural Gas) ..... Affected
21. No ID Established ……....Diesel Fuel Storage Tank - Track Mobiles ..... Affected
22. No ID Established ……....DEF Urea Water 32.5% Storage Tank (T-325) ..... Affected
23. T622 ……....DEF Urea Water 50% Storage/Blend Tank (T-324) ..... Affected
24. T623 ……....50% Urea Liquor Storage Tank..... New
25. J002 ……....DEF Urea Water Solution Truck/Railcar Loading .... New

New Source Review (NSR)/PSD Applicability

The current PCS Nitrogen Ohio, L.P. facility meets the definition for a major stationary source for attainment (PSD) as defined in 3745-31-01 of Ohio's Administrative Code.

PCS Nitrogen Ohio, L.P. is located in an area designated as attainment for PM10, PM2.5, SO2, NOx, CO, VOC (ozone), and lead. The PCS Nitrogen Ohio, L.P. facility is one of the 28 stationary source categories (chemical process plants) that have the potential to emit greater than 100 tons per year of PM10, PM2.5, SO2, NOx, CO, VOC, and particulate matter (PM). PCS Nitrogen Ohio, L.P. has a potential to emit greater than 100,000 tons of carbon dioxide equivalent (CO2e) emissions resulting in greenhouse gases (GHG) from the facility becoming "subject to regulation" as defined in 40 CFR 51.166(b)(48)(i). The potential to emit for GHG on a mass basis is greater than 100 tons per year.

The proposed installations and modifications by PCS Nitrogen Ohio, L.P. in this permitting action are deemed to be a physical change in or change in the method of operation at a current major stationary source. The proposed installations and modifications result in a significant increase in emissions as specified in 3745-31-01 of the Ohio Administrative Code that trigger a major modification at a current major stationary source. Emission increases associated only with the proposed project exceed PSD significant emission threshold levels for GHGs. Table 1 below identifies emission increases for the proposed project:

TABLE 1

PROJECT EMISSION INCREASES

Operations, Property, and/or Equipment Description	Emissions Unit ID	Emissions Unit Project Status	Pollutant Increases (tons/year)[a]							
			PM	PM10	PM2.5	SO2	NOx	VOC	CO	CO2e
Boiler #2 (227 mmBtu/hr – natural gas)	B502	Affected	1.30	1.30	1.30	0.10	23.96	0.94	14.37	20,577.52
Primary Reformer (750.1 mmBtu/hr – natural gas and tail, flash, purge and regenerative fuel gas)	B503	Modified	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ammonia Load Heater (product area) (40 mmBtu/hr – natural gas)	B507	Affected	0.24	0.24	0.24	0.02	3.17	0.17	2.66	3827.58
Boiler #3 (227 mmBtu/hr – natural gas)	B509	Replacement	1.86	1.86	1.86	0.15	4.57	1.34	20.54	29,399.43
Urea Water or UAN Solution Truck/Railcar Loading	J001	Modified								
DEF Urea Water Solution Truck/Railcar Loading	J002	New								
Reforming Section	P520	Modified						0.24	2.50	

(Ammonia Unit)										
Purification Section (Ammonia Unit)	P521	Modified						1.25	6.67	
Synthesis Section (Ammonia Unit)	P522	Modified							0.46	
CO2 Stripper Section (Ammonia Unit)	P523	Modified						0.00	0.67	156,778.46
Synthesis Section (Urea Plant)	P526	Modified					0.54	9.95		
Concentrator Section (Urea Plant)	P529	Affected						4.87	0.16	
Ammonia (Anhydrous) Truck Loading	P554	Affected								
Ammonia (Anhydrous) Railcar Loading	P554	Affected								
Reactor Feed Section (Urea Plant)	P563	Modified						1.24		
UTI Hotwell Section (Urea Plant)	P564	Modified	0.04	0.04	0.04			7.59	0.89	
Ammonia (Anhydrous) Storage Tanks (T-d, T-6)	T518	Affected								
Ammonia (Anhydrous) Storage Spheres (S-1, S-3)	T537	Affected								
Ammonia (Anhydrous) Storage Drums (D-4, D-5)	T551	Affected								
DEF Urea Water 50% Storage/Blend Tank (T-324)	T622	Affected								
50% Urea Liquor Storage Tank	T623	New								
Natural Gas Feed Heater (3 mmBtu/hr – natural gas)		Affected	0.03	0.03	0.03		0.35	0.02	0.30	427.00
Diesel Fuel Storage Tank – Truck Mobiles		Affected						0.02		
DEF Urea Water 32.5% Storage Tank (T-325)										
Total Project Emission Increases			3.47	3.47	3.47	0.27	32.59	27.63	49.22	**210587.26**
PSD Significant Emissions Threshold Levels			25	15	10	40	40	40	100	75,000

[a]Modifications to CO2 Stripper Section will result in an actual decrease in VOC emissions while modifications to the Primary Reformer will result in an actual decrease in all pollutants. Because this project will not involve or require a determination of contemporaneous net emissions increases, a value of 0.00 was applied to the decreases indicated above for purposes of calculating the project emission increases.

The proposed project triggers PSD review requirements for GHGs.

Control Technology Review (BACT)

The requirement to conduct a BACT analysis and determination is set forth in section 165(a)(4) of the Clean Air Act (Act), in federal regulations at 40 CFR Part 52.21.(j) and also in OAC rules 3745-31-15(C) and 3745-31-01(S). The BACT requirement is defined as:

> "an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the director, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such major stationary source or major modification through application of production processes or available methods, systems and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant that would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60, 61, and 63. If the director determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit

would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be approved by the director instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation and shall provide for compliance by means which achieve equivalent results."

The BACT process was further formalized in a memorandum by USEPA on December 1, 1987 and in the draft New Source Review Workshop Manual (EPA 1990b) issued on March 15, 1990, by introducing a "top-down" concept for BACT analysis. The top-down process requires that all available control technologies be ranked in descending order of control effectiveness. The BACT process first examines the most stringent - or top - alternative. That alternative is established as BACTunless it is demonstrated that technical considerations, or energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not applicable. If the most stringent technology is eliminated, then the next most stringent alternative is considered, and this process is continued until an acceptable BACT is selected.

The objective of the BACT analysis is to conduct pollutant-specific control technology evaluation per USEPA requirements. The BACT evaluation steps consist of:

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; and

Step 5: select the most effective control based on energy, environmental and economic impacts (generally the feasible technology that is also considered to be cost effective).

The ammonia and urea expansion project triggered a BACT analysis for GHGs. The results of the BACT evaluation for GHGs is presented in the following table:

Emissions Unit	Pollutant	BACT Requirements
Ammonia Unit - Primary Reformer (750.1 mmBtu/hr - Natural Gas and Tail & Flash & Purge & Regenerative Fuel Gas (B503)	CO_2 as a surrogate for GHG	Carbon dioxide (CO_2) as a surrogate for greenhouse gas (GHG) emissions shall not exceed 388,051 tons per rolling, 12-month period; Use of low-carbon gaseous fuels (natural gas, tail, flash, purge and regeneration fuel gas); and Annual burner tuning and heater inspection.
Ammonia Unit - Boiler #3 (227 mmBtu/hr - Natural Gas) (B509)	CO_2 as a surrogate for GHG	Carbon dioxide (CO_2) as a surrogate for greenhouse gas (GHG) emissions shall not exceed 116,972 tons per rolling, 12-month period; Use of low-carbon gaseous fuel (natural gas); and Annual burner tuning and heater inspection.

Emissions Unit	Pollutant	BACT Requirements
Ammonia Unit - CO2 Stripper Section (P523)	CO_2 as a surrogate for GHG	Carbon dioxide (CO_2) as a surrogate for greenhouse gas (GHG) emissions shall not exceed 1,030,930 tons per rolling, 12-month period; 2,404 lbs of CO_2/ton of ammonia produced, as a rolling, 30-day average; and Good operational practices, including the use of CO_2 within the downstream urea synthesis and commercial sale of CO_2 to the on-site, independently owned hydrogen plant.

The details associated each individual step of the BACT evaluation is contained in attached Appendix A. Appendix A contains the required 5-step top-down analysis from permit application number A0047234 submitted on July 10, 2013.

Modeling Summary:

The PCS Nitrogen Ohio, L.P. facility is located in Lima, Ohio (Allen County). The area is attainment for all criteria pollutants. U.S. EPA regulations require the establishment of baseline air quality in the vicinity of the proposed project. This is normally accomplished using representative air quality monitoring data. Air quality modeling can be utilized to demonstrate that the project will have less than a threshold impact. This threshold impact is identified as the PSD monitoring de minimus level. If the projected impact from the proposed project exceeds this level, ambient data must be collected or existing representative data must be identified which is representative of the area.

For this project, no criteria pollutants or air toxic pollutants exceeded the modeling applicability thresholds (when including emissions decreases associated with the project), and therefore air dispersion modeling is not required or performed for this project.

Conclusions

Based upon the review of the permit to install application and the supporting documentation provided by the applicant, the Ohio EPA staff has determined the installation/modification will comply with all applicable State and Federal environmental regulations and that the requirements for PSD review are satisfied. Therefore, the Ohio EPA staff recommends that a permit to install be issued to PCS Nitrogen Ohio, L.P. for the proposed project.

Appendix A

BACT ANALYSIS

from

Permit Application (A0047234)

for

PCS Nitrogen Ohio, L.P.

Submitted July 10, 2013.

Application Pages 3-1 through 5-11

Ammonia Unit Boiler #3 (B50X) is a new boiler. The boiler will be capable of producing 162,000 pounds of steam per hour and is a like-kind replacement for Ammonia Unit Boiler #1 (B501). This unit has a heat input rating of 227 MMBtu/hr. The boiler will burn only natural gas. The following presents the BACT analysis for this unit.

3.1 Step 1 – Identification of Best Available Control Technologies

The first step of the BACT analysis is to identify all available control technologies. The U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC) database is a useful resource to identify any approved BACT determinations.

A May 2013 RBLC database query was performed for permits issued after August 2, 2010, the effective date of the final GHG Tailoring Rule, which required PSD review for GHG emissions. The RBLC search indicated that there were seven facilities with reported GHG emission limits and/or control methods for similar sized units
(≤500 MMBtu/hr) based on a search of natural gas fired boilers and heaters, Process Code 12.300 - Gaseous Fuel & Gaseous Fuel Mixtures (>100 MMBtu to ≤250 MMBtu/hr) and Process Code 11.30 – Process 11.300 - Gaseous Fuel & Gaseous Fuel Mixtures (<250 MMBtu/hr). See Appendix A for a summary of the RBLC technology search results.

Given that the RBLC has limited case-specific GHG information due to the infancy of the GHG program, other published GHG BACT guidance documents were also referenced to identify all available control options.

The following technologies and work practices were identified as CO2 control options for the new boiler based on available information and data sources:

- Use of Low Carbon Fuels or Carbon Neutral Fuels
- Energy-Efficient Design of Boiler
- Overall Process Design Improvements
- Good Combustion Practices
- Applicable End of Pipe Control Technology
- Post-Combustion Carbon Capture and Storage (CCS)[9, 10]

9 Since Carbon Capture and Sequestration is considered technically infeasible, it could have been eliminated and typically would be eliminated from consideration in Step 2 of the BACT Analysis --- instead it is included and considered in Step 3 and herein as an “above and beyond” measure of diligence on the part of PCS Nitrogen.
10 Further, since there is no defined or true destruction rate efficiency or established “control efficiency” for CCS technologies, it is ranked last in order of effectiveness above.

Performance benchmarking information was used to evaluate CO2 control options relative to the control technologies and work practices used at other similar sources. The following sections discuss each of these CO2 control options.

3.1.1 Use of Low Carbon Fuels or Carbon Neutral Fuels

The new boiler will be fired on natural gas. Natural gas is considered a low carbon fuel when compared to other fossil fuels.

The potential on-site reduction in CO2 emissions that may be realized by switching from a traditional fossil fuel to a biomass fuel is based on the specific emission factor for the fuel as related to its caloric value. Pure biomass fuels include animal meal, waste wood products and sawdust, landfill gas and sewage sludge. Biomass fuels are traditionally viewed as carbon neutral.

Table 3-1 in this section presents the amount of CO2 formed when combusting fossil fuels, including natural gas that will be used by the new boiler, as well as alternative fuels.

Table 3-1 CO2 Emission Factors[11]

Fuel Type	Default CO2 Emission Factor
Coal and Coke	kg CO2/MMBtu
Anthracite	103.54
Bituminous	93.40
Sub-bituminous	97.02
Lignite	96.36
Coke	102.04
Natural Gas	kg CO2/MMBtu
Pipeline (Weighted U.S. Average)	53.02

[11] 40 CFR Part 98, Subpart C, Table C-1, *Default CO2 Emission Factors and High Heat Values for Various Types of Fuels.*

Table 3-1 CO2 Emission Factors (Continued)

Fuel Type	Default CO2 Emission Factor
Petroleum Products	kg CO2/MMBtu
Distillate Fuel Oil No. 1	73.25
Distillate Fuel Oil No. 2	73.96
Distillate Fuel Oil No. 4	75.04
Distillate Fuel Oil No. 5	72.93
Distillate Fuel Oil No. 6	75.10
Used Oil	74.00
Kerosene	75.20
Liquefied Petroleum gasses (LPG)	62.98
Propane	61.46
Propylene	65.95
Ethane	62.64
Ethanol	68.44
Ethylene	67.43
Isobutane	64.91

Fuel Type	Default CO2 Emission Factor
Isobutylene	67.74
Butane	65.15
Biomass Fuels-Gaseous	Kg CO2/MMBtu
Biogas (Captured Methane)	52.07
Biomass Fuels-Liquid	Kg CO2/MMBtu
Ethanol	68.44
Biodiesel	73.84
Biodiesel (100%)	73.84
Rendered Animal Fat	71.06
Vegetable Oil	81.55

3.1.2 Energy Efficient Design of Boiler

When possible based on boiler design and operation, the use of the following can provide an energy efficient design minimizing the required fuel combustion for the new boiler:

- Use of newer burner with latest proven engineering design in new boiler;
- Addition of air to air heat exchangers to capture and re-use the waste heat potentially recovered from the boiler outlet stack; and
- Addition of combustion air pre-heaters to pre-heat forced draft fan combustion air to potentially improve boiler thermal efficiency.

3.1.3 Overall Process Design Improvements

When possible, process design improvements that would require less steam to be produced can be implemented. If steam production is reduced, then the amount of natural gas required in the boiler is also reduced resulting in fewer GHG emissions from combustion.

3.1.4 Good Combustion Practices

- Good combustion practices for boilers fired with natural gas include the following:
- Good air/fuel mixing in the combustion zone;
- Sufficient residence time to complete combustion;
- Proper fuel gas supply system design and operation in order to minimize fluctuations in fuel gas quality;
- Good burner maintenance and operation;
- High temperatures and low oxygen levels in the primary combustion zone;
- Monitor oxygen levels and air intake to optimize the fuel/air ratio and minimize excess air;
- Utilization of economizers for boiler feed water heating;

• Implementing a maintenance program to monitor fouling conditions in the subject heaters; and

• Conduct a thermal tune-up annually. The tune-up will consist of inspection of the burner, flame pattern, and air-to-fuel ratio.

3.1.5 Applicable End of Pipe Control Technology

There is no known end of pipe add-on control technology that has the ability to control GHG emission by destroying them in the exhaust stream or converting them to a non-regulated pollutant. The only known end of pipe control technology for CO2 emissions control is postcombustion carbon capture and storage.

3.1.6 Post-Combustion Carbon Capture and Storage

Post-combustion carbon capture for fuel gas combustion could potentially be applied to conventional combustion techniques using air and carbon-containing fuels in order to isolate CO2 from the combustion exhaust gases.

There are a number of methods and processes that could be used to capture CO2 from the dilute exhaust gases produced by the new boiler. These capture technologies include separation with alkanolamine solvent or physical filters, cryogenic separation to condense the CO2, and membrane separation technologies. With a typical natural gas combustion source with a composition of only 8-10% CO2 w/w, none of these technologies are commercially available for deployment at this time for smaller, non-electric generating boilers like the new boiler.

In addition, the CCS technology is also comprised of the distinct stages below:

• Pressurization of the captured CO2;

• Transmission of CO2 via pipeline; and

• Sequestration for long term storage of the captured CO2 or compression/liquefaction of CO2 for industrial applications.

In order to provide effective reduction of CO2 emissions, efficient methods of compression, transport, and storage would also be required. Storage of CO2 may be through beneficial use options such as compressed and liquefied CO2 for commercial sale, storage through geologic sequestration or storage through terrestrial sequestration in ecosystems. Suitable geological storage formations include the following:

• Depleted oil and gas reservoirs;

• Unmineable coal seams;

• Saline formations; and

• Basalt formations.

There are several major unresolved issues with respect to geologic sequestration including the legal process for closing and remediating sequestration sites and liability for accidental releases from these sites. The August 2010 US Department of Energy, Carbon Capture & Storage Task Force (CCSTF) report noted the following four (4) fundamental near-term and long-term concerns for CCS[12]:

1. The existence of market failures, especially the lack of a climate policy that sets a price on carbon and encourages emission reductions.

2. The need for a legal/regulatory framework for CCS projects that facilitates project development, protects human health and the environment, and provides public confidence that CO2 can be stored safely and securely.

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[12] Note 4.

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3. Clarity with respect to the long-term liability for CO2 sequestration, in particular regarding obligations for stewardship after closure and obligations to compensate parties for various types and forms of legally compensable losses or damages.

4. Integration of public information, education and outreach throughout the lifecycle of CCS projects in order to identify key issues, foster public understanding, and build trust between communities and project developers.

3.1.7 Benchmarking Against Other Similar Sources

Review of the U.S. EPA RBLC technology search results indicates that the typical boiler GHG BACT for similar sized units is low carbon fuel, use of energy efficient equipment, overall process design improvements that would require less steam to be produced and good combustion practices in the boiler.

3.2 Step 2 - Eliminate Technically Infeasible Options

Step 2 of the BACT analysis involves the evaluation of all of the identified available control technologies from Step 1 to determine their technical feasibility. A control technology is technically feasible if (1) it has been demonstrated and operated successfully on the same type of source under review, or (2) it is available and applicable to the source type under review. A control technology is “available” if it has reached the licensing and commercial sales phase of development and therefore is "commercially available." A control technology is applicable if it can reasonably be installed and operated on the source type under consideration. If a given technology has not been used on the source type under review, thought should be given to transferring technology from similar gas streams with the same physical and chemical properties. Technical infeasibility is demonstrated through clear physical, chemical, or other engineering principles that demonstrate that technical difficulties preclude the successful use of the control option.

3.2.1 Use of Carbon Neutral Fuels

The production of steam and heat is an essential function of the new boiler. Natural gas is the lowest GHG-emitting fossil fuel that could be used for this steam production. However, natural gas also serves as the ammonia process feedstock, which is used in several plant operations. U.S. EPA decisions and guidance indicate that the U.S. EPA does not consider the BACT requirement as a means to redefine the basic design of the source or change the fundamental scope of the project when considering available control alternatives. Therefore, because natural gas is an inherently low GHG emitting fuel and it is readily available to the plant, and because the current design is based on the use of a natural gas-fired boiler, alternative fuel firing analysis is not within the scope of this BACT analysis.

3.2.2 Carbon Capture and Storage

In the PSD and Title V Permitting Guidance For Greenhouse Gases document, the U.S. EPA has taken the position that CCS is an add-on pollution control technology that is available under Step 1 of the BACT analysis

for large CO2-emitting facilities, including fossil fuel fired power plants and industrial facilities with high-purity CO2 streams. Even for high-

purity CO2 streams, however, EPA has said that CCS should be eliminated in Step 2 of the BACT analysis if there are features pertinent to the successful operation of the technology at the source under review that render CCS technically infeasible.

The U.S. EPA guidance document provides little specific guidance on whether or how to consider CCS in situations not involving large emitting or high purity CO2 streams. However, some guidance specific to medium-sized natural gas boilers is provided in Appendix F to the guidance document which presents an example GHG BACT analysis for a 250 MMBtu/hr natural gas fired boiler. In the U.S. EPA boiler example, carbon capture is not listed or considered in the BACT analysis as a potentially available option. Under U.S. EPA guidance, therefore, a CO2 capture system is not a required part of the BACT analysis for a small to medium size combustion system, such as Boiler #3 at the PCS facility. Nonetheless, CCS is considered in this BACT review for Boiler #3 to provide an additional basis of analysis.

CCS is currently being tested in slip-stream and pilot scale projects only for boilers and heaters similar to Boiler #3 at the PCS facility. CCS technologies have not yet been proven to be commercially available for deployment on industrial boilers or heaters.

The increased difficulty in CO2 capture from a boiler's exhaust is due to four predominant factors: the boiler exhaust's low CO2 concentration, low pressure, low quantity of CO2 available for capture, and the high variability of load for these units. Gas fuel combustion exhaust streams have relatively low CO2 concentrations. The exhaust streams are typically 8-10% CO2 versus 12-15% for coal-fired boilers and >30% for high concentration industrial gas streams. This means that for a gas fired boiler, a very large volume of gas needs to be treated to recover the CO2. The low concentration and low pressure complicate the absorption and desorption of the CO2, which increases the energy required. Also, a low pressure absorption system creates a low pressure CO2 stream which requires a very high energy demand for compression prior to transport. Further, trace impurities in the flue gas tend to reduce the effectiveness of the CO2 absorbing processes. Lastly, the high variability in boiler design requires that each CO2 capture system be individually engineered for the site specific conditions.

