

Facility Name: PCS Nitrogen Fertilizer L.P. – Augusta Plant

City: Augusta

County: Richmond

AIRS #: 04-13-245-0002

Application #: 46309

Date SIP Application Received: April 19, 2017

Date Title V Application Received: April 19, 2017

Permit No: 2873-245-0002-V-03-6

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Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and draft operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public comment period and EPA review process will be described in an addendum to this narrative.

I. Facility Description**A. Existing Permits**

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Description
2873-245-0002-V-03-0	09/11/2012	Title V Renewal
2873-245-0002-V-03-1	06/13/2013	Correction of Condition No. 6.1.7.c.iii for the Urea Prill moisture content excursion value.
2873-245-0002-V-03-2	11/7/2013	Modification of the C001 AN Plant – Neutralizer Scrubber (Source Code VS01) excursion values.
2873-245-0002-V-03-3	11/26/2014	Modification of the C002 AN Plant – Prill Tower Scrubber exhaust blower motor amperage range in Condition No. 6.1.7.c.xiv(D).
2873-245-0002-V-03-4	02/11/2016	Designation of the 49 MMBtu/hr natural gas-fired Synloop Startup Heater (H-6151) as a “Limited Use” Process Heater pursuant to 40 CFR 63, Subpart DDDDD.
2873-245-0002-V-03-5	05/05/2016	Turnaround repairs and replacement of equipment in the Ammonia Plant.

B. Regulatory Status**1. PSD/NSR/RACT**

PCS Nitrogen Fertilizer, L.P. (PCS) is classified as a major source of air missions according to the new source review (NSR) prevention of significant deterioration of air quality (PSD) regulations. The facility is major for nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM) because the potential to emit (PTE) NO_x, CO, and PM is each greater than the PSD major source threshold of 100 tons per year (ton/yr). Note: PCS manufactures nitric acid which is one of the 28 named categories whose major source threshold is 100 ton/yr (nitric acid plants). The facility has taken the following limits to avoid PSD review:

- The sulfur content of No. 2 fuel oil fired in Boiler H 6531 and the ABB/CE Boiler is limited to 0.15 percent sulfur by weight.
- The ABB/CE Boiler is limited to firing natural gas and No. 2 fuel oil.

- Natural gas fired in ABB/CE Boiler is limited to 1,591 million cubic feet during any period of 12 consecutive months.
- The ABB/CE Boiler is limited to specific emission rates for PM/PM₁₀, NO_x, and CO while firing natural gas.
- The ABB/CE Boiler is limited to 1,849,020 gallons of fuel oil usage per 12-month period.
- The ABB/CE Boiler is limited to specific emission rates for PM/PM₁₀, NO_x, and CO while firing fuel oil.
- Emission of NO_x from the ABB/CE Boiler is limited to less than 40 tons per year (ton/yr).
- The Rental Boiler is limited to firing only natural gas. The Rental Boiler is permitted to operate only when Boiler H6531 or the ABB/CE Boiler is not in operation.
- Emission of VOC from the Ammonia Plant is limited to 163 tons during any period of 12 consecutive months.
- Emission of CO from the Ammonia Plant is limited to 166 tons during any period of 12 consecutive months.
- The gas turbine for the ammonia plant is limited to a minimum steam injection rate of 5,000 pounds per hour (lb/hr) or the value established in the most recent performance test, whichever is greater, on a continuous basis to minimize NO_x emission.
- Emission of NO_x from the Ammonia Plant Gas Turbine is limited to 54 ppm at 15 percent oxygen after the completion of the modifications described in Application No. 19279.
- Urea prills production from the C002 Urea Plant Prill is limited to 474,000 tons during any period of 12 consecutive months.
- Emission of PM from the C002 Urea Plant Prill Tower was previously limited by Permit No. 2873-245-0002-V-2-5, Application No. 18741, to 0.29 pounds per ton (lb/ton) of urea produced. This amendment (Application No. 46309) changes the PM emission limit to an equivalent limit of 68.7 tons PM per year (tpy).

The facility has taken the following limits as a result of a PSD BACT review:

- Emission of NO_x from the C002 Nitric Acid Plant is limited to 3.0 lb/ton of 100 percent nitric acid produced.
- Opacity from the C002 Nitric Acid Plant is limited to less than 10 percent.
- Emission of NO_x from the C002 Nitric Acid Plant is limited to 507 tons during any period of 12 consecutive months.

- Emission of CO from the C002 Nitric Acid Plant is limited to 30.0 lb/ton of 100 percent nitric acid on a 12-month rolling average.

2. Title V Major Source Status by Pollutant

Table 2: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	Yes	✓		
PM ₁₀	Yes	✓		
PM _{2.5}	Yes	✓		
SO ₂	Yes			✓
VOC	Yes	✓		
NO _x	Yes	✓		
CO	Yes	✓		
TRS	n/a			
H ₂ S	n/a			
Individual HAP	Yes	✓		
Total HAPs	Yes	✓		

II. Proposed Modification

A. Description of Modification

The C002 Urea Plant Prill Tower (Source Code U201) is a source of PM emissions at the facility. Permit No. 2873-245-0002-V-2-5, Application No. 18741 (revised March 2009) established a PM emission limit of 0.29 lb/ton urea prill produced and an annual prill production limit of 474,000 tons in order to limit PM₁₀ emission increases to 14.8 tpy thereby avoiding PSD.

