

Prevention of Significant Air Quality Deterioration Review
PCS Nitrogen Fertilizer – Augusta Plant,
located in Augusta, Georgia (Richmond County)

FINAL DETERMINATION

SIP Permit Application No. 14213

September 2004



State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch

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BACKGROUND

On January 2, 2003, PCS Nitrogen Fertilizer (PCS) submitted an application for an air quality permit for modifications to the C-002 Nitric Acid Plant. The modifications will be made at the plant located at 733 Laney Walker Blvd Extension, Augusta (Richmond County), Georgia. The plant currently produces ammonia, nitric acid, urea, carbon dioxide, ammonium nitrate, and urea-ammonium nitrate solutions. The modifications will allow the plant to increase acid production rate by operating at a higher air flow rate and slightly higher pressure. The pre-modification acid capacity of the C-002 Nitric Acid Plant is 430,700 tons per year. The modification will add the ability to produce an additional 120 tons per day of nitric acid.

On May 28, 2004, the Division issued a Preliminary Determination stating that the modifications to the C-002 Nitric Acid Plant per Application No. 14213 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the modification and operation of the C-002 Nitric Acid Plant.

The Division requested that PCS place a public notice in a newspaper of general circulation in the area of the facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in *The Augusta Chronicle* (legal organ for Richmond County) on June 10, 2004. The public comment period expired on Saturday, July 10, 2004. The comment period was extended through Monday, July 12, 2004. During the comment period, comments were received from U.S. EPA Region 4 and PCS. There were no comments received from the general public.

A copy of the final permit is included in Appendix A. A copy of written comments received during the public comment period is provided in Appendix B.

U.S. EPA REGION 4 COMMENTS

Comments were received from Jim Little and Stan Kukier, U.S. EPA Region 4, by email on July 9, 2004. The comments are typed, verbatim, below. Mr. Little reviews PSD permits for completeness and enforceability. Mr. Kukier reviews Title V permitting actions for completeness and enforceability.

Comment 1

The application we have is dated December 30, 2002. PCS Nitrogen used data for 2000-2001 to calculate past actual emissions. Data for 2002 and 2003 (and perhaps even the first quarter of 2004) are now available and could be used to represent the last two years of normal operation. Perhaps the PM₁₀ emissions increase could be recalculated with past actual values based on the more recent operating data. As you know, the net increase in PM₁₀ emissions (14.8 tpy) is just barely below the 15-tpy PSD significant emissions increase level.

EPD Response: Based on the comment PCS Nitrogen recalculated the potential emission increase from the C-002 AN Neutralizer based on the most recent performance test data. Based on a particulate matter performance test completed in April 2004, the potential increase is 8.4 tons per year, which is less than the 15-tpy PSD significant emissions increase level. The 2001/2002 C-002 AN Neutralizer production rate was 427,528 tons per year. The EPD has confirmed that the production rate is representative or less than the production in subsequent years. Therefore, the potential increase in particulate matter from the source would not exceed the PSD significant emissions increase level for any subsequent averaging period.

Comment 2

In the preliminary determination (page 11), an RTO cost effectiveness estimate of \$250 per ton of CO reduced is provided. Although Region 4 EPA recognizes the fact that "this control has never been demonstrated in this process application," and that "use of a RTO is not considered practical," perhaps additional technical rationale for rejecting a CO control method with a very reasonable cost effectiveness value of \$250 per ton removed, should be provided. Information in the BACT analysis for CO indicates that the 30-tpy increase in NO_x from use of an RTO is partial grounds for rejecting RTO technology due to "increased NO_x in an ozone sensitive area." The air quality impact of RTO NO_x emissions should not be a primary consideration regarding whether or not to implement the most effective CO control technology. The environmental impacts analysis should not be confused with the air quality impact analysis (i.e., ambient concentrations), which is an independent statutory and regulatory requirement and is conducted separately from the BACT analysis. If an increase of 30 tpy in NO_x emissions might have a detrimental effect on ozone levels, what about the 297-tpy net increase being allowed for this project?

EPD Response: The EPD did not intend to imply that the NO_x increase from acid production would not have a potential impact on ozone and only NO_x from the RTO would have an impact. Rather, the EPD was reasoning that any increase in NO_x emissions should be kept to a minimum.