Carbon dioxide removal from combustion gas streams has focused on the use of either highly specialized amine chemistries or more recently, membrane diffusion pressure technologies. Carbon dioxide membranes operate on the principle of selective permeation. Each gas component has a specific permeation rate. The rate of permeation is determined by the rate which a component dissolves into the membrane surface and the rate at which it diffuses through the membrane.

The components with higher permeation rates (such as CO2, H2, and H2S) will permeate faster through the membrane module than components with lower permeation rates (such as N2, C1, C2 and heavier hydrocarbons). For example, carbon dioxide is a "fast," more permeable, gas than methane. When a stream consisting of these two gases contacts the membrane, the carbon dioxide will permeate through the fiber at a faster rate than the methane. Thus, the feed stream is separated into a methane-rich (residual) stream on the

exterior of the membrane fiber and a carbon dioxide-rich (permeate) stream on the interior of the membrane fiber.

The primary driving force of the separation is the differential partial pressure of the permeating component. Therefore, the pressure difference between the feed gas and permeate gas and the concentration of the

permeating component determine the product purity and the amount of carbon dioxide membrane surface required.

However, despite the legitimacy of the science surrounding this membrane technology, the limited number of systems in place appear to be best suited to low volume and high pressure gas streams (>450 psi) consisting of methane, CO2, H2S and other similar compounds but not for dilute combustion gas streams in which CO2 concentrations are typically only 8-10% by volume, are at atmospheric pressure (14.7 psi), and in which the volume of flue gas is very large.

To reiterate, a CO2 capture system for small to medium size combustion systems, such as the new boiler, is not a technically feasible BACT option based on the dilute combustion gas streams in which CO2 concentrations are typically only 8-10% by volume. Although CCS is not technically feasible for the new boiler, CCS is further analyzed from an economic, energy and environment standpoint in Step 4 of this BACT review (Section 3.4) to provide an additional basis of analysis.

3.3 Step 3 - Rank Remaining Control Technologies

Step 3 identifies and ranks the most effective control technologies still under consideration after completing Steps 1 and 2. The rankings are based on previous RBLC decisions and vendor data provided for the controls identified in Steps 1 and 2.

The following control technologies and/or work practices for CO2 emissions from the new boiler are based on available information and data sources, and are listed in order of decreasing or equal effectiveness:

- Use of low carbon fuels;
- Energy efficient design of boilers;
- Use of good combustion practices;
- Process design improvements; and
- Carbon capture and storage. [13, 14]

[13] *Since Carbon Capture and Sequestration* is considered technically infeasible, it could have been eliminated and typically would be eliminated from consideration in Step 2 of the BACT Analysis --- instead it is included and considered in Step 3 and herein as an “above and beyond” measure of diligence on the part of PCS Nitrogen.

[14] Further, since there is no defined or true destruction rate efficiency or established “control efficiency” for CCS technologies, it is ranked last in order of effectiveness above.

The combination of the work practices are inherent in the boiler's design and operation at the PCS facility and are considered the baseline GHG control options. The RBLC entries (see Appendix A) that addresses CO2 emissions sets the BACT limit at 118 lbs CO2/MMBtu, which is obtained from AP-42, Section 1.4, Natural Gas emission factor, based on the good combustion practices control option.

Note that the process design improvements discussed in Section 2.3 and the DCS discussed in Section 2.4 directly improve the efficiency of the boiler and are considered an inherent part of the boiler's design and are part of the boiler's baseline emissions for BACT purposes.

3.4 Step 4 - Evaluate the Most Effective Controls and Document Results

This step evaluates the most effective control technologies still under consideration based on economics, energy, and environmental impacts. The results of the evaluation are documented and included in the BACT decision.

3.4.1 Use of Low Carbon Fuels

The combustion of only natural gas with efficient combustion/energy efficient design elements and good combustion practices is expected to achieve an emission rate of 118 lb/MMBtu for CO2. This is the baseline for this BACT analysis. Because the new boiler being procured will be fitted with natural gas burners there is no reason to examine the environmental, energy, or economic impacts of this technology.

3.4.2 Energy Efficient Design of Boilers

The combustion of only natural gas with efficient combustion/energy efficient design elements and good combustion practices is expected to achieve an emission rate of 118 lb/MMBtu for CO2. This is the baseline for this BACT analysis. The new boiler being procured has natural gas burners and energy efficient design elements inherently in the design.

Additional add-on energy efficiency design elements that are technically feasible include addition of air to air heat exchangers and addition of combustion air pre-heaters to pre-heat forced draft air. For the addition of air to air heat exchangers to capture and re-use the waste heat potentially recovered from the boiler outlet stacks, this activity is considered inefficient and uneconomical for the size and application. Boiler stack temperatures are in the range of 350oF to 375oF, and the boiler stack has a volumetric flow of approximately 100,000 ACFM. Even small air to air heat exchangers are only in the range of 60-70% efficient. The heat exchanger efficiency further declines (to 50% +/-) when exposed to high volumetric air flows in the range of 100,000 ACFM. To install an air to air heat exchanger system on the boiler would carry an approximate cost of $3MM and should not be considered economical relative to the offset of recovered heat at only 50% efficiency. The addition of combustion air preheaters to pre-heat forced draft fan combustion air to potentially improve boiler thermal efficiency is considered uneconomical. Again, the equipment cost alone for a B&W, Armstrong, or Zurn air pre-heater is approximately $0.8MM. Total installed cost would likely exceed $4MM given the substantial amount of space occupied by the pre-heaters and the amount of ductwork that would have to be reconfigured to accommodate the installation

of the heaters and coils. The addition of pre-heated air has been linked to corresponding increases in the generation of thermal NOx in the combustion zone and as a result, this option
is not appropriate due to the known environmental impacts (i.e. increase of the criteria pollutant, NOx). Accordingly, neither waste heat recovery on a boiler of this size, nor the addition of combustion air pre-heaters is an economically viable solution to reducing CO2 emissions for this project.

3.4.3 Use of Good Combustion Practices

The combustion of only natural gas with efficient combustion/energy efficient design elements and good combustion practices is expected to achieve an emission rate of 118 lb/MMBtu for CO2. This is the baseline for this BACT analysis. Because the facility will implement good combustion practices as part of the boiler's normal operation and maintenance, there is no reason to examine the environmental, energy, or economic impacts of this technology.

3.4.4 Process Design Improvements

When possible, process design improvements that would require less steam to be produced will be Implemented. If steam production is reduced, then the amount of natural gas required in the boiler is also reduced resulting in fewer GHG emissions from combustion. This is the baseline for this BACT analysis. Because the facility will implement process design improvements as part of the expansion project, there is no reason to examine the environmental, energy, or economic impacts of this technology.

3.4.5 Carbon Capture and Storage

The fact that CCS on similar gas combustion exhaust is too expensive can be illustrated quickly using industry estimates. By far the most significant costs are for capture of the CO2 from the exhaust, and compressing it to the pressure required for transport and sequestration. The capture and compression steps are very energy-intensive and would also result in additional emissions of criteria pollutants. The CCSTF report[15] presents carbon capture cost estimates to be approximately $95/metric tonne CO2 avoided ($105/ton) for a postcombustion system on a new installation[16]. These costs could ultimately be higher depending on site specific issues such as the need for potential off-site pipeline construction.

In addition to the extremely high costs for CCS, it should be recognized that a large portion of these costs are energy related. The two largest energy requirements of carbon capture post-combustion are the energy required to regenerate the solvent and the energy to compress the captured CO2 to typical pipeline pressures. Satisfying these high additional energy

[15] Note 4.
[16] Various literature sources report a fairly wide range of costs for employing CCS systems (typically $60 to $120/ton CO2 controlled). The range spanned by these cost estimates is driven primarily by site-specific considerations (especially CO2 concentration) and energy cost assumptions. In addition, estimates of the future performance of components of the capture, transport, storage, measurement and monitoring systems are uncertain. It is also noted that 70-90% of the stated costs are related to capture and compression of CO2 and uncertainty exists relative to the magnitude and accuracy of sequestration costs.

requirements create significant additional CO2 emissions and emissions of other conventional pollutants.

These cost factors along with the technical feasibility discussion in Section 3.2.2 make the application of CO2 capture on similar gas combustion exhaust extremely difficult and expensive. Therefore, it is proposed that CCS post-combustion is not BACT in light of the environmental, energy and economic impacts and the technical infeasibility of this control option.

3.5 Step 5 - Selection of BACT

Step 5 includes conclusions for the selection of BACT controls and emission limits relative to the designated PCS emission sources.

Ammonia Unit Boiler #3 (B50X) is a new source that will be installed as part of the project. Proposed BACT for Ammonia Unit Boiler #3 (B50X) is as follows:

- Firing only pipeline grade natural gas. Ammonia Unit Boiler #3 (B50X) will be Installed with an individual natural gas flow meter.

- Energy efficiency design of boiler. The boiler unit purchased will be a package boiler that incorporates energy efficient design elements including a newer burner with latest proven engineering design.

- Process design improvements. The facility's process design improvements are discussed in Section 2.3.

• Good combustion practices. Specific good combustion practices to be implemented on Ammonia Unit Boiler #3 (B50X) include:

– Optimizing excess air. The target percent oxygen in the stack will be 7-8% O2 at the outlet of the stack. Adjustments will be automatically performed by the O2 trim system. The boiler will be purchased and supplied with an O2 trim system from the manufacturer. Natural gas boilers are intended to operate with at least 30-50% excess air above the stoichiometric amount of air needed to support basic combustion. 7% stack O2 content is equivalent to 50% excess air and is supported by the following standard and professionally accepted equation:

$$\% \text{ Excess Air} = \frac{0.21*(\text{mols of air})_{\text{actual}} - (\text{mols of air})_{\text{theoretical}}}{(\text{mols of air})_{\text{theoretical}}}$$

– Unit Boiler #3 (B50X) will also have a variable frequency drive on the combustion/FD fan intended to efficiently control and modulate combustion and excess air to the boiler.

– Utilization of economizers for boiler feed water heating. Pre-heating the boiler feed water will increase the energy efficiency of the boiler.

– Metering of natural gas fuel flow.

– Use of a DCS for monitoring. The use of the DCS will assist with combustion control optimization.

– Implementation of boiler maintenance and preventive maintenance programs. Periodic burner tuning is required by the recent U.S. EPA Industrial and Commercial Boiler and Heater MACT regulation (Boiler MACT) on an annual basis for boilers and heaters without automatic O2 trim control and every 5 years for boilers and heaters with O2 trim control. PCS will implement burner tuning and inspections on the boiler as currently required for large gas-fired boilers at major sources in the Boiler MACT rule.

PCS proposes that the GHG emission limits for the new boiler be set as presented in

Table 3-2 GHG Emission Limits for New Boiler

Emission Unit	Pollutant	Standard Emission Limit	Averaging Period
Ammonia Unit Boiler #3 (B50X)	CO2e	117,212 tons/yr	Rolling 12-Month Total
	CO2	118 lb/MMBtu (From AP-42, Section 1.4)	Average of 3 1-hour Stack test runs
	CH4	0.0023 lb/MMBtu (From AP-42, Section 1.4)	Average of 3 1-hour Stack Test Runs
	N2O	0.00063 lb/MMBtu (From AP-42, Section 1.4)	Average of 3 1-hour Stack Test Runs

The CO_2, CH_4 and N_2O emissions from the boiler may not exceed the pounds per million Btu (lb/MMBtu) of heat input emission limits based on three one-hour stack test runs. Also, the total CO_2e emissions of tons per 12-month rolling total will not be exceeded at any time, as calculated based on

the natural gas monthly usage.

The above proposed BACT emission limits are consistent with the RBLC database query results for similar sources.

3.6 GHG BACT Compliance

Compliance will be demonstrated through records of the boiler's design, records of fuel usage, and maintenance records. The unit will be equipped with a gas meter to monitor fuel usage. The new boiler will be operated according to the manufacturer's specifications and monitoring will be consistent with the facility's GHG monitoring plan required by 40 CFR Part 98.

PCS will provide construction/modification specifications, operation and maintenance records, fuel records, and other record keeping documents to Ohio EPA upon request to demonstrate compliance with BACT.

SECTION 4
BACT ANALYSIS – AMMONIA UNIT PRIMARY REFORMER

Ammonia Unit Primary Reformer (B503) is an existing source that will be modified as part of the project. The reformer is included in this BACT analysis due to changes to the reformer heater bank and the duty of the reformer with the installation of the downstream KRES unit. This unit is a 750 MMBtu/hr reformer that is currently permitted to burn natural gas and/or clean process waste gas. The following presents the BACT analysis for this unit.

4.1 Step 1 – Identification of Best Available Control Technologies

The first step of the BACT analysis is to identify all available control technologies. The RBLC database is a useful resource to identify any approved BACT determinations.

A May 2013 RBLC database query was performed for permits issued after August 2, 2010, the effective date of the final GHG Tailoring Rule, which required PSD review for GHG emissions. The RBLC search indicated that there was only one reformer [Iowa Fertilizer Company in Middletown, Iowa (PSD-ID IA-0105)] with reported GHG emission limits and/or control methods based on a search of all process types, with a process name containing "reformer". In addition to the RBLC database information, two other fertilizer plant expansion project permits [CF Industries, Inc., Donaldsonville Nitrogen Complex in Donaldsonville, LA (PSD-LA-757) and Ohio Valley Resources, LLC in Rockport, Indiana (Draft T 147-32322-00062)] were located and similar sources from these permits were included with the RBLC search results. See Appendix A for a summary of the technology search results.

Given that the RBLC has limited case-specific GHG information due to the infancy of the GHG program, other published GHG BACT guidance documents were also referenced to identify all available control options.

The following technologies and work practices were identified as CO2 control options for the primary reformer based on available information and data sources:

- Use of Low Carbon Fuels or Carbon Neutral Fuels
- Combustion of Process Waste Gas
- Energy-Efficient Design of Reformer Furnace
- Overall Process Design Improvements
- Good Combustion Practices
- Applicable End of Pipe Control Technology
- Post-Combustion Carbon Capture and Storage (CCS)[17]

Performance benchmarking information was used to evaluate CO2 control options relative to the control technologies and work practices used at other similar sources. The following sections discuss each of these CO2 control options.

4.1.1 Previously Discussed Control Technologies and Work Practices

With the exception of combustion of process waste gas, Section 3.1 discussed each of these control technologies and work practices in detail and because of the similarities of the primary reformer to a boiler, those discussions are applicable to this unit.

4.1.2 Combustion of Process Waste Gas

The combustion of process waste gases containing methane will destroy any methane in the streams, as well as other organic material, and generate CO2. Since methane has a higher GWP than CO2, the result is a reduction in greenhouse gas emissions as CO2e. The combustion of methane as fuel is considered technically feasible and is an inherent part of the furnace's design and is part of the baseline emissions for BACT purposes.

4.2 Step 2 - Eliminate Technically Infeasible Options

Step 2 of the BACT analysis involves the evaluation of all of the identified available control technologies from Step 1 to determine their technical feasibility. As discussed in Sections 2.1 and 3.2 of this BACT analysis, a control technology is technically feasible if (1) it has been demonstrated and operated successfully on the same type of source under review, or (2) it is available and applicable to the source type under review. Technical infeasibility is demonstrated through clear physical, chemical, or other engineering principles that demonstrate that technical difficulties preclude the successful use of the control option.

[17] Since Carbon Capture and Sequestration is considered technically infeasible, it could have been eliminated and typically would be eliminated from consideration in Step 2 of the BACT Analysis --- instead it is included and considered in Step 3 and again here in Step 4 as an “above and beyond” measure of diligence on the part of PCS Nitrogen.

4.2.1 Use of Carbon Neutral Fuels

The production of heat is an essential function of the modified existing primary reformer. Natural gas is the lowest GHG-emitting fossil fuel that could be used for this heat production. However, natural gas also serves as the ammonia process feedstock, which is used in several plant operations. U.S. EPA decisions and guidance indicate that the U.S. EPA does not consider the BACT requirement as a means to redefine the basic design of the source or change the fundamental scope of the project when considering available control alternatives. Therefore, because natural gas is an inherently low GHG emitting fuel and it is readily available to

the plant, and because the current design is based on the use of a natural gas-fired reformer, alternative fuel firing analysis is not within the scope of this BACT analysis because it would fundamentally redefine the basic design of the reformer.

4.2.2 Carbon Capture and Storage

The technically feasibility discussion for CCS in Section 3.2.2 is applicable to the existing primary reformer due to the similarities in the exhaust streams.

4.3 Step 3 – Rank Remaining Control Technologies

Step 3 identifies and ranks the most effective control technologies still under consideration following Steps 1 and 2 of the BACT analysis. The rankings are based on previous RBLC decisions and vendor data provided for the controls identified in Steps 1 and 2.

The following control technologies and/or work practices were identified as CO2 control options for the primary reformer based on available information and data sources, and are listed in order of decreasing or equal effectiveness:

- Use of low carbon fuels;
- Combustion of process waste gas;
- Energy efficient design of reformer furnace;
- Use of good combustion practices;
- Process design improvements; and
- Carbon capture and storage[18].

The combination of the work practices are inherent in the primary reformer's design and operation at the PCS facility and are considered the baseline GHG control options. The RBLC entries (see Appendix A) that addresses CO2 emissions sets the BACT limit at 118 lbs CO2/MMBtu, which is obtained from AP-42, Section 1.4, Natural Gas emission factor, based on the good combustion practices control option.

Note that the process design improvements discussed in Section 2.3 and the DCS discussed in Section 2.4 directly improve the efficiency of the reformer furnace and are considered an

[18] See previous notes about the technical infeasibility of CCS.

inherent part of the furnace's design and are part of the baseline emissions for BACT purposes.

4.4 Step 4 - Evaluate the Most Effective Controls and Document Results

This step evaluates the most effective control technologies based on economics, energy, and environmental impacts. The results of the evaluation are documented and included in the BACT decision.

4.4.1 Use of Low Carbon Fuels

The combustion of natural gas with efficient combustion/energy efficient design elements and good combustion practices is expected to achieve an emission rate of 118 lb/MMBtu for CO2. This is the baseline for this BACT analysis. Because the reformer is currently fitted with gas burners there is no reason to examine the environmental, energy, or economic impacts of this technology.

4.4.2 Combustion of Process Waste Gas

The combustion of process waste gas in addition to natural gas with efficient combustion/energy efficient design elements and good combustion practices is expected to achieve an emission rate of 118 lb/MMBtu for CO2. This is the baseline for this BACT analysis. Because the reformer is currently fitted with gas burners there is no reason to examine the environmental, energy, or economic impacts of this technology.

4.4.3 Energy Efficient Design of Reformer Furnace

Additional energy efficiency design elements/energy reduction that are technically feasible for the reformer furnace are discussed in Section 2.3 along with the other process design improvements that are being made as part of the expansion project. As a result of the expansion project, the overall plant efficiency will increase by 3.2%. As such, it can be expected that the ammonia plant can and will produce 3.2% more ammonia for the same energy input. This is the baseline for this BACT analysis. Because the facility will implement the design improvements discussed in Section 2.3 as part of the expansion project, there is no reason to examine the environmental, energy, or economic impacts of this technology.

4.4.4 Use of Good Combustion Practices

The combustion of natural gas and process waste gas when available, along with efficient combustion/energy efficient design elements and good combustion practices is expected to achieve an emission rate of 118 lb/MMBtu for CO2. This is the baseline for this BACT analysis. Because the facility will implement good combustion practices as part of the reformer's normal operation and maintenance, there is no reason to examine the environmental, energy, or economic impacts of this technology.

4.4.5 Process Design Improvements

As discussed in Section 4.4.3, the overall plant efficiency will increase by 3.2%. As such, it can be expected that the ammonia plant can and will produce 3.2% more ammonia for the same energy input. This is the baseline for this BACT analysis. Because the facility will implement the design improvements discussed in Section 2.3 as part of the expansion project, there is no reason to examine the environmental, energy, or economic impacts of this technology.

4.4.6 Carbon Capture and Storage

It is proposed that CCS post-combustion is not BACT based on the environmental, energy and economic impacts discussed in Section 3.4.5.

4.5 Step 5 - Selection of BACT

Step 5 includes PCS's conclusions for the selection of BACT controls and emission limits. Ammonia Unit Primary Reformer (B503) is an existing source that will be modified as part of the project. Proposed BACT for Ammonia Unit Primary Reformer (B503) is as follows:

- Firing either pipeline grade natural gas or clean process waste gas (tail, flash, purge and regeneration fuel gas). Ammonia Unit Primary Reformer (B503) will be installed

with an individual natural gas and process gas flow meters.

- Energy efficiency design of reformer furnace.
- Process design improvements. The facility's process design improvements are discussed in Section 2.3.
- Good combustion practices. Specific good combustion practices to be implemented on Ammonia Unit Primary Reformer (B503) include:
  - Metering of natural gas and process gas fuel flow.
  - Use of a DCS for monitoring. The use of the DCS will assist with combustion control optimization.
  - Implementation of furnace maintenance and preventive maintenance programs.
  - PCS proposes that the GHG emission limits for the existing primary reformer be set as presented in Table 4-1.

