

## RESPONSE TO COMMENTS

### El Dorado Chemical Company DRAFT PERMIT #573-AOP-R7 AFIN: 70-00040

On March 18, 2008 the Director of the Arkansas Department of Environmental Quality gave notice of a draft permitting decision for the above referenced facility. During the comment period El Dorado Chemical Company submitted comments, data, views or arguments on the draft permitting decision. The Department's response to these issues follows.

#### Issue 1:

1. Emission Summary: For SN-40, the lb/hr and tpy emission limits should be corrected to 3.8 lb/hr and 1.4 tpy, respectively, to be consistent with those limits as indicated in draft Specific Condition 93.
2. Specific Condition 1: Specific Condition 5 should be deleted as a compliance reference, as it is referenced by Specific Condition 4.
3. Specific Condition 2: The compliance demonstration reference for the lb/hr emission limit for SN-08 and SN-09 should be Specific Condition 9, not Specific Condition 14. The compliance demonstration reference for SN-42 should be Specific Condition 8, not Specific Condition 10.
4. Specific Condition 4: The compliance demonstration reference for opacity for SN-08 and SN-09 should be Specific Condition 5, not Specific Condition 7.
5. Specific Condition 10: Specific Condition 17 should be added to the list of compliance references to maintain consistency with similar citations in the permit
6. Specific Condition 21: The compliance demonstration reference for opacity for the Nitric Acid Vent Collection System should be Specific Condition 22, not Specific Condition 23.
7. Specific Condition 23: The reference to the hourly emission limit for nitrogen oxides should be Specific Condition 19, not Specific Condition 20.
8. Specific Condition 24: The second reference to the hourly emission limit for nitric acid should be Specific Condition 20, not Specific Condition 21.
9. Specific Condition 26: The compliance demonstration references should be corrected to indicate Specific Conditions 28, 30, 32, 33, and 34. Specific Condition 29 should be deleted as it contains an emission limit requirement, and Specific Condition 31 should be deleted as it is referenced by Specific Condition 30.
10. Specific Condition 30: The compliance demonstration reference for opacity for the Direct Strong Nitric Acid Plant should be Specific Condition 31, not Specific Condition 35.

11. Specific Condition 40: The compliance demonstration references should be corrected to indicate Specific Conditions 42, 43, 44, 45, and 46. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 that are redundant due to the addition of the NSPS Subpart H requirements in draft Specific Condition 49. Also, add “40 CFR §60.82” to the regulatory references to document NSPS Subpart H applicability.
12. Specific Condition 44: This condition should be moved and re-numbered as Specific Condition 45 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.
13. Specific Condition 51: The compliance demonstration reference for SN-30 should be revised to indicate Specific Condition 48. Note that the re-numbering of this specific condition considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.
14. Specific Condition 54: The compliance demonstration references for SN-05 should be revised to indicate Specific Conditions 52, 56, 57, 58, 59, and 60. The compliance demonstration references for SN-06 should be revised to indicate Specific Conditions 52, 57, 58, and 60. The compliance demonstration reference for SN-19 should be revised to indicate Specific Condition 57. The compliance demonstration references for SN-28 should be revised to indicate Specific Conditions 52 and 57. The compliance demonstration references for SN-41 should be revised to indicate Specific Conditions 53, 59, 61, 62, and 63. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.+
15. Specific Condition 55: The compliance demonstration references for SN-05 should be revised to indicate Specific Conditions 52, 56, 57, 58, 59, and 60. The compliance demonstration references for SN-06 should be revised to indicate Specific Conditions 52, 57, 58, and 60. The compliance demonstration reference for SN-19 should be revised to indicate Specific Condition 57. The compliance demonstration references for SN-28 should be revised to indicate Specific Conditions 52 and 57. The compliance demonstration references for SN-41 should be revised to indicate Specific Conditions 53, 59, 61, 62, and 63. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.
16. Specific Condition 56: The compliance demonstration reference for opacity for SN-05, SN-06, and SN-28 should be revised to indicate Specific Condition 54 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.
17. Specific Condition 57: The compliance demonstration reference for opacity for SN-41 should be revised to indicate Specific Condition 54 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.
18. Specific Condition 63: The last two sentences of this condition should be deleted because EDCC completed the required testing in November 2007.
19. Specific Condition 67: The references to the emission limits for SN-41 should be revised to indicate Specific Conditions 50, 51, and 61 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above.