Performance testing conducted March 8, 2016 resulted in a PM emission rate of 0.43 lb/ton urea prill produced which exceeded the PM emission limit of 0.29 lb/ton urea prill produced. Performance testing conducted June 22, 2016 resulted in a PM emission rate of 0.29 lb/ton urea prill produced which equaled the PM emission limit of 0.29 lb/ton urea prill produced.

Subsequently, PCS requested substitution of an annual PM emission limit of 68.7 tpy for the C002 Urea Plant Prill Tower (Source Code U201), which is equivalent to the product of the annual urea prill production limit of 474,000 tons urea prill (Condition No. 3.2.14), and the short term PM emission limit of 0.29 lb/ton urea prill produced (formerly Condition No. 3.2.15).

Substitution of an annual PM emission limit of 68.7 tpy in place of the short term PM emission limit of 0.29 lb/ton urea prill produced still limits the annual increase in PM₁₀ to 14.8 tpy maintaining the PSD avoidance limit established in Permit No. 2873-245-0002-V-2-5. The existing annual urea prill production limit of 474,000 tons urea prill (Condition No. 3.2.14) is not altered by this amendment.

Compliance will be demonstrated through calculation of rolling twelve (12) consecutive month PM emissions. PM stack testing of the C002 Urea Plant Prill Tower (Source Code U201) was required biennially; however, the frequency of PM stack testing has been increased to require annual PM performance testing.

Unrelated to the Applicant's request, EPD added EPA Method 202 – Condensable Particulate Matter to the list of acceptable test methods for sources subject to Rule 391-3-1-.02(2)(e).

The following changes were made to the permit:

- Condition No. 3.2.15 was modified to remove the PM emissions limit of 0.29 lb/ton urea prill produced.
- New Condition No. 3.2.20 was added to incorporate an annual PM emission limit of 68.7 tpy for the C002 Urea Plant Prill Tower (Source Code U201).
- Condition No. 4.1.3.e was modified to include EPA Method 202 for Condensable Particulate Matter.
- Condition No. 4.2.4 was modified to increase the particulate matter performance test frequency to annually instead of biennially.
- New Condition No. 6.1.7.b was modified to expand the definition of a reportable exceedance to include any consecutive twelve (12) month period during which PM emissions exceed 68.7 tpy.
- New Condition Nos. 6.2.34 through 6.2.36 were added for recordkeeping in order to demonstrate compliance with the particulate matter limit of 68.7 tpy.

There are no physical changes in equipment at the facility.

B. Emissions Change

No change in annual potential emissions of PM result from this amendment. The proposed PM emission limit of 68.7 tpy for the C002 Urea Plant Prill Tower (Source Code U201) is equivalent to the product of the existing prill production limit (474,000 tpy) and the former PM emission limit (0.29 lb/ton urea prill produced).

Requiring a rolling twelve month limit of 68.7 tpy PM allows the facility to demonstrate compliance with the PSD avoidance established in Permit 2873-245-0002-V-2-5, Application 18741- revised March 2009. Annual urea prill production will remain capped at 474,000 tpy.

Table 3: Emissions Change Due to Modification

Pollutant	Is the Pollutant Emitted?	Net Actual Emissions Increase (Decrease) (tpy)	Net Potential Emissions Increase (Decrease) (tpy)
PM	Yes	0	0

C. PSD/NSR Applicability

PCS accepted PSD avoidance limits for the C002 Urea Plant Prill Tower (Source Code U201) of 474,000 tons urea prill produced per year (Condition No. 3.2.14) and 0.29 lbs PM per ton urea prill produced (formerly Condition No. 3.2.15) in order to limit PM emissions to below 68.7 tpy. Permit 2873-245-0002-V-2-5 established the limits cited above and allowed the facility to avoid PSD by limiting the PM₁₀ emissions increase at that time to 14.8 tpy. Retention of the production limit of 474,000 tons urea prill annually precludes debottlenecking of upstream processes. Substitution of a rolling twelve (12) month PM limit of 68.7 tpy is equivalent to the former PM emission limit of 0.29 lb/ton urea prill produced.

III. Facility Wide Requirements**A. Emission and Operating Caps:**

There are no new or modified facility-wide emission and operating caps associated with the proposed project.

B. Applicable Rules and Regulations

There are no new or modified facility-wide rules or regulations associated with the proposed project.

C. Compliance Status

The facility did not identify any non-compliance issues.

D. Permit Conditions

None applicable.

IV. Regulated Equipment Requirements**A. Brief Process Description**

Carbon dioxide, a by-product from the ammonia process, is combined with ammonia to form urea. The liquid urea is used to make fertilizer solutions, urea solutions, urea prills, and urea pastilles.