Table 4-1 GHG Emission Limits for Existing Primary Reformer

Emission Unit	Pollutant	Standard Emission Limit	Averaging Period
Ammonia Unit Primary Reformer (B503)	CO_2e	390,413 tons/yr	Rolling 12-Month Total
	CO_2	118 lb/MMBtu (From AP-42, Section 1.4)	Average of 3 1-hour Stack Test Runs
	CH_4	0.0023 lb/MMBtu (From AP-42, Section 1.4)	Average of 3 1-hour Stack Test Runs
	N_2O	0.0022 lb/MMBtu (From AP-42, Section 1.4)	Average of 3 1-hour Stack Test Runs

The CO2, CH4 and N2O emissions from the primary reformer may not exceed the pounds per million Btu (lb/MMBtu) of heat input emission limits based on three one-hour stack test runs. Also, the total CO2e emissions of tons per 12-month rolling total will not be exceeded at any time, as calculated based on the natural gas and/or clean process waste gas monthly usage.

The above proposed BACT emission limits are consistent with the RBLC database query results for similar sources.

4.6 GHG BACT Compliance

Compliance will be demonstrated through records of the primary reformer's design, records of fuel usage, and maintenance records. The unit will be equipped with individual gas meters to monitor fuel usage of both natural gas and clean process waste gas.

The existing primary reformer will be operated and maintained according to the written work practice standards developed for this unit and incorporated into the facility's GHG monitoring plan required by 40 CFR Part 98.

PCS will provide construction/modification specifications, operation and maintenance records, fuel records, and other record keeping documents to Ohio EPA upon request to demonstrate compliance with BACT.

SECTION 5
BACT ANALYSIS – AMMONIA UNIT CO2 REGENERATOR/STRIPPER

Ammonia Unit CO2 Regenerator/Stripper (P523) is an existing source that will be modified as part of the project. The ammonia plant is expanding from a baseline actual production level of 1,790 tons per day to a post-project projected actual rate of 2,275 tons per day. This unit is a medium pressure condensate packed tower scrubber used to pressure strip CO2 from the ammonia gas by-product stream. The following presents the BACT analysis for this activity.

5.1 Step 1 – Identification of Best Available Control Technologies

The first step of the BACT analysis is to identify all available control technologies. The RBLC database is a useful resource to identify any approved BACT determinations.

A May 2013 RBLC database query was performed for permits issued after August 2, 2010, the effective date of the final GHG Tailoring Rule, which required PSD review for GHG emissions. The RBLC search indicated that there was only one CO2 regenerator/stripper [Iowa Fertilizer Company in Middletown, Iowa (PSD-ID IA-0105)] with reported GHG emission limits and/or control methods based on a search of all process types, with a process name containing "CO2" and "ammonia". In addition to the RBLC database information, two other fertilizer plant expansion project permits [CF Industries, Inc., Donaldsonville Nitrogen Complex in Donaldsonville, LA (PSD-LA-757) and Ohio Valley Resources, LLC in Rockport, Indiana (Draft T 147-32322-00062)] were located and similar sources from these permits were included with the RBLC search results. See Appendix A for a summary of the RBLC technology search results.

Given that the RBLC has limited case-specific GHG information due to the infancy of the GHG program, other published GHG BACT guidance documents were also referenced to identify all available control technologies.

In this non-combustion process, the only available control technologies for CO2 reduction are:

- Good Operational Practices
- Carbon Capture and Storage

5.2 Step 2 - Eliminate Technically Infeasible Options

Step 2 of the BACT analysis involves the evaluation of all of the identified available control technologies from Step 1 to determine their technical feasibility. The U.S. EPA guidance on technical feasibility has already been discussed in Sections 2.1 and 3.2. As discussed in Sections 2.1 and 3.2 of this BACT analysis, a control technology is technically feasible if (1) it has been demonstrated and operated successfully on the same type of source under

review, or (2) it is available and applicable to the source type under review. Technical infeasibility is demonstrated through clear physical, chemical, or other engineering principles that demonstrate that technical difficulties preclude the successful use of the control option.

Of the two options listed above, in Section 5.1, CCS is considered to be technically infeasible for a number of reasons. Although the stripper CO2 emissions are essentially a 99% purity CO2 stream, there are several concerns with sequestration of CO2 for long term storage in geologic reservoirs include the following:

- The U.S. Department of Energy (DOE) still considers CCS as a developing research and technology effort and does not consider it to be currently commercially viable.

- To date, the approximately six (6) CCS efforts in the U.S. are all funded by DOE as demonstration projects or U.S. EPA grants and are being run/developed by DOE research companies. These are Class VI injection wells.

- The first commercial deep well injection and storage site in Port Arthur, TX for CO2 sequestration only came on-line in May 2013. There are no other operational CO2 deep wells in the U.S. and there is no demonstrated long-term performance application of this technology. This first commercial deep well sequestration site remains under DOE control and funding.

- No CO2 pipelines exist in the Lima, greater northwest Ohio, or even the Midwest area; therefore, potentially connecting to an existing CO2 pipeline is not a viable option. The closest known CO2 pipeline is 500 miles away near Jackson, MS.

- There are presently no viable or potential enhanced oil recovery (EOR) opportunities to utilize and sequester CO2 in the Lima, Ohio area.

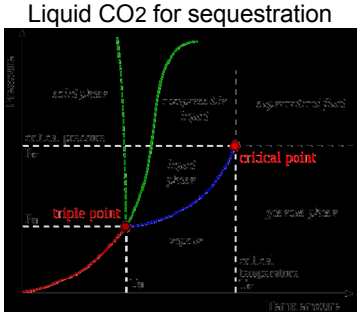
- Relative to benchmarking to other similar facilities, the BACT for CF Industries, Inc., in Donaldsonville, Louisiana (PSD-LA-757); Iowa Fertilizer Company in Middletown, Iowa (PSD-IA-0105), and Ohio Valley Resources, LLC in Rockport, Indiana (Draft T-147-32322-00062) all concluded that CCS was both technically and economically infeasible; therefore CCS did not become a BACT or permit requirement for any similar facility. Moreover, of the greater than 110 GHG BACT analyses in the U.S. EPA RBLC, CCS has not been considered to be BACT in any of the U.S. EPA determinations.

Equally important to understand is that CO2 as an “injectate” for sequestration is a supercritical fluid. Liquid CO2 is produced as a super-critical fluid as a result of the compression and liquefaction processes of the surface facilities which allows the CO2 to occupy the smallest volume for above ground pressurized storage. This means that during storage, transportation, and at the point of injection, liquid CO2 is maintained above its “critical point” --- meaning that the fluid is maintained at an approximate temperature of 31oC and at pressures in excess of 1,000 psi. Under these circumstances, the CO2 has no distinct chemical phase in that it can effuse through solids with behavior like a gas or dissolve or solvate other materials with behavior as a liquid.

Figure 5.2.1-A shows the concept of critical point with regard to pressure and temperature, and Table 5.2.1-A is a collection of critical point pressures and temperatures for a variety of compounds and specifically CO2.

Figure 5.2.1-A CO2 Critical Point with Regard to Pressure and Temperature[19]

Liquid CO_2 for sequestration



[19] Wikipedia, the free encyclopedia, Critical point (thermodynamics). (http://en.wikipedia.org/wiki/Critical_point_(thermodynamics)

Table 5.2.1-A Table of Liquid–Vapor Critical Temperature and Pressure for Selected Substances[20]

Substance	Critical Temperature	Critical Pressure (absolute)
Helium	-267.96o C (5.19 K)	2.24 atm (227 kPa)
Hyrdrogen	-239.95oC (33.20K)	12.8 atm (1,300 kPa)
CH_4 (Methane)	-82.3oC (190.9 K)	45.79 atm (4,640 kPa)
Nitrogen	-146.9 oC (126.3 K)	33.5 atm (3,390 kPa)
Oxygen	-118.6 oC (154.6 K)	49.8 atm (5,050 kPa)
CO_2	31.04 oC (304.19 K)	72.8 atm (7,380 kPa)
N_2O	36.4 oC (309.6 K)	71.5 atm (7,240 kPa)
Ammonia	132.4 oC (405.6 K)	111.3 atm (11,280 kPa)
Chlorine	143.8 oC (417.0 K)	76.0 atm (7,700 kPa)
Ethanol	241 oC (514 K)	62.18 atm (6,300 kPa)
Bromine	310.8 oC (584.0 K)	102 atm (10,300 kPa)
Water [2][10]	373.946 oC (647.096 K)	217.7 atm (22.06 MPa)
H_2SO4	654 oC (27 K)	45.4 atm (4,600 kPa)

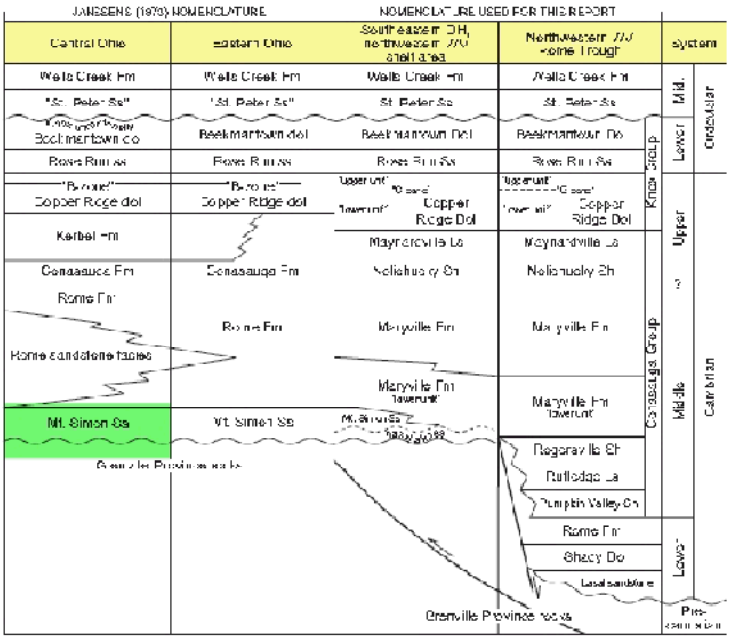
And as seen in Table 5.2.1-A, the critical point for liquid CO2 is in fact 31.04oC at a pressure of 72.8 atm (~1,071 psi).

A significant concern for a deep well injectate like liquid CO2 is the long term stability of the compound. While the CO2 is injected as a super-critical fluid, to date there is no substantive modeling or technical research data to suggest that CO2 may not adversely partition into distinct gas and liquid phases within a geological formation under varying temperatures and pressures --- another important factor deemed to make CO2 sequestration infeasible.

In addition to the general concerns outlined above, there are specific concerns relative to the potential for CCS at the Lima, OH site. PCS sits upon the Mount Simon formation, a geologic sandstone formation with depths between 2,000 and 4,000 feet that extends south to Kentucky and Tennessee and North and Northwest to Michigan, Wisconsin, and Illinois. Figure 5.2.1–B below indicates the general stratigraphic structure of the Mt. Simon formation and its overlying geology.

[20] Note 12.

Figure 5.2.1-B Stratigraphic Column of Geological Formation Showing Mt. Simon Formation



—Stratigraphic correlation chart for the ACR showing details of the Cambrian and lower part of the Ordovician (modified from Janssens, 1973, Ryder, 1992, and Harris and Baranoski, 1996).

One notable concern with respect to the Mt. Simon formation in the proximity of the Lima, OH facility is the fact that it is characterized as having permeability in the range of only 40-50 milli-darcies (~ 40 x 10-12 m2)[21]. Normally, beneficial geo-exploration or production from a sub-surface formation in terms of oil or gas exploration or extraction occurs at permeability's greater than 100 to 150 milli-darcies. The permeability of the sandstone formation is directly related to the ability to deep well inject the injectate.

Based on the full amount of CO2 that would be captured and sequestered from the potentially identified PCS sequestration project, the injection rate would be approximately 1,000 gallons per minute of a 1,000-2,000 psi liquefied CO2 stream (this is based on the capture and conversion of 106 tons per year of CO2 air emissions). This would require multiple Class VI wells each pumping 200 to 250 gallons per minute and would likely not be possible at the PCS facility given the limited footprint of the facility and the necessary well-spacing to accommodate an injection rate of up to 1,000 gallons per minute. Technical research

[21] Sandia Technologies LLC-June 2013.

suggests that spacing between injection wells should be at least 600 feet apart and could be as much as 1,200 feet apart to limit or negate interference between the injection wells.

Complicating matters further is the presence of four existing Class I deep wells injecting into the same sandstone formation by a neighboring facility. The neighboring facility is permitted to inject a maximum of 24,000,000 gallons per month combined from four permitted Class I deep wells that have been in existence for over 45 years. Under maximum potential deep well injection conditions, this means that the neighboring facility may have injected nearly 10 billion gallons of material into the current Mt. Simon formation already. Moreover,

the neighboring deep wells are within 500 feet of the area at the PCS facility where CO2 operations might occur and thus making location of any deep wells on the PCS site totally unsuitable.

The addition of 1,000 gallons per minute potentially from PCS's CO2 injection would virtually triple the amount of liquid going into the Mt. Simon sandstone formation. Such volumes being injected into the same formation within a small geographical area is not technically feasible. In principle, PCS would have to locate CO2 deep wells far enough away from the neighboring site deep wells. In fact, liquefied CO2 would have to be pumped via pipeline to nearly 8 miles away from the PCS facility so as not to have an adverse impact on the existing operation of the deep wells at the neighboring facility. This by itself would force PCS to have to purchase additional property, which may or may not be available, for the installation of CO2 deep wells. This would also entail costly piping of the pressurized liquid CO2 from a surface CO2 compression and liquefaction system to the deep wells located a considerable distance away. Other concerns with on-site injection wells include:

- Concern that the CO2 injected into the sandstone formation will damage the existing and neighboring Class I injection wells. The neighboring deep wells to the PCS facility operate at atmospheric or slightly above atmospheric pressure. The obvious concern is the impact of a nominal 2,000 psi injectate from the PCS facility at similar or deeper injection depths. The belief is that with such a high volume of CO2 injectate, the Mt. Simon formation could easily become over-pressurized and adversely impact or even negate the functionality of the neighboring deep wells. It is also possible that with over-pressurization of the general underlying formation, the seismic activity in the area could possibly also be adversely impacted.

- Liquefied CO2 is corrosive by nature and, therefore, Class VI wells must be designed with corrosion resistant materials such as chromium, titanium, or hastelloy. Corrosion results from the conversion of CO2 to carbonic acid in the presence of moisture. This is of further concern in that the neighboring Class I deep wells might also be adversely impacted by the corrosive environment and potentially have to be re-constructed.

- Concern relative to the effects of potential sub-surface mixing of the CO2 with the neighboring deep well non-hazardous waste streams. While liquid CO2 would initially be more dense than water, as the CO2 pressure in the formation dissipated over time, a “light-phase” CO2 plume would likely be created that when co-mingled with the neighboring Class I deep well plume might cause unwanted stratification, migration, and movement of the neighboring deep well plume.

Moreover, the level of geological and engineering effort necessary to model, predict, and ultimately determine the true long term viability of the Mt. Simon formation in the area of the PCS facility as a true CCS sequestration site, would be extremely expensive and time consuming, and inconsistent with EPA's past and general position on criteria pollutant BACT analyses and technology considerations. Given that CCS is still in its infancy of development, it is highly likely that permitting and developing a CCS site capable of the approximate 1,000,000 tons per year of CO2 from the PCS site would take 5 or more years to complete. This is a timeline wholly inconsistent with PCS's current expansion project plans. To reiterate, current CCS projects remain primarily in various stages of pilot-scale development and have primarily been funded and developed with U.S. Department of Energy resources. Benchmarking indicates that CCS has been found to be technically infeasible for similar sources, and there are no existing pipelines or EOR opportunities near the PCS facility. There are also serious concerns about the long-term stability of CO2 injection at or near the PCS facility. Although CCS is technically infeasible for all these reasons, it is further analyzed from an economic, energy and environment standpoint in Step 4 of this BACT Analysis (Section 5.4) to provide an additional basis of analysis.

5.3 Step 3 - Rank Remaining Control Technologies

Step 3 identifies and ranks the control technologies still under consideration after Steps 1 and 2 of the BACT analysis. The rankings are based on previous RBLC decisions and vendor data provided for the controls identified in Steps 1 and 2.

The following control technologies and/or work practices were identified as CO2 control options for the existing CO2 regenerator/stripper based on available information and data sources and are listed in order of decreasing or equal effectiveness:

- Good operational practices; and
- Carbon capture and storage[22].

The combination of the work practice that maximizes the use of CO2 downstream is inherent in the design and operation of this unit at the PCS facility and is considered the baseline GHG control option.

5.4 Step 4 - Evaluate the Most Effective Controls and Document Results

This step evaluates the most effective control technologies based on economics, energy, and environmental impacts. The results of the evaluation are documented and included in the BACT decision.

5.4.1 Good Operational Practices

Emissions of CO2 are dependent on operating scenarios. Based on current operations at the facility, if the urea synthesis operation is operating at maximum loads, a significant portion of the CO2 produced in the ammonia plant will be used for urea production with the balance

[22]See previous notes on technical infeasibility of CCS and why it is still in noted in this section of discussion.

either being emitted to atmosphere or piped to the on-site, independently owned, Linde/Air Products plant. CO_2 from the regenerator/stripper may be sent to the Linde plant, which then compresses and liquefies the CO_2 for commercial sale. The amount of CO2 piped to Linde/Air Products is dependent on the excess volume of CO_2 not utilized for urea production and the amount purchased by Linde/Air Products based on demand for their CO_2 products.

The stripped CO_2 from the Ammonia Unit CO2 Regenerator/Stripper is vented to the atmosphere during start-up, shutdown and malfunction at the urea plant, during operating load variations in the urea synthesis operation that result in excess CO2, and/or when there is not sufficient demand for liquefied CO2 for commercial sale.

The more CO_2 which can be recovered and used for urea manufacturing, the less CO2 is emitted to the atmosphere directly from the ammonia plant. Further, captured CO2 emissions from the ammonia plant can also be processed at the on-site Linde/Air Products plant thus providing an added beneficial use of the CO2. Because these controls are the highest ranked level of control, there is no reason to examine the energy, or economic impacts of the technology. Both of these described best practice activities maximize the beneficial use of CO_2 generated by the ammonia plant so that it is not otherwise directly vented to atmosphere.

The use of captured CO_2 emissions in the urea production plant and sale of CO_2 to Linde/Air Products are considered Good Operational Practices for purposes of BACT.

5.4.2 Carbon Capture and Storage

CCS has already been demonstrated to be technically infeasible as outlined above, in Section 5.2. However, to further demonstrate the infeasibility of CCS on all levels, PCS offers the following additional information from an economic, energy and environment perspective:

- PCS has estimated the cost of off-site CCS which would consist of compression and liquefaction, transportation to an off-site location via surface pipeline, and installation/operation of Class VI wells for injection of the CO2 to a likely depth of approximately 3,000 feet. The capital costs are estimated to be $124MM for this potential undertaking, with annual operating costs of $24MM. This computes to an annualized cost of approximately $49MM, or $55.31 per ton of CO2 (for the capture and sequestration of 1MM tons of CO_2 annually). This is prohibitively expensive and is above any of the EPA or similarly published levels suggested as affordable. The capital costs for CCS alone would almost double the cost of the entire plant expansion and would very likely lead to the decision not to expand the plant. Furthermore, PCS' current cost estimates for CCS are preliminary in nature and may not reflect the full costs of CCS.

- The operation of the compression and liquefaction plant is estimated to lead to the emission of an additional 144,000 tons per year of CO2 from the utility providing electricity to the plant, an approximate 14% increase above the amount estimated to be emitted from the CO2 stripper.

- The long term environmental risks related to CO2 losses and leakage through well casings remains unknown; therefore it is impossible to state with certainty whether a deep well has a 10 year, 15 year, or 20 year useful life. Further, the site specific risks related to the Ohio Mt. Simon geologic formation are unknown at this time.

- The potential costs of monitoring and data management are still as yet unknown but are likely to be substantially expensive and may require financial assurance or financial bond requirements. One literature source quotes the need for at least a $5MM surety bond.

- Environmental permitting of a Class VI deep well injection system is still so new at U.S. EPA that it could be in excess of 2.5 to 3 years before obtaining a permit to construct the deep wells for CO2 sequestration. A delay of 2-plus years due to the permitting of a Class VI well will likely result in a decision to not pursue the plant expansion due to economic reasons.

5.5 Step 5 - Selection of BACT

Step 5 includes PCS's conclusions for the selection of BACT controls and emission limits.

Based on this analysis PCS proposes that BACT for Ammonia Unit CO2 Regenerator/Stripper (P523) is good operational practices; which include the use of CO2 within the downstream urea synthesis and commercial sale of CO2 to the on-site, independently owned, Linde/Air Products plant whenever possible.

PCS proposes that the GHG emission limits for the existing CO2 regenerator/stripper be set as presented in Table 5-1. These limits assume that the urea production plant is not operating and that there is no demand for liquefied CO2 (i.e. no sale of CO2).