The U.S. EPA is correct in stating that the cost is very reasonable. However, the EPD's determination that an RTO is not BACT is based on feasibility issues and environmental impact issues. As stated in the Preliminary Determination, the use of an RTO to control CO emissions from a nitric acid plant has never been demonstrated. Numerous technical hurdles may exist that could not be determined until the actual installation of the unit. In addition, the BACT/RACT/LAER Clearinghouse does not list any other devices used for CO control at nitric acid plants.

Second, the C-002 Nitric Acid Plant stack gas contains ammonia. An RTO would likely convert a significant amount of this ammonia to NO_x. These NO_x emissions, in addition to the 30 tpy of NO_x created by the natural gas needed to run the RTO, would likely result in an environmental impact above and beyond the impact created by the modification itself. Because the facility is located in an ozone sensitive area, the Division does not believe that the potential decrease in CO emissions of an undemonstrated control device outweighs a NO_x increase in addition to that created by the modification. Based on this information taken as a whole, the EPD has determined that an RTO does not constitute BACT for this particular modification.

Comment 3

Region 4 EPA will have another 45 days to review the Title V aspects of the draft permit and may have further comment on Title V related components such as CAM requirements.

EPD Response: The EPD agrees with the commenter. The EPD will propose the final permit to the U.S. EPA for a 45-day review of the Title V related components.

PCS NITROGEN FERTILIZER – AUGUSTA PLANT COMMENTS

Comments were received from John Hewson, Senior Environmental Engineer, on July 12, 2004. The comments submitted by Mr. Hewson can be broken into three general areas of concern. These comments are presented in the three sections below and have been transferred verbatim from the comment letter.

Comment Set 1 – Condition Effective Dates

The first set of comments pertains to when monitoring, testing, and emission rate limitations should become effective. The permit is silent on the effective date of these conditions which would imply that these conditions could be effective on the same date as the permit. It is PCS' understanding that generally these types of requirements do not become effective until after all of the new construction authorized by this draft Title V permit is completed and the affected facility (the C-002 Nitric Acid Plant) is up to its new maximum production capacity.

PCS believes that its situation is different than most facilities because emission rate limits 3.3.10 [507 tons of NO_x per 12-month consecutive period] and 3.3.11 [30.0 pounds per ton of nitric acid produced] are not monitored directly, but the NO_x and CO concentrations are monitored by a NO_x and CO continuous emission monitoring system (CEMS). Thus an initial compliance test must be performed to correlate the NO_x and CO concentration to limits 3.3.10 and 3.3.11 through a conversion factor before compliance can be determined with these limits. Other facilities have limits (e.g. opacity limits) where compliance is not dependent on the data from the initial compliance test. Since the limits in this permit are contingent on the conversion factors from the initial performance tests, PCS is requesting that limits 3.3.10 and 3.3.11 become effective on the date that PCS quantifies what those limits are. Thus, conditions 3.3.10 and 3.3.11 would become effective on the date that PCS receives the quality assured testing data from the initial performance test.

The testing conditions are 4.2.2.b and 4.2.2.c, and these conditions require an annual compliance test in the months of July or August. PCS wants to clarify that these testing conditions do not require testing for NO_x or CO prior to the initial performance test associated with this permit under condition 4.2.12. The permit needs to be clarified so that it is clear that the annual testing is required every year after the initial performance test.

Condition 5.2.1.b requires the installation of a CEMS for CO. The permit is silent on the installation date of the CEMS. For consistency, PCS is recommending that the permit require the installation of the CEMS before the date of the initial performance test.

To accommodate these clarifications, PCS is requesting that a statement be added to condition 4.2.11 stating:

On the date of the initial performance test conditions 4.2.2.b, 4.2.2.c, and 5.2.1.b will become effective.
Conditions 3.3.11 and 3.3.10 will become effective on the date of the submittal of the initial performance test.

In summary, it does not make sense for PCS to be expected to comply with a limit that cannot be quantified in the units that it is monitored. Secondly, it does make sense for PCS to be required to perform compliance tests prior to the date of the initial compliance test. Thirdly, PCS must be given time to install the required CEMS. All three of these issues can be resolved by adding these statements to condition 4.2.11.

EPD Response: First, the EPD would like to clarify some of the language used by PCS in this comment. The permit limits associated with this modification are 507 tons of NO_x per year and 30 pounds of CO per ton of nitric acid. When PCS writes of quantifying “what those limits are” the facility is referring to the conversion factor that is required to convert the CEMS data (ppm) to the units of pound per hour.