B. Equipment List for the Process

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	ID No.	Description
U201	C002 Urea Plant Prill Tower	391-3-1-.02-(2)(b) 391-3-1-.02-(2)(e) 40 CFR 63, Subpart FFFF ^{G2}	3.2.14, 3.2.20, 3.3.6, 3.3.7, 3.4.7, 3.4.8, 4.2.1, 4.2.4, 4.2.5, 5.2.2, 5.2.3, 6.1.7, 6.2.15, 6.2.18, and 6.2.19, 6.2.34, 6.2.35, 6.2.36*	None	None

* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards and corresponding permit conditions are intended as a compliance tool and may not be definitive.

G2 Group 2 source under 40 CFR 63, Subpart FFFF.

C. Equipment & Rule Applicability

Emission and Operating Caps – The C002 Urea Plant Prill Tower (Source Code U201) is limited to production of 474,000 tons urea prill annually and, with this amendment, a PM emission cap of 68.7 tons PM annually. In order to avoid PSD, the C002 Urea Plant Prill Tower (Source Code U201) was limited to 474,000 tons urea prill produced annually and a PM emission limit of 0.29 lb/ton urea prill produced (Permit 2873-245-0002-V-2-5). This amendment replaces the PM emission limit of 0.29 lb/ton urea prill produced with an equivalent PM emission cap of 68.7 tpy.

$$\frac{(474,000 \text{ tons urea prill produced})(0.29 \text{ lbs PM/ton urea prill})}{2,000 \text{ lbs/ton}} = 68.7 \text{ tpy PM}$$

The production limit of 474,000 tons urea prill produced annually has not been altered by this amendment in order to preclude debottlenecking.

Applicable Rules and Regulations – The C002 Urea Plant Prill Tower (Source Code U201) was installed in 1978. The unit is subject to the following rules, regulations, and limits:

- Georgia Rule 391-3-1-.02(2)(b) – Visible Emissions: The rule limits the opacity of emissions from air contaminant sources to less than 40 percent.
- Georgia Rule 391-3-1-.02(2)(e) – Particulate Emission from Manufacturing Processes: The rule limits PM from a source based on the process input weight.
- 40 CFR 63 Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing: The vent from the prill tower is classified as a Group 2 continuous process vents under the subpart for potential emissions of methanol and formaldehyde. The classification was based on TRE testing. There are no limits that apply to Group 2 vents.
- PSD Avoidance: The facility accepted a prill production limit of 474,000 tons urea prill annually and a short term PM emission limit of 0.29 lb/ton urea prill produced to avoid PSD applicability for this source. This amendment (Application No. 46309) modifies the permit conditions for avoiding PSD by substituting an annual PM limit of 68.7 tpy in place of the short term PM emission limit of 0.29 lb/ton urea prill produced. The product of the prill production limit and the former short term PM emission limit of 0.29 lb/ton urea prill produced equals 68.7 tpy PM.

D. Permit Conditions

Modified Condition No. 3.2.15 requiring the PM stack test emission factor not to exceed 0.29 lb/ton urea prill produced was removed. The language was changed to “Reserved”.

New Condition No. 3.2.20 limits the rolling 12-month total PM emissions from the C002 Urea Plant Prill Tower (Source Code U201) to no more than 68.7 tpy.

V. Testing Requirements (with Associated Record Keeping and Reporting)

EPA Method 202 for Condensable Particulate Matter was added to Condition 4.1.3.e for those sources subject to Rule 391-3-1-.02(2)(e).

PM stack testing of the C002 Urea Plant Prill Tower (Source Code U201) was previously required every twenty-four (24) months. The frequency of PM stack testing has been increased to once every twelve (12) months (Modified Condition No. 4.2.4.).

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

Monitoring requirements for the C002 Urea Plant Prill Tower (Source Code U201) have not been altered by this amendment.

VII. Other Record Keeping and Reporting Requirements

New Condition 6.1.7.b.xi expands the definition of a reportable exceedance to include any consecutive twelve (12) month period during which PM emissions exceed 68.7 tpy.

New Condition No. 6.2.34 requires daily records of urea prill production by the C002 Urea Plant Prill Tower (Source Code U201).

New Condition No. 6.2.35 specifies the manner in which monthly PM emissions from the C002 Urea Plant Prill Tower (Source Code U201) are to be calculated.

New Condition No. 6.2.36 requires the calculation of rolling 12 consecutive month PM emissions from the C002 Urea Plant Prill Tower (Source Code U201) and notification if PM emissions during any month exceed 5.7 tons PM (68.7 tpy PM/12 months/yr = 5.7 tons per month).

VIII. Specific Requirements

Discuss any of the following specific requirements as they apply to the modification.

A. Operational Flexibility

The facility has not made any operational flexibility requests for this permitting action.

B. Alternative Requirements

None applicable.

C. Insignificant Activities

None applicable.

D. Temporary Sources

None applicable.

E. Short-Term Activities

None applicable.

F. Compliance Schedule/Progress Reports

None applicable.

G. Emissions Trading

None applicable.

H. Acid Rain Requirements/CAIR/CSPAR

None applicable.

I. Prevention of Accidental Releases

None applicable.

J. Stratospheric Ozone Protection Requirements

None applicable.

K. Pollution Prevention

None applicable.

L. Specific Conditions

None applicable.