Table 5-1 GHG Emission Limits for Existing CO2 Regenerator/Stripper

Emission Unit	Pollutant	Standard Emission LImit	Averaging Period
Ammonia Unit CO2 Regenerator/Stripper (P523)	CO2e	1,031,336 tons/yr	Rolling 12-Month Total
	CO2	2,404 lb/ton of ammonia produced	Rolling 12-Month Total

Operational limitations can affect the level of energy efficiency the plant can achieve during production. On an annual basis, ammonia plants generally do not operate at their design energy efficiencies, which are based on continuous operation with equipment and catalysts in good condition [23]. Ammonia production facilities are susceptible to start-ups and shutdowns caused by both planned and unplanned outages such as those necessary for maintenance and power outages. The variation in ammonia production rates over the course of the year caused

[23] International Fertilizer Industry Association, Energy Efficiency and CO2 Emissions in Ammonia Production 2008-2009 Summary Report, September 2009, Page 1.

by changes in product demand and natural gas prices also prevents the ammonia production plant from operating at the design energy efficiency year in and year out. A reasonable amount of plant downtime and inherent process and market variability must be factored into the BACT limit.

Over years of operation, the catalyst in the ammonia synthesis reactor and other catalyst reactors is expected to lose reactivity. At the same time, the efficiency of the large rotating equipment and heat exchange equipment is expected to worsen. Eventually, the ammonia unit requires maintenance to sustain operations within physical, safety, regulatory, and market constraints. Through this cycle, the emissions of CO2 on a per ton of product basis will increase. The BACT limit must account not only for variation caused by constraints not within the producer's control, but also due to normal expected changes in efficiency of major equipment within the process.

A variety of manufacturing methods and raw materials can be used to produce ammonia, which makes it difficult to directly compare efficiencies between different facilities. For example, ammonia can be produced using various methods including the Haber-Bosch process and coal gasification for ammonia production. These differences in the ammonia manufacturing method can result in different BACT determinations/emission limits for different processes and raw materials. According to the International Fertilizer Industry Association, no single process can be identified as a Best Practice Technology (BPT) for ammonia production [24]. The amount of ammonia produced per day can also greatly affect the energy efficiency of the plant.

In general, the ammonia production plants with the largest capacity are the most efficient. The PCS Ammonia Unit's production rate represents a large capacity ammonia plant. This fact, coupled with the use of natural gas as the feedstock for ammonia production, helps improve the plant's efficiency when compared to smaller capacity and coal feedstock plants.

The proposed BACT limit is 1.20 ton CO2/ton of ammonia produced. This limit is similar to the BACT limit established for the recently permitted CO2 regenerator/strippers:

- Iowa Fertilizer Company in Middletown, Iowa (PSD-ID IA-0105) – 1.26 ton CO2/ton of ammonia produced;

- CF Industries, Inc., Donaldsonville Nitrogen Complex in Donaldsonville, LA (PSD-LA-757) – 1.182 ton CO2/ton of ammonia produced; and

- Ohio Valley Resources, LLC in Rockport, Indiana (Draft T 147-32322-00062) – 1.28 on CO2/ton of ammonia produced.

This limit also allows for variation in expected market conditions and operational constraints which are not within the control of the producer.

The CO_2 emissions from the Ammonia Unit CO_2 Regenerator/Stripper (P523) may not exceed the 2,404 lb CO_2/ton of ammonia produced on a 30-day rolling average. Also, the

[24] International Fertilizer Industry Association, Energy Efficiency and CO2 Emissions in Ammonia Production 2008-2009 Summary Report, September 2009, Page 2.

total CO_2e emissions of 1,031,336 tons per 12-month rolling total will not be exceeded at any time, as calculated based on the monthly ammonia production.

5.6 GHG BACT Compliance

Compliance will be demonstrated through records of the CO2 regenerator/stripper design, records of ammonia production, records of CO2 flow to urea synthesis, records of CO2 flow to Linde/Air Products, and maintenance records.

The CO2 regenerator/stripper will be operated according to the manufacturer's specifications and monitoring will be consistent with the facility's GHG monitoring plan required by 40 CFR Part 98.

PCS will provide construction/modification specifications, operation and maintenance records, production records, and other record keeping documents to Ohio EPA upon request to demonstrate compliance with BACT.

DRAFT

Division of Air Pollution Control
Permit-to-Install
for
PCS Nitrogen Ohio, L.P.

Facility ID:	0302020370
Permit Number:	P0115063
Permit Type:	Initial Installation
Issued:	11/22/2013
Effective:	To be entered upon final issuance

Division of Air Pollution Control
Permit-to-Install
for
PCS Nitrogen Ohio, L.P.

Table of Contents

Authorization

Facility ID:	0302020370
Facility Description:	Nitrogenous Fertilizers
Application Number(s):	A0047234
Permit Number:	P0115063
Permit Description:	Installation/modification to increase urea and ammonia production.
Permit Type:	Initial Installation
Permit Fee:	$17,300.00*DO NOT send payment at this time, subject to change before final issuance*
Issue Date:	11/22/2013
Effective Date:	To be entered upon final issuance

This document constitutes issuance to:

PCS Nitrogen Ohio, L.P.
Fort Amanda & Adgate Roads
None
Lima, OH 45804

of a Permit-to-Install for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northwest District Office
347 North Dunbridge Road
Bowling Green, OH 43402
(419)352-8461

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the emissions unit(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Scott J. Nally
Director

Authorization (continued)

Permit Number: P0115063
Permit Description: Installation/modification to increase urea and ammonia production.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID: **B503**
Company Equipment ID: NH3 Unit - Primary Reformer
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **B507**
Company Equipment ID: NH3 Load Heater
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **B509**
Company Equipment ID: NH3 Unit - Boiler #3
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **J001**
Company Equipment ID: Urea Water or UAN Sol'n Truck/Railcar Load #2
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **J002**
Company Equipment ID: DEF Urea Water Sol'n Truck/Railcar Load
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **P520**
Company Equipment ID: NH3 Unit - Reforming
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **P521**
Company Equipment ID: NH3 Unit - Purification
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **P522**
Company Equipment ID: NH3 Unit - Synthesis
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **P523**
Company Equipment ID: NH3 Unit - CO2 Stripper
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **P526**
Company Equipment ID: Urea Plant - Synthesis
Superseded Permit Number:
General Permit Category and Type: Not Applicable

Emissions Unit ID: **P563**

Company Equipment ID:	Urea Plant - Reactor Feed
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P564**
Company Equipment ID:	Urea Plant - UTI Hotwell
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**T622**
Company Equipment ID:	T-324
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**T623**
Company Equipment ID:	T-xxx
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable

A. Standard Terms and Conditions

1. Federally Enforceable Standard Terms and Conditions

a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:

(1) Standard Term and Condition A.2.a), Severability Clause

(2) Standard Term and Condition A.3.c) through A. 3.e)General Requirements

(3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements

(4) Standard Term and Condition A.9., Reporting Requirements

(5) Standard Term and Condition A.10., Applicability

(6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install

(7) Standard Term and Condition A.14., Public Disclosure

(8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

(9) Standard Term and Condition A.16., Fees

(10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

a) A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

a) Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.

b) It shall not be a defense for the 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 federally enforceable terms and conditions of this permit.

c) This permit may be modified, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

d) This permit does not convey any property rights of any sort, or any exclusive privilege.

e) The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

4. Monitoring and Related Record Keeping and Reporting Requirements

a) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

(1) The date, place (as defined in the permit), and time of sampling or measurements.

(2) The date(s) analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of such analyses.

(6) The operating conditions existing at the time of sampling or measurement.

b) Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

c) Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:

(1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Ohio EPA DAPC, Northwest District Office.

(2) Quarterly written reports of (i) any deviations from federally enforceable emissionlimitations, operationalrestrictions, andcontroldeviceoperatingparameterlimitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Ohio EPA DAPC, Northwest District Office. The written reports shall be submitted quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

(3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, andreportingrequirements contained in this permit shall be submitted to the Ohio EPA DAPC, Northwest District Office every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

(4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

5. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to theOhio EPA DAPC, Northwest District Officein accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

a) All applications, notifications or reports required by terms and conditions in this permit to be submitted or "reported in writing" are to be submitted to Ohio EPA through the Ohio EPA's eBusiness Center: Air Services web service ("Air Services"). Ohio EPA will accept hard copy submittals on an as-needed basis if the permittee cannot submit the required documents through the Ohio EPA eBusiness Center. In the event of an alternative hard copy submission in lieu of the eBusiness Center, the post-marked date or the date the document is delivered in person will be recognized as the date submitted. Electronic submission of applications, notifications or reports required to be submitted to Ohio EPA fulfills the requirement to submit the required information to the Director, the appropriate Ohio EPA District Office or contracted

local air agency, and/or any other individual or organization specifically identified as an additional recipient identified in this permit unless otherwise specified. Consistent with OAC rule 3745-15-03, the electronic signature date shall constitute the date that the required application, notification or report is considered to be "submitted". Any document requiring signature may be represented by entry of the personal identification number (PIN) by responsible official as part of the electronic submission process or by the scanned attestation document signed by the Authorized Representative that is attached to the electronically submitted written report.

Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a Responsible Official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete

b) Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:

(1) At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.

(3) Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

(4) As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

c) The permittee shall submit progress reports to the Ohio EPA DAPC, Northwest District Office concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

(1) Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.

(2) An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Ohio EPA DAPC, Northwest District Office.

b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to theOhio EPA DAPC, Northwest District Office. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s)not exempt from the requirement to obtain a Permit-to-Install.

11. Construction of New Sources(s) and Authorization to Install

a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual

obligation to undertake and complete within a reasonable time a continuing program of installation. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the permittee shows good cause for any such extension.

c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as “permanently shut down” in “Air Services” along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update electronically will constitute notifying the Director of the permanent shutdown of the affected emissions unit(s).

d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

Unless otherwise exempted,no emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31 and OAC Chapter 3745-77 if the restarted operation is subject to one or more applicable requirements.

e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if operation of the proposed new or modified source(s) as authorized by this permit would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d)must be obtained beforeoperating the source in a manner that would violate the existing Title V permit requirements.

13. Construction Compliance Certification

The applicant shall identify the following dates in the "Air Services" facility profile for each new emissions unit identified in this permit.

a) Completion of initial installation date shall be enteredupon completion of construction and prior to start-up.

b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable permit-to-install fees within 30 days after the issuance of any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the "Owner/Contact Change" functionality in "Air Services" once the transfer is legally completed.The change must be submitted through "Air Services" within thirty days of the ownership transfer date.

18. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

19. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding

any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

B. Facility-Wide Terms and Conditions

1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

   a) None.

2. The permittee shall maintain the following records for emissions units B502, B503, B507, B509, B510, J001, J002, P520, P521, P522, P523, P526, P529, P554, P555, P563, P564, T518, T537, T551, T622, T623, T624 and T625 as described in Permit to Install application No. A0047234 submitted on July 10, 2013 in order to demonstrate that the ammonia and urea units expansion project does not trigger a major modification for PM2.5, NOx, CO and/or VOC:

   a. the projected actual annual emissions for PM2.5, NOx, CO and VOC, in tons per year, from the ammonia and urea units' expansion project as submitted in PTI application No. A0047234 submitted on July 10, 2013; and

   b. the total actual annual emissions for PM2.5, NOx, CO and VOC, in tons per year, from emissions units B502, B503, B507, B509, P520, P522, P523, P554, P555, T518, T537 and T551,combined, for ten calendar years after commencing operation of the ammonia and urea units expansion project.

3. The permittee shall notify the Northwest District Office in writing if annual emissions from all emissions units in the ammonia and urea expansion project, as specified in facility-wide term and condition B.2.b., result in a significant PM2.5, NOx, CO and/or VOCemissions increase and exceed the projected actual PM2.5, NOx, CO and/or VOCemissions contained in the application for PTI No. A0047234, submitted July 10, 2013. This notification shall identify the cause for the significant emissions increase and the estimated PM2.5, NOx, CO and/or VOCemissions. This notification shall be submitted to the Northwest District Office within 120 days after the end of such year.

4. The following emissions unit contained in this permit is subject to 40 CFR, Part 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units: B509. The complete NSPS requirements, including the NSPS General Provisions may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the Ohio EPA, Northwest District Office.

   The permittee shall comply with all applicable requirements of 40 CFR, Part 60, Subpart Db. The permittee shall also comply with all applicable requirements of 40 CFR, Part 60, Subpart A (General Provisions). Compliance with all applicable requirements shall be achieved by the dates set forth in 40 CFR, Part 60, Subpart Db, and Subpart A.

5. The following emissions unit contained in this permit is subject to 40 CFR, Part 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters: B509. The complete NESHAPS requirements, including the NESHAPS General Provisions may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the Ohio EPA, Northwest District Office.

   The permittee shall comply with all applicable requirements of 40 CFR, Part 63, Subpart DDDDD. The permittee shall also comply with all applicable requirements of 40 CFR, Part 63, Subpart A (General Provisions). Compliance with all applicable requirements shall be achieved by the dates set forth in 40 CFR, Part 63, Subpart DDDDD, and Subpart A.

6. The following emissions units contained in this permit are subject to 40 CFR, Part 63, Subpart FFFF, National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing: P526, P563 and P564. The complete NESHAPS requirements, including the NESHAPS General Provisions may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting the Ohio EPA, Northwest District Office.

   The permittee shall comply with all applicable requirements of 40 CFR, Part 63, Subpart FFFF. The permittee shall also comply with all applicable requirements of 40 CFR, Part 63, Subpart A (General Provisions). Compliance with all applicable requirements shall be achieved by the dates set forth in 40 CFR, Part 63, Subpart FFFF, and Subpart A.

C. Emissions Unit Terms and Conditions

1. B503, Ammonia Unit - Primary Reformer

Operations, Property and/or Equipment Description:

Ammonia Unit - Primary Reformer (750.1 million Btu/hr - Natural Gas, Tail, Flash, Purge and Regeneration Fuel Gas Fired)

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)i. and d)(3).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	5.61 lbs of particulate emissions/ particulate matter less than or equal to 10 microns in diameter/particulate matter less than or equal to 2.5 microns in diameter ($PE/PM_{10}/PM_{2.5}$)/hr and 24.58 tons of $PE/PM_{10}/PM_{2.5}$/yr 0.35 lb of sulfur dioxide (SO2)/hr and 1.54 tons of SO2/yr 190.05 lbs of nitrogen oxides (NOx)/hr and 832.43 tons of NOx/yr 4.95 lbs of carbon monoxide (CO)/hr and 21.69 tons of CO/yr 4.06 lbs of volatile organic compounds (VOC)/hr and 17.79 tons of VOC/yr See b)(2)a. through b)(2)c.
b.	ORC 3704.03(T)	See b)(2)d.
c.	OAC rule 3745-17-07(A)	Visible particulate emissions (PE) shall not exceed 20% opacity as a six-minute average, except as provided by rule
d.	OAC rule 3745-17-10(B)(1)	0.020 lb of PE/mmBtu of actual heat input [See b)(2)e.]

e.	OAC rule 3745-18-08(D)(2)	1.27 lb of SO2/mmBtu of actual heat input [See b)(2)f.]
f.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)g. and b)(2)h.
g.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)i.
h.	OAC rules 3745-31-10 through 3745-31-20	Carbon dioxide(CO_2) as a surrogate for greenhouse gas (GHG) emissions shall not exceed 388,051 tons per rolling, 12-month period See b)(2)j., d)(2) and e)(2)
i.	ORC 3704.03(F) and OAC rule 3745-114	See d)(3)

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under its physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a., b, c., d., and e. for details regarding the PTEs.

b. It is assumed that all PE are equivalent to both PM_{10} and $PM_{2.5}$.

c. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit:

i. 5.61 lbs of PE/PM_{10}/$PM_{2.5}$/hr and 24.58 tons of PE/PM_{10}/$PM_{2.5}$/yr;

ii. 0.35 lb of SO2/hr and 1.54 tons of SO2/yr;

iii. 190.05 lbs of NOx/hr and 832.43 tons of NOx/yr;

iv. 4.95 lbs of CO/hr and 21.69 tons of CO/yr; and

v. 4.06 lbs of VOC/hr and 17.79 tons of VOC/yr.

d. Best Available Technology (BAT) requirements for PE/PM_{10}/$PM_{2.5}$, NOx, CO and VOC emissions under ORC 3704.03(T) have been determined to be compliance with the annual emission limitations for PE/PM_{10}/$PM_{2.5}$, NOx, CO and VOC as established pursuant to OAC rule 3745-31-05(D).

e. The emission limitation of 0.020 lb of particulate emissions (PE) per million Btu of actual heat input specified by OAC 3745-17-10(B)(1) is less stringent than the PE limitation specified pursuant to OAC rule 3745-31-05(D).

f. The emission limitation of 1.27 lb of sulfur dioxide (SO2) per million Btu of actual heat input specified by OAC rule 3745-18-08(D)(2) is less stringent than the SO2 limitation specified pursuant to OAC rule 3745-31-05(D).

g. BAT requirements for SO2 emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual SO2 emission limitation as established pursuant to OAC rule 3745-31-05(D)..

h. The permittee has satisfied the BAT requirements for SO2 emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

i. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the SO2 emissions since the potential to emit is less than 10 tons per year.

j. The permittee shall employ Best Available Control Technology (BACT) for this emissions unit. BACT has been determined to be the following:

Pollutant	BACT Requirements
CO_2 as a surrogate for GHG	Use of low-carbon gaseous fuels (natural gas, tail, flash, purge and regeneration fuel gas); and Annual burner tuning and heater inspections or during scheduled extended outages for an extended period which would allow safe access (whichever comes later).

c) Operational Restrictions

(1) The permittee shall burn only natural gas, tail gas, flash gas, purge gas, or regeneration (regen.) fuel gas in this emissions unit.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, tail, flash, purge or regen. fuel gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) The permittee shall record the following for this emissions unit:

a. the volume, in million standard cubic feet, of natural gas, tail, flash, purge and regen. fuel gas combusted per month;

b. the volume, in million standard cubic feet, of natural gas, tail, flash, purge and regen. fuel gas combusted per rolling, 12-month period;

c. the CO_2, as a surrogate for GHG, emission rate, in tons, for each month of operation;

d. the CO_2, as a surrogate for GHG, emission rate, in tons, for each rolling, 12-month period;

e. heater design documents; and

f. heater maintenance activities, as completed.

(3) Modeling to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas, tail, flash, purge or regen. fuel gas, was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

(2) The permittee shall notify the Director (the Ohio EPA, Northwest District Office) on a quarterly basis, in writing, of:

a. All exceedances of the 388,051 tons per rolling, 12-month period emission limitation for CO_2 as a surrogate for GHG emissions.

The notification shall include a copy of the record and shall be sent to the Director (the Ohio EPA, Northwest District Office) by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during previous calendar quarters.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

5.61 lbs of PE/PM_{10}/$PM_{2.5}$/hr and 24.58 tons of PE/PM_{10}/$PM_{2.5}$/yr

Applicable Compliance Method:

The hourly PE/PM_{10}/$PM_{2.5}$ emission limitation above was developed by the following ratio of fuel firing:

Total maximum heat input = 750.1 million Btu/hr, which consists of a typical composite fuel heat input of 598.7 million Btu/hr from natural gas; plus 123.9 million Btu/hr from tail gas and purge gas, combined; plus 27.7 million Btu/hr from flash gas.

Fuel firing rates: Natural gas = (598.7 million Btu/hr)/(1,020 Btu/scf) = **0.5869 million scf/hr**

Tail gas and purge gas, combined = (123.9 million Btu/hr)/(353.62 Btu/scf) = **0.3504 million scf/hr**

Flash gas = (27.7 million Btu/hr)/(502.18 Btu/scf) = **0.0551 million scf/hr**

Emission factors: natural gas = 7.6 lbs/million scffrom AP-42, Table 1.4-2 (dated 7/98); tail gas and purge gas, combined = 2.837 lbs/million scf from ratio of fuel gas heat contents in AP-42, Table 1.4-2 (dated 7/98)

PE/PM_{10}/$PM_{2.5}$ emissions =

From natural gas: (7.6 lbs/million scf)(0.5869 million scf/hr) = 4.46 lbs PE/PM_{10}/$PM_{2.5}$/hr;

From tail gas and purge gas, combined: (2.837 lbs/million scf)(0.3504 million scf/hr) = 0.99 lbPE/PM_{10}/$PM_{2.5}$/hr; and

From flash gas: (2.837 lbs/million scf)(0.0551 million scf/hr) = 0.16 lbPE/PM_{10}/$PM_{2.5}$/hr

Total PE/PM_{10}/$PM_{2.5}$ emissions = 4.46 + 0.99 + 0.16 = **5.61 lbs/hr**

Compliance is presumed by only using natural gas, tail gas, flash gas, purge gas or regen. fuel gas, as required in c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Methods 1 through 4 of 40 CFR, Part 60, Appendix A and

Methods 201, 201A and 202 of 40 CFR, Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitations:

0.35 lb of SO2/hr and 1.54 tons of SO2/yr

Applicable Compliance Method:

The hourly SO2 emission limitation above was developed by multiplying the SO2 emission factor from AP-42, Table 1.4-2 (dated 7/98) (0.6 lb/million scf) by the maximum heat input of 598.7 million Btu/hr when firing natural gas (all other fuels fired have negligible sulfur content), then dividing by the natural gas heat content of 1,020 Btu/scf. Compliance is presumed by only using natural gas, tail gas, flash gas, purge gas or regen. fuel gas, as required in c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 6of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

c. Emission Limitations:

190.05 lbs of NOx/hr and 832.43 tons of NOx/yr

Applicable Compliance Method:

The hourly NOx emission limitation above was developed by the following ratio of fuel firing:

Total maximum heat input = 750.1 million Btu/hr, which consists of a typical composite fuel heat input of 598.7 million Btu/hr from natural gas; plus 123.9 million Btu/hr from tail gas and purge gas, combined; plus 27.7 million Btu/hr from flash gas.