Conditions 4.2.2.b and 4.2.2.c – The EPD has added the following sentence to the performance testing condition for NO_x and CO:

“Following the initial performance test, the Permittee shall comply with the testing schedule found in paragraphs (b) and (c) of Condition 4.2.2.”

Condition 5.2.1.b – The Stationary Source Compliance Program prefers that the CO CEMS be installed well in advance of the final performance test for the C-002 Nitric Acid Plant. Based on the facility’s ability to budget, purchase, and install the monitor, Condition 5.2.1.b now reads as follows:

“The Permittee shall install, calibrate, maintain and operate a continuous emission monitoring system (CEMS) for the measurement of Carbon Monoxide (CO) emissions from the C-002 Nitric Acid Plant (Source Code N201) and record the output of the system. The CEMS shall be installed and in operation no later than June 30, 2005.”

Condition 3.3.10 and 3.3.11 – The Division acknowledges that the facility will not have the performance test data necessary to calculate the emissions totals from the modified plant until the final performance testing required by Condition 4.2.11 is completed. However, the Division believes that emissions testing and monitoring for NO_x and CO should be conducted throughout the modification period to demonstrate good air pollution control practices on the part of the facility. The facility has agreed to a schedule of performance tests to be completed during the modification period. The facility will conduct a performance test 90 days after the startup of the CO CEMS. The facility will then conduct a performance test annually thereafter and also complete a final performance test when all modifications are complete. Condition 4.2.13 has been added to the permit and reads as follows:

“Within 90 days after startup of the CO CEMS required by Condition 5.2.1.b, the facility shall conduct performance tests for NO_x and CO from the C-002 Nitric Acid Plant. The Permittee shall calculate conversion factors as required by Condition 4.2.8. Following the performance test, the Permittee shall comply with the testing schedule found in paragraphs (b) and (c) of Condition 4.2.2.”

Refer to the response for Comments 2 (Condition 4.2.11) for language for effective dates for Conditions 3.3.10 and 3.3.11.

Comment Set 2 – Initial Performance Testing

The second set of comment clarifies the timing of the initial performance tests. It is PCS’ belief that generally the initial performance tests are performed 60 days after the project is completed and maximum production rate is reached but no later than 180 days after startup of the plant after the construction on the project is completed. Conditions 4.2.11 and 4.2.12 do not state this clearly. Condition 4.2.11 states:

“Within 60 days of achieving the maximum production rate of nitric acid from the C-002 Nitric Acid Plant, 180 days after achieving maximum production, the Permittee shall conduct performance tests for NO_x and CO.”

PCS proposes that condition 4.2.11 state:

“Within 60 days after the completion of all the projects and achieving maximum production rate of nitric acid from the C-002 Nitric Acid Plant but no later than 180 days after startup of the C-002 Nitric Acid Plant after the completion of all the projects, the Permittee shall conduct performance tests for NO_x and CO.”

The same type of language can be used for condition 4.2.12 to clarify the timing for the C-002 AN neutralizer test. Note that PCS added the phrase “after the completion of all projects” as another criteria for when the test should be performed since it is possible that one of the projects associated with the permit application could change the emission rate but not the production rate. Clearly the intent of the permit is to perform the initial performance test after all of these types of changes are made, particularly, if the physical or operational change increased the CO or NO_x emission rate.

EPD Response: The EPD agrees with the commenter. The intention of Conditions 4.2.11 and 4.2.12 are unclear due to a typographical error in both conditions. Condition 4.2.11 has been edited as requested by the Permittee:

~~Within 60 days achieving the maximum production rate of nitric acid from the C-002 Nitric Acid Plant, but not later than 180 days after achieving maximum production~~ Within 60 days after the completion of all of the projects and achieving the maximum production rate of nitric acid from the C-002 Nitric Acid Plant, but no later than 180 days after startup of the C-002 Nitric Acid Plant after the completion of all of the projects, the Permittee shall conduct performance tests for NO_x and CO. The Permittee shall calculate conversion factors as required by Condition 4.2.8. On such date that the conversion factors are determined, the facility shall begin demonstration of compliance with the limits in Conditions 3.3.10 and 3.3.11. Following the initial performance test, the Permittee shall comply with the testing schedule found in paragraphs (b) and (c) of Condition 4.2.2.