Fuel firing rates: Natural gas = (598.7 million Btu/hr)/(1,020 Btu/scf) = **0.5869 million scf/hr**

Tail gas and purge gas, combined = (123.9 million Btu/hr)/(353.62 Btu/scf) = **0.3504 million scf/hr**

Flash gas = (27.7 million Btu/hr)/(502.18 Btu/scf) = **0.0551 million scf/hr**

Emission factors: natural gas = 252 lbs/million scf based on vendor guaranteed value which is a 10 percent reduction from AP-42, Table 1.4-1 (dated 7/98) emission factor of 280 lbs/million scf due to burner modifications and upgrades during maintenance turnaround conducted in 2010; tail gas, purge gas and flash gas, combined = 94.085 lbs/million scf from ratio of fuel gas heat contents in AP-42, Table 1.4-1 (dated 7/98); plus an additional 0.286 lb/lb ammonia combusted from tail gas, purge gas and flash gas based on vendor information and review of previous stack test reports

NOx emissions =

From natural gas: (252 lbs/million scf)(0.5869 million scf/hr) = 147.90 lbs NOx/hr;

From tail gas and purge gas, combined: (94.085 lbs/million scf)(0.3504 million scf/hr) = 32.97 lbsNOx/hr;

From flash gas: (94.085 lbs/million scf)(0.0551 million scf/hr) = 5.18 lbsNOx/hr; and

From tail gas, purge gas and flash gas, combined, introduced into reformer for combustion of ammonia, from vendor information: (0.286 lb/lb ammonia combusted)(13.991 lbs ammonia/hr) = 4.00 lbs NOx/hr

Total NOx emissions = 147.90 + 32.97 + 5.18 + 4.00 = **190.05 lbs/hr**

The permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 7of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

d. Emission Limitations:

4.95 lbs of CO/hr and 21.69 tons of CO/yr

Applicable Compliance Method:

The hourly CO emission limitation above was developed from previous stack test, and adjusted to remove turbine emissions, plus a margin of 15 percent.

Compliance is presumed by only using natural gas, tail, flash, purge or regeneration fuel gas, as required in c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

e. Emission Limitations:

4.06 lbs of VOC/hr and 17.79 tons of VOC/yr

Applicable Compliance Method:

The hourly VOC emission limitation above was developed by the following ratio of fuel firing:

Total maximum heat input = 750.1 million Btu/hr, which consists of a typical composite fuel heat input of 598.7 million Btu/hr from natural gas; plus 123.9 million Btu/hr from tail gas and purge gas, combined; plus 27.7 million Btu/hr from flash gas.

Fuel firing rates: Natural gas = (598.7 million Btu/hr)/(1,020 Btu/scf) = **0.5869 million scf/hr**

Tail gas and purge gas, combined = (123.9 million Btu/hr)/(353.62 Btu/scf) = **0.3504 million scf/hr**

Flash gas = (27.7 million Btu/hr)/(502.18 Btu/scf) = **0.0551 million scf/hr**

Emission factors: natural gas = 5.5 lbs/million scf from AP-42, Table 1.4-2 (dated 7/98); tail gas, purge gas and flash gas, combined = 2.053 lbs/million scf from ratio of fuel gas heat contents in AP-42, Table 1.4-2 (dated 7/98)

VOC emissions =

From natural gas: (5.5 lbs/million scf)(0.5869 million scf/hr) = 3.23 lbs VOC/hr;

From tail gas and purge gas, combined: (2.053 lbs/million scf)(0.3504 million scf/hr) = 0.72 lbVOC/hr; and

From flash gas: (2.053 lbs/million scf)(0.0551 million scf/hr) = 0.11 lbVOC/hr; and

Total VOC emissions = 3.23 + 0.72 + 0.11 = **4.06 lbs/hr**

Compliance is presumed by only using natural gas, tail gas, flash gas, purge gas or regen. fuel gas, as required in c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

f. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the visible particulate emission limitation above in accordance with the methods and procedures specified in Method 9 of 40 CFR, Part 60, Appendix A, and the requirements specified in OAC rule 3745-17-03(B)(1).

g. Emission Limitation:

CO_2 as a surrogate for GHG emissions shall not exceed 388,051 tons per rolling, 12-month period

Applicable Compliance Method:

The rolling, 12-month period GHG emission limitation above was developed by the following ratio of fuel firing:

Total maximum heat input = 750.1 million Btu/hr, which consists of a typical composite fuel heat input of 598.7 million Btu/hr from natural gas; plus 123.9 million Btu/hr from tail gas and purge gas, combined; plus 27.7 million Btu/hr from flash gas.

Fuel firing rates: Natural gas = (598.7 million Btu/hr)/(1,020 Btu/scf) = **0.5869 million scf/hr**

Tail gas and purge gas, combined = (123.9 million Btu/hr)/(353.62 Btu/scf) = **0.3504 million scf/hr**

Flash gas = (27.7 million Btu/hr)/(502.18 Btu/scf) = **0.0551 million scf/hr**

Emission factors: natural gas = 120,000 lbs/million scf from AP-42, Table 1.4-2 (dated 7/98); tail gas and purge gas combined =44,802.35 lbs/million scf from ratio of fuel gas heat contents in AP-42, Table 1.4-2 (dated 7/98)

GHG (CO_2) emissions =

From natural gas: (120,000 lbs/million scf)(0.5869 million scf/hr) = 70,428 lbs GHG(CO_2)/hr;

From tail gas and purge gas, combined: (44,802.35 lbs/million scf)(0.3504 million scf/hr) = 15,699 lbGHG(CO_2)/hr; and

From flash gas: (44,802.35 lbs/million scf)(0.0551 million scf/hr) = 2,469 lbsGHG(CO_2)/hr

Total GHG (CO_2) emissions = 70,428 + 15,699 + 2,469 = 88,596 lbs/hr

(88,596 lbs/hr)(8,760 hrs/rolling 12-month period)/(2,000 lbs/ton) = 388,051 tons GHG(CO_2)/rolling, 12-month period

Compliance shall be demonstrated by the monitoring and record keeping requirements in d)(2).

(2) The permittee shall conduct, or have conducted, emission testing for this emissions unitin accordance with the following requirements:

a. The emission testing shall be conducted within six months of completion of installation and commencement of operation in modified mode for the equipment associated with the urea and ammonia expansion project for this PTI.

The emission testing shall be conducted to demonstrate compliance with theallowable emission rate of 190.05 lbs of NOx/hr.

b. The following test methods shall be employed to demonstrate compliance withthe allowable mass emission rate for NOx: Methods 1 through 4, and 7 of 40 CFR, Part 60, Appendix A. Alternate U.S. EPA-approved test methods may be used withprior approval from the Ohio EPA.

c. The test(s) shall be conducted while the emissions unit is operating at itsmaximum capacity, unless otherwise specified or approved by the Ohio EPA,Northwest District Office.

d. Not later than 30 days prior to the proposed test date(s), the permittee shallsubmit an "Intent to Test" notification to the Ohio EPA,Northwest District Office. The "Intent to Test" notification shall describe in detail theproposed test methods and procedures, the emissions unit operatingparameters, the time(s) and date(s) of the test(s), and the person(s) who will beconducting the test(s).

Failure to submit such notification for review and approvalprior to the test(s) may result in the Ohio EPA,Northwest District Office's refusal to accept the results of the emission test(s).

e. Personnel from the Ohio EPA,Northwest District Office shallbe permitted to witness the test(s), examine the testing equipment, and acquiredata and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions fromthe emissions unit and/or the performance of the control equipment.

f. A comprehensive written report on the results of the emissions test(s) shall besigned by the person or persons responsible for the tests and submitted to the Ohio EPA,Northwest District Office within 30 days followingcompletion of the test(s).

g) Miscellaneous Requirements

(1) None.

2. B507, Ammonia Load Heater

Operations, Property and/or Equipment Description:

Ammonia Load Heater (product area) (40 million Btu/hr - Natural Gas Fired)

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)f. and d)(2).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	0.082 lb of carbon monoxide (CO)/million Btu See b)(2)a. and b)(2)b.
b.	OAC rule 3745-31-05(D)	3.92 lbs of nitrogen oxides (NOx)/hr and 17.18 tons of NOx/yr See b)(2)b.
c.	OAC rule 3745-17-07(A)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average, except as provided by rule.
d.	OAC rule 3745-17-10(B)(1)	0.020 lb PE/mmBtu of actual heat input
e.	OAC rule 3745-18-06(E)	Exempt, see b)(2)c.
f.	ORC 3704.03(F) and OAC rule 3745-114	See d)(2)

(2) Additional Terms and Conditions

a. The CO emissions limitation was previously established in permit-to-install No. P0105861, issued on 5/21/10. Best Available Technology (BAT) requirements for NOx emissions under ORC 3704.03(T) have been determined to be compliance with the annual NOx emission limitation as established pursuant to OAC rule 3745-31-05(D).

b. The mass emission rate limitations in b)(1)a. and b)(1)b. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record

keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a. and f)(1)b. for details regarding the PTE.

Emissions from the ammonia load heater are associated with the combustion of natural gas and include: particulate emissions (PE), particulate matter 10 microns or less in size (PM_{10}), particulate matter 2.5 microns or less in size ($PM_{2.5}$), organic compounds (OC), volatile organic compounds (VOC), and sulfur dioxide (SO2).

The uncontrolled potential emissions of PE, PM_{10}, $PM_{2.5}$, OC, VOC, and SO2 are of negligible quantities for criteria pollutants and therefore have not been addressed within this permit.

c. This emissions unit is exempt from the requirements of OAC rule 3745-18-06(E) in accordance with OAC rule 3745-18-06(C).

d. Greenhouse gas (GHG) emissions, specifically carbon dioxide (CO_2) as a surrogate for GHG, resulting from combustion of natural gas have been determined to be negligible for this emissions unit.

c) Operational Restrictions

(1) The permittee shall burn only natural gas as fuel in this emissions unit.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

0.082 lb of CO/million Btu

Applicable Compliance Method:

The emission limitation represents the PTE (defined as the maximum capacity to emit an air pollutant under the physical and operational design). The PTE is based on a heat content of 1,020 Btu/scf and a CO emission factor of 84 lbs/million scf (AP-42, Table 1.4-1 [7/98]).

If required, the permittee shall demonstrate compliance with this emission limitation pursuant to Methods 1 through 4, and 10 of 40 CFR, Part 60, Appendix A.

b. Emission Limitations:

3.92 lbs of NOx/hr and 17.18 tons of NOx/yr

Applicable Compliance Method:

The emission limitation represents the PTE (defined as the maximum capacity to emit an air pollutant under the physical and operational design). The PTE is based on a heat content of 1,020 Btu/scf and a NOx emission factor of 100 lbs/million scf (AP-42, Table 1.4-1 [7/98]).

If required, the permittee shall demonstrate compliance with this emission limitation pursuant to Methods 1 through 4, and 10 of 40 CFR, Part 60, Appendix A.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

c. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a 6-minute average, except as provided by rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the visible PE limitation above in accordance with the methods and procedures specified in

Method 9 of 40 CFR, Part 60, Appendix A, and the requirements specified in OAC rule 3745-17-03(B)(1).

d. Emission Limitation:

0.020 lb PE/million Btu of actual heat input

Applicable Compliance Method:

The permittee may demonstrate compliance with the PE limitation above by multiplying the maximum hourly natural gas consumption rate (0.0392 million scf/hr) by an AP-42 emission factor of 1.9 lbs PE (filterable)/million scf (AP-42, Table 1.4-2 [7/98]), and then dividing by the maximum heat input capacity of the heater (40 million Btu/hr).

If required, compliance with the lb/million Btu PE limitation above shall be determined in accordance with the methods specified in OAC rule 3745-17-03(B)(9).

g) Miscellaneous Requirements

(1) None.

3. B509, Ammonia Production Unit - Boiler #3

Operations, Property and/or Equipment Description:

Ammonia Production Unit - Boiler #3 (227 million Btu/hr - Natural Gas Fired)

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)k. and d)(4).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	1.69 lbs of particulate emissions/ particulate matter less than or equal to 10 microns in diameter/particulate matter less than or equal to 2.5 microns in diameter (PE/PM_{10}/$PM_{2.5}$)/hr and 7.41 tons of PE/PM_{10}/$PM_{2.5}$/yr 0.13 lb of sulfur dioxide (SO2)/hr and 0.58 ton of SO2/yr 22.70 lbs of nitrogen oxides (NOx)/hr and 99.43 tons of NOx/yr 18.69 lbs of carbon monoxide (CO)/hr and 81.88 tons of CO/yr 1.22 lbs of volatile organic compounds (VOC)/hr and 5.36 tons of VOC/yr See b)(2)a. through b)(2)c.
b.	ORC 3704.03(T)	See b)(2)d.
c.	OAC rule 3745-17-07(A)	Visible particulate emissions (PE) shall not exceed 20% opacity, as a six-minute average, except as provided by rule.
d.	OAC rule 3745-17-10(B)(1)	0.020 lb of PE/mmBtu of actual heat input [See b)(2)e.]

e.	OAC rule 3745-18-06(E)	Exempt, see b)(2)f.
f.	40 CFR, Part 63, Subpart DDDDD (40 CFR 63.7480-7575) [In accordance with 63.7575, this emissions unit is a gaseous fuel 1 subcategory new process heater located at a major source of HAP emissions and subject to the applicable requirements specified in this section.]	See b)(2)f., c)(2) and c)(3) 63.7500(a) Table 3 requirements
g.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)h. and b)(2)i.
h.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)j.
i.	OAC rules 3745-31-10 through 3745-31-20	Carbon dioxide(CO_2) as a surrogate for greenhouse gas (GHG) emissions shall not exceed 116,972 tons per rolling, 12-month period See b)(2)k., d)(2) and e)(2)
j.	OAC rule 3745-110	See b)(2)l.
k.	ORC 3704.03(F) and OAC rule 3745-114	See d)(4)
l.	40 CFR, Part 60, Subpart Db 40 CFR 60.40b - 60.49b	0.20 lb of NOx (expressed as NO_2)/mmBtu of actual heat input on a 30-day rolling average basis [See b)(2)m., d)(3) and e)(3)]

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potential to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a., b, c., d., and e. for details regarding the PTE.

b. It is assumed that all PE are equivalent to both PM_{10} and $PM_{2.5.}$

c. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit:

i. 1.69 lbs of PE/PM_{10}/$PM_{2.5}$/hr and 7.41 tons of PE/PM_{10}/$PM_{2.5}$/yr;

ii. 0.13 lb of SO2/hr and 0.58 ton of SO2/yr;

iii. 22.70 lbs of NOx/hr and 99.43 tons of NOx/yr;

iv. 18.69 lbs of CO/hr and 81.88 tons of CO/yr; and

v. 1.22 lbs of VOC/hr and 5.36 tons of VOC/yr.

d. Best Available Technology (BAT) requirements for NOx and CO emissions under ORC 3704.03(T) have been determined to be compliance with the annual emission limitations for NOx and CO as established pursuant to OAC rule 3745-31-05(D).

e. The emission limitation of 0.020 lb of particulate emissions (PE) per million Btu of actual heat input specified by OAC 3745-17-10(B)(1) is less stringent than the PE limitation specified pursuant to OAC rule 3745-31-05(D).

f. This emissions unit is exempt from the requirements of OAC rule 3745-18-06(E) in accordance with OAC rule 3745-18-06(C).

g. This emissions unit is subject to the initial notification requirements of 40 CFR, Part 63, Subpart DDDDD (Boiler MACT) as outlined in 63.9(b) (i.e., it is not subject to the emission limits, performance testing, monitoring, or site-specific monitoring plan requirements of Subpart DDDDD or any other requirements in 40 CFR, Part 63, Subpart A).

h. BAT requirements for PE/PM_{10}/$PM_{2.5}$, SO2 and VOC emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual emission limitations for PE/PM_{10}/$PM_{2.5}$, SO2 and VOC as established pursuant to OAC rule 3745-31-05(D).

i. The permittee has satisfied the BAT requirements for PE/PM_{10}/$PM_{2.5}$, SO2 and VOC emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

j. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the PE/PM_{10}/$PM_{2.5}$PE/PM_{10}/$PM_{2.5}$, SO2 and VOC emissions since the potential to emit is less than 10 tons per year.

k. The permittee shall employ Best Available Control Technology (BACT) for this emissions unit. BACT has been determined to be the following:

Pollutant	BACT Requirements
CO_2 as a surrogate for GHG	Use of low-carbon gaseous fuel (natural gas); and Burner tuning and heater inspection every 5 years.

l. Pursuant to OAC rule 3745-110-01(B)(19), this emissions unit is a new large boiler. The emissions limitations for NOx in OAC rule 3745-110-03(C) are as stringent as the NOx emission limitation established pursuant to OAC rule 3745-31-05(D).

m. The emission limitation of 0.20 lb of NOx (expressed as NO_2)/mmBtu of actual heat input on a 30-day rolling average basis specified by 40 CFR 60.44b(i) and (l)(1) for a boiler with "high heat release rate" is less stringent than the NOx limitation specified pursuant to OAC rule 3745-31-05(D).

c) Operational Restrictions

(1) The permittee shall burn only natural gas in this emissions unit.

(2) Pursuant to 40 CFR 63.7540(a)(12), because this emissions unit is a process heater or boiler in the Gas 1 subcategory with a continuous oxygen trim system that maintains an optimum air to fuel ratio, the permittee shall conduct a tune-up of the boiler or process heater every 5 years as specified in 40 CFR 63.7540(a)(10)(i) through 63.7540(a)(10)(vi). The permittee may delay the burner inspection specified in paragraph 63.7540(a)(10)(i) until the next scheduled or unscheduled unit shutdown, but the permittee must inspect each burner at least once every 72 months. Pursuant to 40 CFR 63.7540(a)(13), if the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

(3) The permittee shall have a one-time energy assessment performed by a qualified energy assessor, pursuant to work practice standards 4.a through 4.h in Table 3 of 40 CFR, Part 63, Subpart DDDDD. The subsequent report associated with this assessment shall be submitted no later than January 31, 2016.

d) Monitoring and/or Recordkeeping Requirements

(1) For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

(2) The permittee shall record the following for this emissions unit:

a. the volume, in million standard cubic feet, of natural gas combusted per month;

b. the volume, in million standard cubic feet, of natural gas combusted per rolling, 12-month period;

c. the CO_2, as a surrogate for GHG, emission rate, in tons, for each month of operation;

d. the CO_2, as a surrogate for GHG, emission rate, in tons, for each rolling, 12-month period;

e. heater design documents; and

f. heater maintenance activities, as completed.

(3) The permittee shall perform the following monitoring and record keeping requirements contained in 40 CFR, Part 60, Subpart Db for purposes of demonstrating compliance with the 0.20 lb of NOx (expressed as NO2)/mmBtu of actual heat input on a 30-day rolling average basis emission limitation:

a. The permittee shall install, calibrate, maintain, and operate CEMS for measuring NOx and O2 (or CO2) emissions discharged to the atmosphere, and shall record the output of the system. [40 CFR 60.48b(b)(1)]

b. The CEMS shall be operated and data recorded during all periods of operation of the affected facility except for CEMS breakdowns and repairs. Data is recorded during calibration checks, and zero and span adjustments.[40 CFR 60.48b(c)]

c. The 1-hour average NOx emission rates measured by the continuous NOx monitor required under 40 CFR 60.13(h) shall be expressed in ng/J or lb/mmBtu heat input and shall be used to calculate the average emission rates. The 1-hour averages shall be calculated using the data points required under 40 CFR 60.13(h)(2). [40 CFR 60.48b(d)]

d. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of the continuous monitoring systems. The span value for NOx is determined using the procedures in 40 CFR 60.48b(e)(2)(i). [40 CFR 60.48b(e)(2)]

e. When NOx emission data are not obtained because of CEMS breakdowns, repairs, calibration checks and zero and span adjustments, emission data will be obtained by using standby monitoring systems, Method 7 of appendix A of this part, Method 7A of appendix A of this part, or other approved reference methods to provide emission data for a minimum of 75% of the operating hours in each steam generating unit operating day, in at least 22 out of 30 successive steam generating unit operating days.[40 CFR 60.48b(f)]

f. The permittee shall record and maintain records of the amount of natural gas combusted during each day and calculate the annual capacity factor for natural gas for the reporting period. The annual capacity factor is determined on a 12-month rolling average basis with a new annual capacity factor calculated at the end of each calendar month.[40 CFR 60.49b(d)(1)]

g. The permittee shallmaintain records of the following information for each steam generating unit operating day:[40 CFR 60.49b(g)]

i. Calendar date;

ii. The average hourly NOx emission rates (expressed as NO2) (ng/J or lb/mmBtu heat input) measured or predicted;

iii. The 30-day average NOx emission rates (ng/J or lb/mmBtu heat input) calculated at the end of each steam generating unit operating day from the measured or predicted hourly NOx emission rates for the preceding 30 steam generating unit operating days;

iv. Identification of the steam generating unit operating days when the calculated 30-day average NOx emission rates are in excess of the NOx emission limitation (specified above in b)(1)l.), with the reasons for such excess emissions as well as a description of corrective actions taken;

v. Identification of the steam generating unit operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data and a description of corrective actions taken;

vi. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data;

vii. Identification of “F” factor used for calculations, method of determination, and type of fuel combusted;

viii. Identification of the times when the pollutant concentration exceeded full span of the CEMS;

ix. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3; and

x. Results of daily CEMS drift tests and quarterly accuracy assessments as required under appendix F, Procedure 1 of this part.

h. All records required under this section shall be maintained by the permittee for a period of 2 years following the date of such record.[40 CFR 60.49b(o)]

(4) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to

increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs.

(2) The permittee shall notify the Director (the Ohio EPA, Northwest District Office) on a quarterly basis, in writing, of:

a. All exceedances of the 116,972 tons per rolling, 12-month period emission limitation for CO_2 as a surrogate for GHG emissions.

The notification shall include a copy of the record and shall be sent to the Director (the Ohio EPA, Northwest District Office) by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during previous calendar quarters.

(3) The permittee shall perform the following reporting requirements contained in 40 CFR. Part 60, Subpart Db:

a. The permittee shall submit notification of the date of initial startup, as provided by 40 CFR 60.7. This notification shall include:[40 CFR 60.49b(a)]

i. The design heat input capacity of the affected facility and identification of the fuels to be combusted in the affected facility; and [40 CFR 60.49b(a)(1)]

ii. The annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and based on each individual fuel fired. [40 CFR 60.49b(a)(3)]

b. The permittee shallsubmit to the Administrator the performance test data from the initial performance test and the performance evaluation of the CEMS using the applicable performance specifications in appendix B of 40 CFR, Part 60.[40 CFR 60.49b(b)]

c. The permittee shallsubmit excess emission reports for any excess emissions that occurred during the reporting period. Excess emissions are defined as any calculated 30-day rolling average NOx emission rate that exceeds the applicable emission limit.[40 CFR 60.49b(h)]

d. The permittee shall submit reports containing the information recorded under the recordkeeping requirements in d)(3)g. [40 CFR 60.49b(i)]

e. The permittee may submit electronic quarterly reports for NOx in lieu of submitting the written reports required under 40 CFR 60.49b(h) or (i). The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after

the end of the calendar quarter and shall be accompanied by a certification statement from the permittee, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the permittee shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format. [40 CFR 60.49b(v)]

f. The reporting period for the reports required under this subpart is each 6 month period. All reports shall be submitted to the Administrator and shall be postmarked by the 30th day following the end of the reporting period.[40 CFR 60.49b(w)]

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

1.69 lbs of PE/PM_{10}/$PM_{2.5}$/hr and 7.41 tons of PE/PM_{10}/$PM_{2.5}$/yr

Applicable Compliance Method:

The hourly PE/PM_{10}/$PM_{2.5}$ emission limitation above was developed by multiplying the PE/PM_{10}/$PM_{2.5}$ emission factor from AP-42, Table 1.4-2 (dated 7/98) (7.6 lbs/million scf) by the maximum heat input of 227 million Btu/hr, then dividing by the natural gas heat content of 1,020 Btu/scf. Compliance is presumed by only using natural gas as required in (c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Methods 1 through 4 of 40 CFR, Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR, Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitations:

0.13 lb of SO2/hr and 0.58 ton of SO2/yr

Applicable Compliance Method:

The hourly SO2 emission limitation above was developed by multiplying the SO2 emission factor from AP-42, Table 1.4-2 (dated 7/98) (0.6 lb/million scf) by the maximum heat input of 227 million Btu/hr, then dividing by the natural gas heat

content of 1,020 Btu/scf. Compliance is presumed by only using natural gas as required in (c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 6of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

c. Emission Limitations:

22.70 lbs of NOx/hr and 99.43 tons of NOx/yr

Applicable Compliance Method:

The hourly NOx emission limitation above was developed by multiplying the required Ohio EPA NOx Reasonably Available Control Technology emission limit of 0.1 lb/million Btu from OAC rule 3745-110-03(C) by the maximum heat input of 227 million Btu/hr. Compliance is presumed by only using natural gas as required in (c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 7of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

d. Emission Limitations:

18.69 lbs of CO/hr and 81.88 tons of CO/yr

Applicable Compliance Method:

The hourly CO emission limitation above was developed by multiplying the CO emission factor from AP-42, Table 1.4-1 (dated 7/98) (84 lbs/million scf) by the maximum heat input of 227 million Btu/hr, then dividing by the natural gas heat content of 1,020 Btu/scf. Compliance is presumed by only using natural gas as required in (c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton.

Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

e. Emission Limitations:

1.22 lbs of VOC/hr and 5.36 tons of VOC/yr

Applicable Compliance Method:

The hourly VOC emission limitation above was developed by multiplying the VOC emission factor from AP-42, Table 1.4-2 (dated 7/98) (5.5 lbs/million scf) by the maximum heat input of 227 million Btu/hr, then dividing by the natural gas heat content of 1,020 Btu/scf. Compliance is presumed by only using natural gas as required in (c)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

f. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the visible particulate emission limitation above in accordance with the methods and procedures specified in Method 9 of 40 CFR, Part 60, Appendix A, and the requirements specified in OAC rule 3745-17-03(B)(1).

g. Emission Limitation:

CO_2 as a surrogate for GHG emissions shall not exceed 116,972 tons per rolling, 12-month period

Applicable Compliance Method:

The allowable CO_2 as a surrogate for GHG emissions limitation was established to reflect the potential to emit for this emissions unit based on an emission factor of 120,000 lbs CO_2/million scf from AP-42,Table 1.4-2 (dated 7/98) multiplied by the maximumheat input of 227 million Btu/hr, then dividing by the natural gas heat content of 1,020 Btu/scf, and then multiplying by the maximum annual hours of operation (8,760 hrs/yr) and dividing by 2,000 pounds per ton.

Compliance shall be demonstrated by the monitoring and record keeping requirements in d)(2).

h. Emission Limitation:

0.20 lb of NOx (expressed as NO2)/mmBtu of actual heat input on a 30-day rolling average basis

Applicable Compliance Method:

The permittee shall demonstrate compliance with the 30-day rolling average emission limitation by conducting the performance testing as required under 40 CFR 60.8 using the continuous system for monitoring NOx under 40 CFR 60.48(b). Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA. [40 CFR 60.46b(e)]

i. For the initial compliance test, NOx from the boiler are monitored for 30 successive steam generating unit operating days and the 30-day average emission rate is used to determine compliance with the NOx emission limit. The 30-day average emission rate is calculated as the average of all hourly emissions data recorded by the monitoring system during the 30-day test period.[40 CFR 60.46b(e)(1)]

ii. Following the date on which the initial performance test is completed or required to be completed under 40 CFR 60.8, whichever date comes first, thepermittee shall, upon request, determine compliance with the NOx emission limit through the use of a 30-day performance test. During periods when performance tests are not requested, NOx emissions data collected pursuant to 40 CFR 60.48b(g)(1) are used to calculate a 30-day rolling average emission rate on a daily basis and used to prepare excess emission reports, but will not be used to determine compliance with the NOx emission standards. A new 30-day rolling average emission rate is calculated each steam generating unit operating day as the average of all of the hourly NOx emission data for the preceding 30 steam generating unit operating days.[40 CFR 60.46b(e)(4)]

(2) The permittee shall conduct, or have conducted, emission testing for this emissions unitin accordance with the following requirements:

a. The emission testing shall be conducted within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility. [40 CFR 60.8(a)]

The emission testing shall be conducted to demonstrate compliance with theallowable emission rate of 0.20 lb of NOx (expressed as NO2)/mmBtu of actual heat input on a 30-day rolling average basis.

b. The following test methods shall be employed to demonstrate compliance withthe allowable mass emission rate for NOx:using the continuous system for monitoring NOx under 40 CFR 60.48(b).Alternate U.S. EPA-approved test methods may be used withprior approval from the Ohio EPA.

c. The test(s) shall be conducted while the emissions unit is operating at itsmaximum capacity, unless otherwise specified or approved by the Ohio EPA,Northwest District Office.

d. Not later than 30 days prior to the proposed test date(s), the permittee shallsubmit an "Intent to Test" notification to the Ohio EPA,Northwest District Office. The "Intent to Test" notification shall describe in detail theproposed test methods and procedures, the emissions unit operatingparameters, the time(s) and date(s) of the test(s), and the person(s) who will beconducting the test(s).

Failure to submit such notification for review and approvalprior to the test(s) may result in the Ohio EPA,Northwest District Office's refusal to accept the results of the emission test(s).

e. Personnel from the Ohio EPA,Northwest District Office shallbe permitted to witness the test(s), examine the testing equipment, and acquiredata and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions fromthe emissions unit and/or the performance of the control equipment.

f. A comprehensive written report on the results of the emissions test(s) shall besigned by the person or persons responsible for the tests and submitted to the Ohio EPA,Northwest District Office within 30 days followingcompletion of the test(s).

g) Miscellaneous Requirements

(1) None.

4. J001, Urea Water or UAN Solution Truck/Railcar Load #2

Operations, Property and/or Equipment Description:

Urea Water or UAN Solution Truck/Railcar Loading

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)a., d)(1) through d)(5) and e)(1).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(F) and OAC rule 3745-114	See d)(1) through d)(5) and e)(1).

(2) Additional Terms and Conditions

a. None.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Air toxic emissions associated with the original installation of this emissions unit (J001) was addressed by PTI #P0109600 issued 3/21/2012. Additional modeling to demonstrate compliance with, the "Toxic Air Contaminant Statute", ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

(2) PTI #P0109600 issued for this emissions unit, J001, was evaluated using the air dispersion model ISCST3 and the actual materials and the design parameters of the emissions units' exhaust system as specified by the permittee, and as presented in the paragraphs below.

The predicted 1-hour maximum ground-level concentration result(s) from the approved air dispersion model, was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC), calculated as described in the Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A", as follows:

a. the exposure limit, expressed as a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, for each toxic compound(s) emitted from the emissions unit(s), (as determined from the raw materials processed and/or coatings or other materials applied) has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):

   i. threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; or

   ii. STEL (short term exposure limit) or the ceiling value from the American Conference of Governmental Industrial Hygienists (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent 8-hour TLV.

b. The TLV is divided by ten to adjust the standard from the working population to the general public (TLV/10).

c. This standard is/was then adjusted to account for the duration of the exposure or the operating hours of the emissions unit(s), i.e., "X" hours per day and "Y" days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

   TLV/10 x 8/X x 5/Y = 4 TLV/XY = MAGLC

d. The following summarizes the results of dispersion modeling for the significant toxic contaminants (emitted at 1 or more tons/year) or "worst case" toxic contaminant(s):

   Toxic Contaminant: Ammonia

   TLV (mg/m3): 17.413

   Maximum Hourly Emission Rate (lbs/hr): 1.574

   Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 395.68

(3) Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration", the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the 1-hour maximum ground-level concentration include, but are not limited to, the following:

a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a new toxic air contaminant with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled;

b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application; and

c. physical changes to the emissions unit(s) or its/their exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Toxic Air Contaminant Statute" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), has been documented. If the change(s) meet(s) the definition of a "modification", the permittee shall apply for and obtain a final PTI prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

(4) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F):

a. a description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.);

b. the Maximum Acceptable Ground-Level Concentration (MAGLC) for each significant toxic contaminant or worst-case contaminant, calculated in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F);

c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) to be in compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), initially and for each change that requires re-evaluation of the toxic air contaminant emissions; and

d. the documentation of the initial evaluation of compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the emissions unit(s) or the materials applied.

(5) The permittee shall maintain a record of any change made to a parameter or value used in the dispersion model, used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.

e) Reporting Requirements

(1) The permittee shall submit quarterly reports to the appropriate Ohio EPA, Northwest District Office, documenting any changes made to a parameter or value used in the dispersion model, that was used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration. If no changes to the emissions, emissions unit(s), or the exhaust stack have been made, then the report shall include a statement to this effect. These quarterly reports shall be submitted by April 30, July 30, October 30, and January 30, and shall cover the records for the previous calendar quarters.

f) Testing Requirements

(1) None.

g) Miscellaneous Requirements

(1) None.

5. J002, DEF Urea Water Solution Truck/Railcar Load

Operations, Property and/or Equipment Description:

Diesel Exhaust Fluid (DEF) Urea Water Solution Truck/Railcar Loading

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)a. and d)(1).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

a.	ORC 3704.03(F) and OAC rule 3745-114	See d)(1)

(2) Additional Terms and Conditions

a. None.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) None.

f) Testing Requirements

(5) None.

g) Miscellaneous Requirements

(1) None.

6. P520, Ammonia Unit - Reforming

Operations, Property and/or Equipment Description:

Ammonia Unit - Reforming Section

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)c. and d)(2).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	2,439.85 lbs of carbon monoxide (CO)/hr during emissions unit start-up periods 8.22 lbs of CO/hr during normal production mode of operation 489.83 tons of CO/yr during start-up periods and normal production mode of operation, combined 37.15 lbs of volatile organic compounds (VOC)/hr during emissions unit start-up periods 0.75 lb of VOC/hr during normal production mode of operation 10.20 tons of VOC/yr during start-up periods and normal production mode of operation, combined See b)(2)a., b)(2)b., c)(1), d)(1) and e)(1)
b.	ORC 3704.03(T)	See b)(2)c.
c.	ORC 3704.03(F) and OAC rule 3745-114	See d)(2)

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a. andb., for details regarding the PTE.

b. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit. The federally enforceable limitations are based on the operational restrictions in c)(1):

i. 2,439.85 lbs of CO/hr during emissions unit start-up periods;

ii. 8.22 lbs of CO/hr during normal production mode of operation;

iii. 489.83 tons of CO/yr during start-up periods and normal production mode of operation, combined;

iv. 37.15 lbs of VOC/hr during emissions unit start-up periods;

v. 0.75 lb of VOC/hr during normal production mode of operation; and

vi. 10.20 tons of VOC/yr during start-up periods and normal production mode of operation, combined.

c. Best Available Technology (BAT) requirements for CO and VOC emissions under ORC 3704.03(T) have been determined to be compliance with the annual emission limitations for CO and VOC as established pursuant to OAC rule 3745-31-05(D).

d. Greenhouse gas (GHG) emissions, specifically methane (CH4) as a surrogate for GHG, resulting from venting of methane during startups have been determined to be negligible for this emissions unit.

c) Operational Restrictions

(1) Start-up, shutdown, and normal operations for the ammonia reforming unit is limited by the following:

$$\sum_{M=1}^{12} \sum_{n} CO_n \leq 453.81 \text{ AND } \sum_{n} VOC_n \leq 6.91$$

where:

M = the increment of the rolling 12-month period;

n = type of operation (i.e. normal, start-up, shutdown) during the period;

CO_n = calculated emissions of carbon monoxide in tons;

VOC_n = calculated emissions of volatile organic compounds in tons;

(2) To ensure federal enforceability during the first 12 calendar months of operation under the provisions of this permit, start-up, shutdown, and normal operations for the ammonia reforming unit is limited by the following:

Allowable Operation Limitations

MONTH(S)	$\sum_n CO_n \leq$	AND	$\sum_n VOC_n \leq$
1-1	90.00	and	1.30
1-2	180.00	and	2.60
1-3	270.00	and	3.90
1-4	360.00	and	5.20
1-12	453.15	and	6.91

After the first 12 calendar months of operation under the provisions of this permit, compliance with the allowable operation limitations shall be based upon a rolling 12-month summation.

d) Monitoring and/or Recordkeeping Requirements

(5) The permittee shall collect and record the following information each month:

a. Type and time period of each operation (startup, shutdown, normal);

b. The calculated CO and VOC emissions, in tons, associated with each type of operation, based on a detailed review of startup, shutdown, and normal operations.

c. The total CO and VOC emission rates, in tons, from all operation types [summation of d)(1)b. for startup, shutdown, and normal operations];

d. For the first 12 calendar months of operation under the provisions of this permit, the cumulative monthly CO and VOC emissions, in tons; and

e. After the first 12 months of operation under the provisions of this permit, the rolling 12-month CO and VOC emissions, in tons.

(6) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for

each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year.

OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) The permittee shall submit quarterly deviation (excursion) reports that identify:

a. all exceedances of the rolling 12-month operational restriction specified in c)(1); and

b. all exceedances of the allowable operational limitations for the first 12 months of operation as specified in c)(2);

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

2,439.85 lbs of CO/hr during emissions unit start-up periods

Applicable Compliance Method:

The hourly emission limitation during start-up periods is based on PCS Engineering staff system knowledge and a detailed review of operations history. Compliance shall be demonstrated by the recordkeeping requirements in d)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

b. Emission Limitation

8.22 lbs of CO/hr during normal production mode of operation

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit during normal production mode of operation.

Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

c. Emission Limitation:

489.83 tons of CO/yr during start-up periods and normal production mode of operation, combined

Applicable Compliance Method:

The annual emission limitation is based on 453.81 tons of CO/yr during emissions unit start-up periods: (2,439.85 lbs of CO/hr)(372 hrs/yr of start-up)/2,000 lbs/ton); plus an additional 36.02 tons of CO during the remaining 8,388 hrs/yr. Compliance with the 453.81 tons of CO/yr during emissions unit start-up periodsoperational restriction shall be demonstrated by the recordkeeping requirements in d)(1).

The 36.02 tons of CO/yr is based on previous stack testing, and reflects the potential to emit (PTE) for this emissions unit during normal production operating mode. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

d. Emission Limitation:

37.15 lbs of VOC/hr during emissions unit start-up periods

Applicable Compliance Method:

The hourly emission limitation during start-up periods is based on PCS Engineering staff system knowledge and a detailed review of operations history. Compliance shall be demonstrated by the recordkeeping requirements in d)(1).

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

e. Emission Limitation:

0.75 lb of VOC/hr during normal production mode of operation

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit during normal production mode of operation.

Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

f. Emission Limitation:

10.20 tons of VOC/yr during start-up periods and normal production mode of operation, combined

Applicable Compliance Method:

The annual emission limitation is based on 6.91 tons of VOC/yr during emissions unit start-up periods: (37.15 lbs of VOC/hr)(372 hrs/yr of start-up)/2,000 lbs/ton); plus an additional 3.29 tons of VOC during the remaining 8,388 hrs/yr. Compliance with the 6.91 tons of VOC/yr during emissions unit start-up periods operational restriction shall be demonstrated by the recordkeeping requirements in d)(1).

The 3.29 tons of VOC/yr is based on previous stack testing, and reflects the potential to emit (PTE) for this emissions unit during normal production operating mode.

Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

g) Miscellaneous Requirements

(1) None.

7. P521, Ammonia Unit - Purification

Operations, Property and/or Equipment Description:

Ammonia Unit - Purification Section

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)e. and d)(1).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	2.62 lbs of carbon monoxide (CO)/hr and 11.49 tons of CO/yr 0.37 lb of volatile organic compounds (VOC)/hr and 1.62 tons of VOC/yr See b)(2)a. and b)(2)b.
b.	ORC 3704.03(T)	See b)(2)c.
c.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)d. and b)(2)e.
d.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)f.
e.	ORC 3704.03(F) and OAC rule 3745-114	See d)(1)

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potential to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a. andb. for details regarding the PTE.

b. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit:

i. 2.62 lbs of CO/hr and 11.49 tons of CO/yr; and

ii. 0.37 lb of VOC/hr and 1.62 tons of VOC/yr.

c. Best Available Technology (BAT) requirements for CO emissions under ORC 3704.03(T) have been determined to be compliance with the annual CO emission limitation as established pursuant to OAC rule 3745-31-05(D).

d. BAT requirements for VOC emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual VOC emission limitation as established pursuant to OAC rule 3745-31-05(D).

e. The permittee has satisfied the BAT requirements for VOC emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

f. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the VOC emissions since the potential to emit is less than 10 tons per year.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Modeling to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) None.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

2.62 lbs of CO/hr and 11.49 tons of CO/yr

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitations:

0.37 lb of VOC/hr and 1.62 tons of VOC/yr

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

(1) None.