Condition 4.2.12 has been similarly edited:

~~Within 60 days achieving the maximum production rate of nitric acid from the C-002 Nitric Acid Plant, but not later than 180 days after achieving maximum production~~ Within 60 days after the completion of all of the projects and achieving the maximum production rate of nitric acid from the C-002 Nitric Acid Plant, but no later than 180 days after startup of the C-002 Nitric Acid Plant after the completion of all of the projects, the Permittee shall conduct a performance test for particulate matter from the C-002 AN Neutralizer. If necessary, the Permittee shall submit an application, within 60 days after submittal of the test report, to revise the excursion values for the VS02 Venturi Scrubber.

Comment Set 3 – Emissions Averaging

The third set of comments concerns the terms “12-month rolling average” and “12-month rolling period” as used in conditions 3.3.11 and 3.3.10. It is PCS’ understanding that compliance with these limits cannot be determined until one year after the effective date of the limit since they are both 12-month limits. Secondly, it is PCS’ understanding that compliance with both of these limits will be determined on a monthly basis. Thirdly, PCS proposes that compliance with these limits be calculated monthly based on the hourly data. To clarify these concerns PCS recommends that the following statements be added to condition 3.3.10:

Compliance with this limit will be determined each month by summing the monthly NO_x emission totals for the past 12 months. The monthly NO_x emission totals will be determined by summing the hourly NO_x emission totals for every hour that the C-002 Nitric Acid Plant operated in the month.

PCS recommends that the following statements be added to condition 3.3.11:

Compliance with this limit will be determined each month by averaging the monthly CO emission rates for the past 12 months. The monthly CO emission rate will be determined by summing the hourly emission rates for every hour that the C-002 Nitric Acid Plant operated in the month.

It should be noted that the compliance calculation method does affect the compliance determination. For instance, if 30 daily emission rates were averaged to determine the monthly average, then a day that the plant operated for 2 hours would effect the compliance status of the plant as much as a day that the plant operated for 24 hours. This latter compliance calculation method would give a different 12-month rolling average than the method recommended by PCS. Secondly, PCS is recommending that the first sentence of condition 6.2.15 be deleted from the permit since PCS does not believe that daily records of NO_x emissions are necessary.

EPD Response: The EPD agrees with the commenter that compliance cannot be determined for the limits until one year after the effective date and that compliance with the limits should be determined on a monthly basis. The Division believes that the proper section of the permit to address these comments is in Section 6.0 of the permit. In general, calculation methods are not specified in Section 3.0 of the permit.

Condition 3.3.10 – In order to address the facility’s concerns and to add a submittal requirement requested by the Stationary Source Compliance Program, Condition 6.2.15 has been edited as follows:

The Permittee shall maintain ~~daily~~ records of nitrogen oxide emissions from the operation of the C-002 Nitric Acid Plant (Source Code N201). The Permittee shall calculate emissions using the CEMS data that is collected in accordance with Condition 5.2.1.a, the conversion factor determined in accordance with Condition 4.2.8, and the production data collected in accordance with Condition 5.2.2.e. The monthly NO_x emission totals shall be determined by summing the hourly NO_x emission totals. The records shall include monthly emission totals and 12-month rolling totals for each calendar month. The Permittee shall submit the monthly emission totals and 12-month rolling totals calculated during each reporting period with the quarterly report required by Condition 6.1.4.

Condition 3.3.11 – In order to address the facility’s concerns and to add a submittal requirement requested by the Stationary Source Compliance Program, Condition 6.2.16 has been edited as follows:

The Permittee shall maintain ~~daily~~ records of carbon monoxide emissions from the operation of the C-002 Nitric Acid Plant (Source Code N201). The Permittee shall calculate emissions using the CEMS data that is collected in accordance with Condition 5.2.1.b, the conversion factor determined in accordance with Condition 4.2.8, and the production data collected in accordance with Condition 5.2.2.e. The Permittee shall calculate the CO emission rate for each hour data point recorded by the CEMs. The records shall include the 12-month rolling average for CO emissions in terms of pounds CO per ton 100% nitric acid. The monthly emission rate shall be determined by summing the hourly CO emission rates and dividing by the total number of hours that the C-002 Nitric Acid Plant was operated that month. The records shall include the monthly emission average and the 12-month rolling averages for each calendar month. The Permittee shall submit the monthly emission averages and 12-month rolling averages calculated during each reporting period with the semiannual report required by Condition 6.1.4.

APPENDIX A

AIR QUALITY PERMIT

2873-245-0002-V-01-4

APPENDIX B

**WRITTEN COMMENTS
RECEIVED DURING
COMMENT PERIOD**