8. P522, NH3 Unit - Synthesis

Operations, Property and/or Equipment Description:

Ammonia Unit - Synthesis Section, with South Stripper Stack Flare

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)f. and d)(4).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	<u>Emissions from the flare:</u> Visible particulate emissions (PE) from the flare shall not exceed 5% opacity, as a 6-minute average. 2.41 lbs of carbon monoxide (CO)/hr and 10.55 tons of CO/yr during normal production mode of operation <u>Emissions from process equipment</u>: 6.04 tons of volatile organic compounds (VOC)/yr during normal production mode of operation See b)(2)a., b)(2)b., b)(2)g., c)(1), c)(2), d)(1) through d)(3), and e)(1) through e)(3)
b.	ORC 3704.03(T)	See b)(2)c.
c.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)d. and b)(2)e.
d.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)f.
e.	OAC rules 3745-31-10 through 3745-31-20	See b)(2)h.
f.	ORC 3704.03(F) and OAC rule 3745-114	See d)(4)

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)b. andc., for details regarding the PTE.

b. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit. The federally enforceable limitation for VOCis based on the operational restriction in c)(1):

i. 2.41 lbs of CO/hr and 10.55 tons of CO/yr from the flare during normal production mode of operation; and

ii. 6.04 tons of VOC/yr from process equipment during normal production mode of operation.

c. Best Available Technology (BAT) requirements for CO emissions under ORC 3704.03(T) have been determined to be compliance with the emission limitations and requirements established pursuant to OAC rule 3745-31-05(D).

d. BAT requirements for VOC emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual VOC emission limitation as established pursuant to OAC rule 3745-31-05(D).

e. The permittee has satisfied the BAT requirements for VOC emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

f. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the VOC emissions since the potential to emit is less than 10 tons per year.

g. Criteria pollutant emissions resulting from shutdown events and from combustion of gas streams in the flare have been determined to be negligible for this emissions unit. The VOC emissions that vent through the flare (determined by

previous stack testing)have been determined to be negligible(0.01 ton of VOC/yr). [See c)(2)]

h. Greenhouse gas (GHG) emissions, specifically carbon dioxide (CO2) as a surrogate for GHG resulting from combustion of gas streams in the flare have been determined to be negligible for this emissions unit.

c) Operational Restrictions

(1) The following operational restrictions have been included in this permit for establishing federally enforceable requirements which limit PTE for VOC [See b)(2)b.ii.]:

a. The maximum amount of methanol used as an anti-freeze agent shall not exceed 1,830 gallons methanol per rolling, 12 month period;

b. To ensure federal enforceability during the first 12 calendar months of operation under the provisions of this permit, start-up, shutdown, and normal operations for the ammonia reforming unit is limited by the following:

Maximum Allowable Methanol Usage

MONTH(S)	GALLONS
1-1	350
1-2	700
1-3	1050
1-4	1400
1-12	1830

After the first 12 calendar months of operation under the provisions of this permit, compliance with the allowable operation limitations shall be based upon a rolling 12-month summation.

c. The permittee shall employ a flare during all dryer depressuring, loop depressuring and refrigeration depressuring periods. [See b)(2)g.]

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall perform daily checks, when the emissions unit is being shut down and when the weather conditions allow, for any visible particulate emissions from the flare serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to eliminate the visible emissions.

(2) The permittee shall maintain records showing that emissions were vented to the flare during all dryer depressuring, loop depressuring and refrigeration depressuring events.

(3) The permittee shall maintain monthly records of the following information:

a. the number of gallons of methanol used for each month;

b. for the first 12 calendar months of operation under the provisions of this permit, the cumulative monthly usage of methanol in gallons; and

c. After the first 12 months of operation under the provisions of this permit, the rolling, 12-month usage of methanol in gallons.

(4) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) The permittee shall submit semiannual written reports that identify:

a. all days during which any visible particulate emissions were observed from the flare serving this emissions unit; and

b. any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the Ohio EPA, Northwest District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

(2) If emissions were not vented to the flare during all dryer depressuring, loop depressuring and/or refrigeration depressuring events, the permittee shall notify the Ohio EPA, Northwest District Office within 30 days of such occurrence. The notification shall include calculations that show the emissions of any criteria pollutants from the depressuring events, and if necessary, submit a PTI modification application.

(3) The permittee shall submit quarterly deviation (excursion) reports that identify:

a. all exceedances of the rolling, 12-month operational restriction specified in c)(1)a; and

b. all exceedances of the allowable methanol usage restrictions for the first 12 months of operation as specified in c)(1)b.;

(4) The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible PE from the flare shall not exceed 5% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the visible PE limitation above in accordance with the methods and procedures specified in Method 9 in Appendix A of 40 CFR, Part 60.

b. Emission Limitations:

2.41 lbs of CO/hr and 10.55 tons of CO/yr from the flare during normal production mode of operation

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit during normal production mode of operation. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

c. Emission Limitations:

6.04 tons of VOC/yr from process equipment during normal production mode of operation

Applicable Compliance Method:

The VOC emissions are based on mass balance calculations for the use of methanol as an anti-freeze agent during colder weather months to prevent freezing of instrument air systems, and on previous stack testing data upstream of the flare. The annual potential to emit of methanol as an anti-freeze agent is based on using a maximum of 5 gallons of methanol per 12-hour shift, multiplied by two shifts/day, multiplied by 183 days/yr (October 15 to April 15 assumed), multiplied by a solvent density of 6.589 lbs VOC/gallon, then divided by 2,000 lbs/ton = 6.03 tons of VOC/yr. The potential VOC emissions that ventfrom the flare (determined by previous stack testingupstream of the flare) are 0.01 ton of VOC/yr.

Compliance shall also be based on the recordkeeping requirements in d)(3).

g) Miscellaneous Requirements

(1) None.

9. P523, NH3 Unit – Carbon Dioxide (CO_2) Stripper

Operations, Property and/or Equipment Description:

Ammonia Unit – CO_2 Stripper Section

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)f. and d)(2).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	1.03 lbs of carbon monoxide (CO)/hr and 4.50 tons of CO/yr 49.81 lbs of volatile organic compounds (VOC)/hr and 218.15 tons of VOC/yr See b)(2)b. and b)(2)c.
b.	ORC 3704.03(T)	See b)(2)d.
c.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)e. and b)(2)f.
d.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)g.
e.	OAC rules 3745-31-10 through 3745-31-20	Carbon dioxide(CO_2) as a surrogate for greenhouse gas (GHG) emissions shall not exceed 1,030,930 tons emitted per rolling, 12-month period; and 2,404 lbs of CO_2 emitted/ton of ammonia produced, as a rolling, 12-month average These limits were determined based on expected natural gas quality. See b)(2)h., d)(1) and e)(1)
f.	ORC 3704.03(F) and OAC rule 3745-114	See d)(2)

(2) Additional Terms and Conditions

a. The Medium Pressure Condensate Stripper associated with this emissions unit is integral to the process equipment as a product recovery device. Thus, there is no parametric monitoring necessary.

b. The mass emission rate limitations in b)(1)a. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a. andb., for details regarding the PTE.

c. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit for this emissions unit:

i. 1.03 lbs of CO/hr and 4.50 tons of CO/yr; and

ii. 49.81 lbs of VOC/hr and 218.15 tons of VOC/yr.

d. Best Available Technology (BAT) requirements for VOC emissions under ORC 3704.03(T) have been determined to be compliance with the annual VOC emission limitation as established pursuant to OAC rule 3745-31-05(D).

e. BAT requirements for CO emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual CO emission limitation as established pursuant to OAC rule 3745-31-05(D).

f. The permittee has satisfied the BAT requirements for CO emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

g. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the CO emissions since the potential to emit is less than 10 tons per year.

h. The permittee shall employ Best Available Control Technology (BACT) for this emissions unit. Methane (CH_4) emissions as a surrogate for GHG have been determined to be negligible for this emissions unit. BACT has been determined to be the following:

Pollutant	BACT Requirements
CO_2 as a surrogate for GHG	Good operational practices, including the use of CO_2 within the downstream urea synthesis and commercial sale of CO_2 to the on-site, independently owned CO_2plant (when available).

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall record the following for this emissions unit to determine the emissions of CO_2, as a surrogate for GHG:

a. the amount of ammonia, in tons, produced each month;

b. the CO_2, as a surrogate for GHG, emission rate, (after any use downstream by urea synthesis and/or the CO_2 plant), in tons, for each month of operation (determined by performing stoichiometric calculations following the process chemistry and using monthly natural gas measurements from the natural gas supplier);

c. the CO_2, as a surrogate for GHG, emission rate, (after any use downstream by urea synthesis and/or the CO_2 plant) in tons per rolling, 12-month period; and

d. the CO_2, as a surrogate for GHG, emission rate, (after any use downstream by urea synthesis and/or the CO_2 plant) in lbs/ton of ammonia produced, as a rolling, 12-month average.

(2) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year.OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) The permittee shall notify the Director (the Ohio EPA, Northwest District Office) on a quarterly basis, in writing, of:

a. All exceedances of the 1,030,930 tons emitted per rolling, 12-month period emission limitation for CO_2 as a surrogate for GHG emissions; and

b. All exceedances of the 2,404 lbs of CO_2 emitted/ton of ammonia produced, as a rolling, 12-month average emission limitation.

The notification shall include a copy of the record and shall be sent to the Director (the Ohio EPA, Northwest District Office) by January 30, April 30, July 30, and October 30 of each year and shall address the data obtained during previous calendar quarters.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

1.03 lbs of CO/hr and 4.50 tons of CO/yr

Applicable Compliance Method:

The hourly CO emission limitation above was developed by multiplying an adjusted CO emission factor from AP-42, Table 8.1-1 (dated 7/93) (0.0105 lb/ton of ammonia, which was adjusted from PCS Engineering staff system knowledge, a detailed review of operations history,and process chemistry and conversion data) by the maximum ammonia production rate of 97.917 tons/hr.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitations:

49.81 lbs of VOC/hr and 218.15 tons of VOC/yr

Applicable Compliance Method:

The hourly VOC emission limitation above was developed by multiplying an adjusted VOC emission factor from AP-42, Table 8.1-1 for (dated 7/93) (0.5087 lb/ton of ammonia, which was adjusted from PCS Engineering staff system knowledge, a detailed review of operations history,and process chemistry and conversion data) by the maximum ammonia production rate of 97.917 tons/hr.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

c. Emission Limitation:

CO_2 as a surrogate for GHG emissions shall not exceed 1,030,930 tons emitted per rolling, 12-month period

Applicable Compliance Method:

The rolling, 12-month period GHG emission limitation above was developed by multiplying an adjusted CO_2 emission factor from AP-42, Table 8.1-1 (dated 7/93) (2,404 lb/ton of ammonia, which was adjusted from PCS Engineering staff system knowledge, a detailed review of operations history,and process chemistry and conversion data) by the maximum ammonia production rate of 97.917 tons/hr, then multiplying by 8,760 hrs/yr, and then dividing by 2,000 lbs/ton.

Compliance shall be demonstrated by the monitoring and record keeping requirements in d)(1).

d. Emission Limitation:

2,404 lbs of CO_2 emitted/ton of ammonia produced, as a rolling, 12-month average

Applicable Compliance Method:

The lbs/ton GHG emission limitation above was developed by adjusting the CO_2emission factor from AP-42, Table 8.1-1 (dated 7/93) considering PCS Engineering staff system knowledge, a detailed review of operations history,and process chemistry and conversion data. Compliance shall be demonstrated by the monitoring and record keeping requirements in d)(1).

g) Miscellaneous Requirements

(1) None.

10. P526, Urea Plant - Synthesis

Operations, Property and/or Equipment Description:

Urea Plant - Synthesis Section, with Flare during start-up periods

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)e. and d)(4).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	<u>Emissions from Urea Unit Flare</u>: 187.5 lbs of nitrogen oxides (NOx)/hr and 0.75 ton of NOx/yrduring emissions unit start-up periods when start-up venting is taking place Visible particulate emissions (PE) from the flare shall not exceed 5% opacity, as a 6-minute average during emissions unit start-up periods when start-up venting is taking place <u>Emissions from Urea Plant Synthesis process equipment</u>: 2.85 lbs of volatile organic compounds (VOC)/hr and 12.50 tons of VOC/yr during normal production mode of operation See b)(2)a., b)(2)b., b)(2g., c)(1), d)(1) through d)(3), and e)(1) through e)(3)
b.	ORC 3704.03(T)	See b)(2)c.
c.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)d. and b)(2)e.
d.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)f.
e.	ORC 3704.03(F) and OAC rule	See d)(3)

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	3745-114	
f.	OAC rule 3745-21-09(DD)	See b)(2)h., d)(4) and e)(3)
g.	40 CFR, Part 63, Subpart FFFF [40 CFR 63.2430 – 63.2550] In accordance with 40 CFR 63.2440,this emissions unit is an existingaffected source consisting of a pressurized reactor;which is partof a miscellaneous organic chemicalmanufacturing process unit at anexisting chemical manufacturingfacility subject to the emissionlimitations/control measuresspecified in this section.	See b)(2)i., d)(5), and e)(4)

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potential to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a. andb., for details regarding the PTE.

b. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit:

i. 187.5 lbs of NOx/hr and 0.75 ton of NOx/yr during emissions unit start-up periodswhen start-up venting is taking place; [See c)(1)] and

ii. 2.85 lbs of VOC/hr and 12.50 tons of VOC/yr during normal production mode of operation.

c. Best Available Technology (BAT) requirements for VOC emissions under ORC 3704.03(T) have been determined to be compliance with the annual VOC emission limitation as established pursuant to OAC rule 3745-31-05(D).

d. BAT requirements for NOx emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual NOx emission limitation as established pursuant to OAC rule 3745-31-05(D).

e. The permittee has satisfied the BAT requirements for NOx emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions

less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP).

Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

f. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the NOx emissions since the potential to emit is less than 10 tons per year.

g. Criteria pollutant emissions resulting from shutdown events have been determined to be negligible for this emissions unit.

h. The permittee shall comply with the applicable requirements under OAC rule 3745-21-09(DD), including the following sections:

OAC rule 3745-21-09(DD)(1)	Compliance requirements
OAC rule 3745-21-09(DD)(3)	Compressors
OAC rule 3745-21-09(DD)(4)	Pressure relief devices in gas/vapor service
OAC rule 3745-21-09(DD)(5)	Sampling connection systems
OAC rule 3745-21-09(DD)(6)	Open-ended valves or lines
OAC rule 3745-21-09(DD)(7)	Equipment designated for no detectable emissions
OAC rule 3745-21-09(DD)(8)	Barrier fluid systems and sensors for pumps and compressors
OAC rule 3745-21-09(DD)(9)	Closed vent systems
OAC rule 3745-21-09(DD)(10)	Control equipment
OAC rule 3745-21-09(DD)(11)	Delay of repair
OAC rule 3745-21-09(DD)(16)	Equivalent requirements
OAC rule 3745-21-09(DD)(17)	Exemptions
OAC rule 3745-21-09(DD), Appendix A	List of organic chemicals for which paragraph (DD) of Rule 3745-21-09 is applicable

i. The permittee shall comply with the additional terms and conditions under 40 CFR, Part 63, Subpart FFFF, including the following sections:

63.2445(b) through (d)	When do I have to comply with this subpart?
63.2450	Emission Limitations, Work Practice Standards and Compliance Requirements -- What are my general requirements for complying with this subpart?
63.2450(a)	You must be in compliance with the emission limits and work practice standards in tables 1 through 7* to this subpart at all times, except during periods of startup, shutdown, and malfunction (SSM), and you must meet the requirements specified in 63.2455 through 63.2490 (or the alternative means of compliance in 63.2495, 63.2500, or 63.2505), except as specified in paragraphs (b) through (s) of this section. You must meet the notification, reporting, and recordkeeping requirements specified in 63.2515, 63.2520, and 63.2525. * Only the work practice standards listed in Table 6 are applicable
63.2450(p)	Opening a safety device, as defined in 63.2550, is allowed at any time conditions require it to avoid unsafe conditions
63.2455	Emission Limitations, Work Practice Standards and Compliance Requirements – What requirements must I meet for continuous process vents?
63.2455(a)	You must meet each emission limit in Table 1 to this subpart that applies to your continuous process vents, and you must meet each applicable requirement specified in paragraphs (b) through (c) of this section. [Note: There are no emission limits and/or work practice standards in Table 1 that are applicable.]
63.2455(b)	For each continuous process vent, you must either designate the vent as a Group 1 continuous process vent or determine the total resource effectiveness (TRE) index value as specified in 63.115(d), except as specified in paragraphs (b)(1) through (3) of this section.
63.2480	Emission Limitations, Work Practice Standards and Compliance Requirements – What requirements must I meet for equipment leaks?
63.2480(a)	You must meet each requirement in Table 6 to this subpart that applies to your equipment leaks, except as specified in paragraphs (b) through (d) of this section. [See Table 6 below for requirements.]

63.2480(b)	If you comply with either subpart H or subpart UU of this part 63, you may elect to comply with the provisions in paragraphs (b)(1) through (5) of this section as an alternative to the referenced provisions in subpart H or subpart UU of this part.
63.2535	Other Requirements and Information – What compliance options do I have if part of my plant is subject to both this subpart and another subpart?
63.2535(k)	Compliance with 40 CFR, Part 60, subpart VV and 40 CFR, Part 61, subpart V
63.2540	Other Requirements and Information – What parts of the General Provisions apply to me?
Table 6	Requirements for Equipment Leaks

c) Operational Restrictions

(1) The following operational restrictions have been included in this permit for establishing federally enforceable requirements which limit PTE for NOx [See b)(2)b.i.]:

a. The permittee shall employ a flare during all emission unit start-up periods when start-up venting is taking place; and

b. Start-up operations for the urea synthesis plant is limited by the following:

12

$$\sum_{M=1} \sum_{n} NOx_n \leq 0.75$$

where:

M = the increment of the rolling 12-month period;

n = individual startup event during the period;

NOx_n = calculated emissions of nitrogen oxide in tons;

c. To ensure federal enforceability during the first 12 calendar months of operation under the provisions of this permit, start-up, shutdown, and normal operations for the ammonia reforming unit is limited by the following:

Allowable Operation Limitations

MONTH(S)	$\sum_{n} NOx_n \leq$
1-1	0.15
1-2	0.30

MONTH(S)	$\sum_{n} NOx_n \leq$
1-3	0.45
1-4	0.60
1-12	0.75

After the first 12 calendar months of operation under the provisions of this permit, compliance with the allowable operation limitations shall be based upon a rolling 12-month summation.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall perform daily checks, when the emissions unit is being started up when start-up venting is taking place and when the weather conditions allow, for any visible particulate emissions from the flare serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to eliminate the visible emissions.

(2) The permittee shall collect and record the following information each month:

a. Time period for each startup operation;

b. The calculated NOx emissions, in tons, for each startup operation;

c. The total NOx emission rate, in tons, from all startup operations [summation of d)(2)b.]

d. For the first 12 calendar months of operation under the provisions of this permit, the cumulative monthly NOx emissions, in tons; and

e. After the first 12 months of operation under the provisions of this permit, the rolling 12-month NOx emissions, in tons.

(3) Modeling to demonstrate compliance with, the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of

the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

(4) The permittee shall comply with the applicable monitoring and record keeping requirements under OAC rule 3745-21-09(DD), including the following sections:

OAC rule 3745-21-09(DD)(2)	Leak detection and repair program
OAC rule 3745-21-09(DD)(12)	Alternative monitoring schedule for valves based on a skip period
OAC rule 3745-21-09(DD)(13)	Alternative monitoring standard for valves based on the allowable percentage of valves leaking
OAC rule 3745-21-09(DD)(14)	Record keeping

(5) The permittee shall comply with the applicable monitoring and recordkeeping requirements under 40 CFR, Part 63, Subpart FFFF, including the following sections:

63.2525	Notifications, Reports and Records – What records must I keep?
63.2525(a)	Each applicable record required by subpart A of this part 63 and in referenced subparts F, G, SS, UU, WW, and GGG of this part 63 and in referenced subpart F of 40 CFR part 65.
63.2525(b)	Records of each operating scenario as specified in paragraphs (b)(1) through (8) of this section.
63.2525(f)	A record of each time a safety device is opened to avoid unsafe conditions in accordance with 63.2450(s).
63.2525(j)	In the SSMP required by 63.6(e)(3), you are not required to include Group 2 emission points, unless those emission points are used in an emissions average. For equipment leaks, the SSMP requirement is limited to control devices and is optional for other equipment.

(6) The permittee shall maintain records showing that emissions were vented to the flare during all startup venting events.

e) Reporting Requirements

(1) The permittee shall submit semiannual written reports that identify:

a. all days during which any visible PE were observed from the flare serving this emissions unit; and

b. any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the Ohio EPA, Northwest District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

(2) The permittee shall submit quarterly deviation (excursion) reports that identify:

a. all exceedances of the rolling, 12-month operational restriction specified in c)(1)b.; and

b. all exceedances of the allowable operational limitations for the first 12 months of operation as specified in c)(2)c;

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(3) The permittee shall comply with the applicable reporting requirements under OAC rule 3745-21-09(DD), including the following section:

OAC rule 3745-21-09(DD)(15)	Reporting

(4) The permittee shall submit semiannual reports and such other notifications and reports to the Ohio EPA, Northwest District Office, as are required pursuant to 40 CFR, Part 63, Subpart FFFF, per the following sections:

63.2450(m)	Reporting
63.2515	Notifications, Reports and Records – What notifications must I submit and when?
63.2515(a)	You must submit all of the notifications in 63.6(h)(4) and (5), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to you by the dates specified.
63.2515(b)	Initial notification* * the company submitted the initial notification in 2004
63.2520	Notifications, Reports and Records – What reports must I submit and when?
63.2520(a)	You must submit each report in Table 11 to this subpart that applies to you.

63.2520(b)	Unless the Administrator has approved a different schedule for submission of reports under 63.10(a), you must submit each report by the date in Table 11 to this subpart and according to paragraphs (b)(1) through (5) of this section.
63.2520(d)	Notification of compliance status report
63.2520(e)	Compliance report
Table 11	Requirements for Reports

(5) If emissions were not vented to the flare during all startup venting events, the permittee shall notify the Ohio EPA, Northwest District Office within 30 days of such occurrence. The notification shall include calculations that show the emissions of any criteria pollutants from the startup event(s), and if necessary, submit a PTI modification application.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

187.5 lbs of NOx/hr and 0.75 ton of NOx/yr during emissions unit start-up periods when start-up venting is taking place (from the flare)

Applicable Compliance Method:

The hourly emission limitation was developed by using a flare manufacturer emission factor of 0.005 lb NOx/lb of ammonia introduced to the flare, multiplied by the maximum of 37,500 lbs of ammonia/hr = 187.5 lbs of NOx/hr.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 7of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation is based on a maximum annual-average rate of NOx emissions (based on maximum annual-average rate of ammonia introduced to the flare of 7,500 lb of ammonia/hr) of 37.50 lbs of NOx/hr during emissions unit start-ups when start-up venting is taking place multiplied by a maximum of 40 hrs/yr of start-ups, then divided by 2,000 lbs/ton.

The emission limitations during start-up periods when start-up venting is taking place are based on PCS Engineering staff system knowledge and a detailed

review of operations history. Compliance shall be demonstrated by the recordkeeping requirements in d)(2).

b. Emission Limitation:

Visible PE from the flare shall not exceed 5% opacity, as a 6-minute average during emissions unit start-up periods when start-up venting is taking place

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the visible PE limitation above in accordance with the methods and procedures specified in Method 9 in Appendix A of 40 CFR, Part 60.

c. Emission Limitations:

2.85 lbs of VOC/hr and 12.50 tons of VOC/yr during normal production mode of operation (from process equipment, not flare)

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit during normal production mode of operation. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

(1) None.

11. P563, Urea Plant - Reactor Feed

Operations, Property and/or Equipment Description:

Urea Plant - Reactor Feed Section

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)d. and d)(1).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	0.36 lb of volatile organic compounds (VOC)/hr and 1.58 tons of VOC/yr See b)(2)a. and b)(2)b.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)c. and b)(2)d.
c.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)e.
d.	ORC 3704.03(F) and OAC rule 3745-114	See d)(1)
e.	OAC rule 3745-21-09(DD)	See b)(2)f., d)(2) and e)(1)
f.	40 CFR, Part 63, Subpart FFFF [40 CFR 63.2430 – 63.2550] In accordance with 40 CFR 63.2440,this emissions unit is an existingaffected source consisting ofSundyne and Lawrence carbamate charge and booster pumps;which is partof a miscellaneous organic chemicalmanufacturing process unit at anexisting chemical manufacturingfacility subject to the emissionlimitations/control measuresspecified in this section.	See b)(2)g., d)(3), and e)(2)

(2) Additional Terms and Conditions

a. The mass emission rate limitations in b)(1)a. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a., for details regarding the PTE.

b. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit:

i. 0.36 lb of VOC/hr and 1.58 tons of VOC/yr

c. BAT requirements for VOC emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual VOC emission limitation as established pursuant to OAC rule 3745-31-05(D).

d. The permittee has satisfied the BAT requirements for VOC emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

e. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the VOC emissions since the potential to emit is less than 10 tons per year.

f. The permittee shall comply with the applicable requirements under OAC rule 3745-21-09(DD), including the following sections:

OAC rule 3745-21-09(DD)(1)	Compliance requirements
OAC rule 3745-21-09(DD)(3)	Compressors
OAC rule 3745-21-09(DD)(4)	Pressure relief devices in gas/vapor service
OAC rule 3745-21-09(DD)(5)	Sampling connection systems
OAC rule 3745-21-09(DD)(6)	Open-ended valves or lines

OAC rule 3745-21-09(DD)(7)	Equipment designated for no detectable emissions
OAC rule 3745-21-09(DD)(8)	Barrier fluid systems and sensors for pumps and compressors
OAC rule 3745-21-09(DD)(9)	Closed vent systems
OAC rule 3745-21-09(DD)(10)	Control equipment
OAC rule 3745-21-09(DD)(11)	Delay of repair
OAC rule 3745-21-09(DD)(16)	Equivalent requirements
OAC rule 3745-21-09(DD)(17)	Exemptions
OAC rule 3745-21-09(DD), Appendix A	List of organic chemicals for which paragraph (DD) of Rule 3745-21-09 is applicable

g. The permittee shall comply with the additional terms and conditions under 40 CFR, Part 63, Subpart FFFF, including the following sections:

63.2445(b) through (d)	When do I have to comply with this subpart?
63.2450	Emission Limitations, Work Practice Standards and Compliance Requirements -- What are my general requirements for complying with this subpart?
63.2450(a)	You must be in compliance with the emission limits and work practice standards in tables 1 through 7* to this subpart at all times, except during periods of startup, shutdown, and malfunction (SSM), and you must meet the requirements specified in 63.2455 through 63.2490 (or the alternative means of compliance in 63.2495, 63.2500, or 63.2505), except as specified in paragraphs (b) through (s) of this section. You must meet the notification, reporting, and recordkeeping requirements specified in 63.2515, 63.2520, and 63.2525. * Only the work practice standards listed in Table 6 are applicable
63.2450(p)	Opening a safety device, as defined in 63.2550, is allowed at any time conditions require it to avoid unsafe conditions
63.2455	Emission Limitations, Work Practice Standards and Compliance Requirements – What requirements must I meet for continuous process vents?

63.2455(a)	You must meet each emission limit in Table 1 to this subpart that applies to your continuous process vents, and you must meet each applicable requirement specified in paragraphs (b) through (c) of this section. [Note: There are no emission limits and/or work practice standards in Table 1 that are applicable.]
63.2455(b)	For each continuous process vent, you must either designate the vent as a Group 1 continuous process vent or determine the total resource effectiveness (TRE) index value as specified in 63.115(d), except as specified in paragraphs (b)(1) through (3) of this section.
63.2480	Emission Limitations, Work Practice Standards and Compliance Requirements – What requirements must I meet for equipment leaks?
63.2480(a)	You must meet each requirement in Table 6 to this subpart that applies to your equipment leaks, except as specified in paragraphs (b) through (d) of this section. [See Table 6 below for requirements.]
63.2480(b)	If you comply with either subpart H or subpart UU of this part 63, you may elect to comply with the provisions in paragraphs (b)(1) through (5) of this section as an alternative to the referenced provisions in subpart H or subpart UU of this part.
63.2535	Other Requirements and Information – What compliance options do I have if part of my plant is subject to both this subpart and another subpart?
63.2535(k)	Compliance with 40 CFR, Part 60, subpart VV and 40 CFR, Part 61, subpart V
63.2540	Other Requirements and Information – What parts of the General Provisions apply to me?
Table 6	Requirements for Equipment Leaks

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Modeling to demonstrate compliance with the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter

3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

(2) The permittee shall comply with the applicable monitoring and record keeping requirements under OAC rule 3745-21-09(DD), including the following sections:

OAC rule 3745-21-09(DD)(2)	Leak detection and repair program
OAC rule 3745-21-09(DD)(12)	Alternative monitoring schedule for valves based on a skip period
OAC rule 3745-21-09(DD)(13)	Alternative monitoring standard for valves based on the allowable percentage of valves leaking
OAC rule 3745-21-09(DD)(14)	Record keeping

(3) The permittee shall comply with the applicable monitoring and recordkeeping requirements under 40 CFR, Part 63, Subpart FFFF, including the following sections:

63.2525	Notifications, Reports and Records – What records must I keep?
63.2525(a)	Each applicable record required by subpart A of this part 63 and in referenced subparts F, G, SS, UU, WW, and GGG of this part 63 and in referenced subpart F of 40 CFR part 65.
63.2525(b)	Records of each operating scenario as specified in paragraphs (b)(1) through (8) of this section.
63.2525(f)	A record of each time a safety device is opened to avoid unsafe conditions in accordance with 63.2450(s).
63.2525(j)	In the SSMP required by 63.6(e)(3), you are not required to include Group 2 emission points, unless those emission points are used in an emissions average. For equipment leaks, the SSMP requirement is limited to control devices and is optional for other equipment.

e) Reporting Requirements

(5) The permittee shall comply with the applicable reporting requirements under OAC rule 3745-21-09(DD), including the following section:

OAC rule 3745-21-09(DD)(15)	Reporting

(6) The permittee shall submit semiannual reports and such other notifications and reports to the Ohio EPA, Northwest District Office, as are required pursuant to 40 CFR, Part 63, Subpart FFFF, per the following sections:

63.2450(m)	Reporting
63.2515	Notifications, Reports and Records – What notifications must I submit and when?
63.2515(a)	You must submit all of the notifications in 63.6(h)(4) and (5), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to you by the dates specified.
63.2515(b)	Initial notification* * the company submitted the initial notification in 2004
63.2520	Notifications, Reports and Records – What reports must I submit and when?
63.2520(a)	You must submit each report in Table 11 to this subpart that applies to you.
63.2520(b)	Unless the Administrator has approved a different schedule for submission of reports under 63.10(a), you must submit each report by the date in Table 11 to this subpart and according to paragraphs (b)(1) through (5) of this section.
63.2520(d)	Notification of compliance status report
63.2520(e)	Compliance report
Table 11	Requirements for Reports

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

0.36 lb of VOC/hr and 1.58 tons of VOC/yr

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr and dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

(1) None.

12. P564, Urea Plant - UTI Hotwell

Operations, Property and/or Equipment Description:

Urea Plant - UTI Hotwell Section with Scrubber

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)f. and d)(2).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(D)	0.02 lb of particulate emissions/ particulate matter less than or equal to 10 microns in diameter/particulate matter less than or equal to 2.5 microns in diameter (PE/PM_{10}/$PM_{2.5}$)/hr and 0.09 ton of PE/PM_{10}/$PM_{2.5}$/yr Visible particulate emissions (PE) shall not exceed 20% opacity, as a 6-minute average. 0.69 lb of carbon monoxide (CO)/hr and 3.01 tons of CO/yr 2.06 lbs of volatile organic compounds (VOC)/hr and 9.01 tons of VOC/yr See b)(2)b. through b)(2)d., d)(1) and e)(1)
b.	OAC rule 3745-17-11(B)	See b)(2)e.
c.	OAC rule 3745-17-07(A)	See b)(2)f.
d.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	See b)(2)g. and b)(2)h.
e.	OAC rule 3745-31-05(A)(3), as effective 12/1/06	See b)(2)i.
f.	ORC 3704.03(F) and OAC rule 3745-114	See d)(2)

g.	40 CFR, Part 63, Subpart FFFF [40 CFR 63.2430 – 63.2550] In accordance with 40 CFR 63.2440,this emissions unit is an existingaffected source consisting of a vapor condensing/recovery system;which is partof a miscellaneous organic chemicalmanufacturing process unit at anexisting chemical manufacturingfacility subject to the emissionlimitations/control measuresspecified in this section.	See b)(2)j., d)(3), and e)(2)

(2) Additional Terms and Conditions

a. The UTI Hotwell Scrubber associated with this emissions unit is integral to the process equipment as a product recovery device. Thus, there is no parametric monitoring necessary.

b. It is assumed that all PE are equivalent to both PM_{10} and $PM_{2.5}$.

c. The mass emission rate limitations in b)(1)a. above represent the potentials to emit (PTE), defined as the maximum capacity to emit an air pollutant under the physical and operational design. Therefore, no monitoring, record keeping, or reporting requirements are necessary to ensure compliance with these emission limitations. See f)(1)a., c. and d., for details regarding the PTE.

d. This permit establishes the following federally enforceable emission limitations for the purpose of representing the potentials to emit of this emissions unit:

i. 0.02 lb of PE/PM_{10}/$PM_{2.5}$/hr and 0.09 ton of PE/PM_{10}/$PM_{2.5}$/yr;

ii. 0.69 lb of CO/hr and 3.01 tons of CO/yr; and

iii. 2.06 lbs of VOC/hr and 9.01 tons of VOC/yr.

e. The PE limitation specified by OAC 3745-17-11(B) is less stringent than the PE limitation specified pursuant to OAC rule 3745-31-05(D).

f. The visible emission limitation specified by OAC rule 3745-17-07(A) is equivalent to the visible emission limitation established pursuant to OAC rule 3745-31-05(D).

g. BAT requirements for PE/PM_{10}/$PM_{2.5}$, CO and VOC emissions under OAC rule 3745-31-05(A)(3), as effective 11/30/01 have been determined to be compliance with the annual emission limitations for PE/PM_{10}/$PM_{2.5}$, CO and VOC as established pursuant to OAC rule 3745-31-05(D).

h. The permittee has satisfied the BAT requirements for PE/PM_{10}/$PM_{2.5}$, CO and VOC emissions pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than 10 tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limits and control measures no longer apply.

i. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The BAT requirements under OAC rule 3745-31-05(A)(3)(a) do not apply to the PE/PM_{10}/$PM_{2.5}$, CO and VOC emissions since the potential to emit is less than 10 tons per year.

j. The permittee shall comply with the additional terms and conditions under 40 CFR, Part 63, Subpart FFFF, including the following sections:

63.2445(b) through (d)	When do I have to comply with this subpart?
63.2450	Emission Limitations, Work Practice Standards and Compliance Requirements -- What are my general requirements for complying with this subpart?
63.2450(a)	You must be in compliance with the emission limits and work practice standards in tables 1 through 7* to this subpart at all times, except during periods of startup, shutdown, and malfunction (SSM), and you must meet the requirements specified in 63.2455 through 63.2490 (or the alternative means of compliance in 63.2495, 63.2500, or 63.2505), except as specified in paragraphs (b) through (s) of this section. You must meet the notification, reporting, and recordkeeping requirements specified in 63.2515, 63.2520, and 63.2525. * Only the work practice standards listed in Table 6 are applicable
63.2450(p)	Opening a safety device, as defined in 63.2550, is allowed at any time conditions require it to avoid unsafe conditions
63.2455	Emission Limitations, Work Practice Standards and Compliance Requirements – What requirements must I meet for continuous process vents?

63.2455(a)	You must meet each emission limit in Table 1 to this subpart that applies to your continuous process vents, and you must meet each applicable requirement specified in paragraphs (b) through (c) of this section. [Note: There are no emission limits and/or work practice standards in Table 1 that are applicable.]
63.2455(b)	For each continuous process vent, you must either designate the vent as a Group 1 continuous process vent or determine the total resource effectiveness (TRE) index value as specified in 63.115(d), except as specified in paragraphs (b)(1) through (3) of this section.
63.2480	Emission Limitations, Work Practice Standards and Compliance Requirements – What requirements must I meet for equipment leaks?
63.2480(a)	You must meet each requirement in Table 6 to this subpart that applies to your equipment leaks, except as specified in paragraphs (b) through (d) of this section. [See Table 6 below for requirements.]
63.2480(b)	If you comply with either subpart H or subpart UU of this part 63, you may elect to comply with the provisions in paragraphs (b)(1) through (5) of this section as an alternative to the referenced provisions in subpart H or subpart UU of this part.
63.2535	Other Requirements and Information – What compliance options do I have if part of my plant is subject to both this subpart and another subpart?
63.2535(k)	Compliance with 40 CFR, Part 60, subpart VV and 40 CFR, Part 61, subpart V
63.2540	Other Requirements and Information – What parts of the General Provisions apply to me?
Table 6	Requirements for Equipment Leaks

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall perform daily checks, when the emissions unit is being operated and when the weather conditions allow, for any visible particulate emissions from the scrubber stack serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;

b. whether the emissions are representative of normal operations;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to eliminate the visible emissions.

(2) Modeling to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

(3) The permittee shall comply with the applicable monitoring and recordkeeping requirements under 40 CFR, Part 63, Subpart FFFF, including the following sections:

63.2525	Notifications, Reports and Records – What records must I keep?
63.2525(a)	Each applicable record required by subpart A of this part 63 and in referenced subparts F, G, SS, UU, WW, and GGG of this part 63 and in referenced subpart F of 40 CFR part 65.
63.2525(b)	Records of each operating scenario as specified in paragraphs (b)(1) through (8) of this section.
63.2525(f)	A record of each time a safety device is opened to avoid unsafe conditions in accordance with 63.2450(s).
63.2525(j)	In the SSMP required by 63.6(e)(3), you are not required to include Group 2 emission points, unless those emission points are used in an emissions average. For equipment leaks, the SSMP requirement is limited to control devices and is optional for other equipment.

e) Reporting Requirements

(1) The permittee shall submit semiannual written reports that identify:

a. all days during which any visible particulate emissions were observed from the scrubber stack serving this emissions unit; and

b. any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the Ohio EPA, Northwest District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

(2) The permittee shall submit semiannual reports and such other notifications and reports to the Ohio EPA, Northwest District Office, as are required pursuant to 40 CFR, Part 63, Subpart FFFF, per the following sections:

63.2450(m)	Reporting
63.2515	Notifications, Reports and Records – What notifications must I submit and when?
63.2515(a)	You must submit all of the notifications in 63.6(h)(4) and (5), 63.7(b) and (c), 63.8(e), (f)(4) and (6), and 63.9(b) through (h) that apply to you by the dates specified.
63.2515(b)	Initial notification* * the company submitted the initial notification in 2004
63.2520	Notifications, Reports and Records – What reports must I submit and when?
63.2520(a)	You must submit each report in Table 11 to this subpart that applies to you.
63.2520(b)	Unless the Administrator has approved a different schedule for submission of reports under 63.10(a), you must submit each report by the date in Table 11 to this subpart and according to paragraphs (b)(1) through (5) of this section.
63.2520(d)	Notification of compliance status report
63.2520(e)	Compliance report
Table 11	Requirements for Reports

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

0.02 lb of PE/PM_{10}/$PM_{2.5}$/hr and 0.09 ton of PE/PM_{10}/$PM_{2.5}$/yr

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Methods 1 through 4 of 40 CFR, Part 60, Appendix A and Methods 201, 201A and 202 of 40 CFR, Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

b. Emission Limitation:

Visible PE shall not exceed 20% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, the permittee shall demonstrate compliance with the visible particulate emissions limitation above in accordance with the methods and procedures specified in Method 9 in Appendix A of 40 CFR, Part 60.

c. Emission Limitations:

0.69 lb of CO/hr and 3.01 tons of CO/yr

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 10of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

d. Emission Limitations:

2.06 lbs of VOC/hr and 9.01 tons of VOC/yr

Applicable Compliance Method:

The hourly emission limitation is based on previous stack testing data, and reflects the potential to emit (PTE) for this emissions unit. Therefore, it is not necessary to develop any further monitoring, record keeping and/or reporting requirements to ensure compliance with this limitation.

If required, the permittee shall demonstrate compliance with the hourly emission limitation by conducting emission testing in accordance with the methods and procedures specified in Method 1 through 4, and 18, 25, or 25A, as applicable,of 40 CFR, Part 60, Appendix A. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA.

The annual emission limitation was established by multiplying the hourly emission limitation by the maximum operating schedule of 8,760 hrs/yr, and then dividing by 2,000 lbs/ton. Therefore, provided compliance is shown with the lb/hr emission limitation, compliance with the annual emission limitation shall also be demonstrated.

g) Miscellaneous Requirements

(1) None.

13. T622, Storage Tank

Operations, Property and/or Equipment Description:

Diesel Exhaust Fluid (DEF) Urea Water 50% Storage/Blend Tank with a capacity of 39,000 gallons

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)a. and d)(1).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(F) and OAC rule 3745-114	See d)(1)

(2) Additional Terms and Conditions

a. None.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Modeling to demonstrate compliance with the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) None.

f) Testing Requirements

(5) None.

g) Miscellaneous Requirements

(1) None.

14. T623, Storage Tank

Operations, Property and/or Equipment Description:

50% Urea Liquor Storage Tank with a capacity of 1,380,000 gallons

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) b)(1)a. and d)(1).

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(F) and OAC rule 3745-114	See d)(1)

(2) Additional Terms and Conditions

a. None.

c) Operational Restrictions

(1) None.

d) Monitoring and/or Recordkeeping Requirements

(1) Modeling to demonstrate compliance with the “Toxic Air Contaminant Statute”, ORC 3704.03(F)(4)(b), was not necessary for this permit action because actual emissions of the toxic air contaminant ammonia (NH3), as specified in OAC rule 3745-114-01, resulted in an actual decrease. Other than NH3, the maximum annual emissions for each toxic air contaminant (as specified in OAC rule 3745-114-01) that is not subject to MACT and/or NESHAP regulations will be less than 1.0 ton per year. OAC Chapter 3745-31 requires a permittee to apply for and obtain a new or modified permit-to-install (PTI) prior to making a "modification" as defined by OAC rule 3745-31-01.

The permittee is hereby advised that changes in the composition of the materials, or use of new materials, etc. that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.

e) Reporting Requirements

(1) None.

f) Testing Requirements

(5) None.

g) Miscellaneous Requirements

(1) None.