20. Specific Condition 68: The compliance demonstration references for SN-14 should be revised to indicate Specific Conditions 67, 70, 72, 73, and 75. The compliance demonstration references for SN-15 should be revised to indicate Specific Conditions 68, 70, 72, and 73. The compliance demonstration reference for SN-18 should be revised to indicate Specific Conditions 67, 72, 73, and 74. The compliance demonstration references for SN-21 should be revised to indicate Specific Conditions 67, 70, 72, 73, 74, and 75. The compliance demonstration references for SN-27 should be revised to indicate Specific Conditions 68, 72, and 73. The compliance demonstration reference for SN-43 should be revised to indicate Specific Condition 75. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
21. Specific Condition 69: The compliance demonstration references for SN-14 should be revised to indicate Specific Conditions 67, 70, 72, 73, and 75. The compliance demonstration references for SN-15 should be revised to indicate Specific Conditions 68, 70, 72, and 73. The compliance demonstration reference for SN-18 should be revised to indicate Specific Conditions 67, 72, 73, and 74. The compliance demonstration references for SN-21 should be revised to indicate Specific Conditions 67, 70, 72, 73, 74, and 75. The compliance demonstration references for SN-27 should be revised to indicate Specific Conditions 68, 72, and 73. The compliance demonstration reference for SN-43 should be revised to indicate Specific Condition 75. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
22. Specific Condition 70: The compliance demonstration reference for opacity for SN-14 and SN-21 should be revised to indicate Specific Condition 69 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
23. Specific Condition 71: The compliance demonstration reference for opacity for SN-15 and SN-27 should be revised to indicate Specific Condition 69 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
24. Specific Condition 73: The reference to the emission limits for SN-14, SN-15, and SN-21 should be revised to indicate Specific Condition 65 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
25. Specific Condition 74: The reference to the emission limits for SN-15 and SN-21 should be revised to indicate Specific Condition 66 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
26. Specific Condition 77: The last two sentences of this condition should be deleted because EDCC completed the required testing in January 2008.
27. Specific Condition 78: The reference to the emission limits for SN-43 should be revised to indicate Specific Conditions 65 and 66 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.

28. Specific Condition 80: The compliance demonstration reference in this condition should be revised to indicate Specific Condition 79 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
29. Specific Condition 81: The compliance demonstration reference in this condition should be revised to indicate Specific Condition 79 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 13 above and the addition of the condition in Comment 28 above.
30. Specific Condition 83: The compliance demonstration reference for VOC for SN-25 should be revised to indicate Specific Conditions 81 and 82 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
31. Specific Condition 86: The compliance demonstration reference for NH<sub>3</sub> for SN-26 should be revised to indicate Specific Conditions 57 and 58 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
32. Specific Condition 89: The compliance demonstration reference for PM<sub>10</sub> for SN-34 should be revised to indicate Specific Conditions 57 and 58 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
33. Specific Condition 90: The compliance demonstration reference for PM for SN-34 should be revised to indicate Specific Conditions 57 and 58 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
34. Specific Condition 91: The compliance demonstration reference for PM<sub>10</sub> for SN-35 should be revised to indicate Specific Conditions 57 and 58 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
35. Specific Condition 92: The compliance demonstration reference for PM for SN-35 should be revised to indicate Specific Conditions 57 and 58 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
36. Specific Condition 93: The compliance demonstration reference for NH<sub>3</sub> for SN-40 should be revised to indicate Specific Conditions 91 and 92 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
37. Specific Condition 94: Regulatory references should be added to this condition, as follows.  
*"[Regulation 18, §18.1004 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and A.C.A. §8-4-311]"*

38. Specific Condition 95: Regulatory references should be added to this condition, as follows. “[Regulation 18, §18.1004 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and A.C.A. §8-4-311]”
39. Specific Condition 96: The compliance demonstration references in this condition should be revised to indicate Specific Conditions 95 through 100 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
40. Specific Condition 97: The compliance demonstration references in this condition should be revised to indicate Specific Conditions 95 through 100 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
41. Specific Condition 102: The references to the emission limits for SN-44 should be revised to indicate Specific Conditions 93 and 94 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 15 above and the addition of the condition requested in Comment 30 above.
42. Miscellaneous: Minor typos and language corrections are indicated in the redline/strikeout version of the draft permit which is being submitted electronically. Please incorporate those proposed changes, as appropriate.

### **Response 1:**

With addition, deletion, and relocation of the proposed and/or draft Specific Conditions, all numbering references have been revised accordingly. Typographical errors and language corrections have been made.

### **Issue 2:**

Specific Condition 9: The regulatory reference for this condition should be corrected to indicate Regulation 18 as the underlying authority for the testing requirement for ammonia (an air contaminant). This proposed change will also support ADEQ’s decision to forgo periodic compliance demonstration requirements for ammonia emissions from SN-08 and SN-09, based on the fact that ammonia is not a federally regulated pollutant.

### **Response 2:**

The Department agrees. The regulatory reference has been changed as requested.

### **Issue 3:**

Process Description – Sulfuric Acid Plant: Please add the following language “*This plant is subject to 40 CFR 60 Subpart H (Standards of Performance for Sulfuric Acid Plants), which limits sulfur dioxide (SO<sub>2</sub>) and sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>) emissions to 4.0 lbs per ton of 100% acid production and 0.15 lbs per ton of 100% acid production, respectively*” to document NSPS applicability in a manner similar to the DM Weatherly Nitric Acid Plant (SN-13).

**Response 3:**

The language has been added to the process description section of the sulfuric acid plant as requested.

**Issue 4:**

Specific Condition 40: The compliance demonstration references should be corrected to indicate Specific Conditions 42, 43, 44, 45, and 46. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 that are redundant due to the addition of the NSPS Subpart H requirements in draft Specific Condition 49. Also, add "40 CFR §60.82" to the regulatory references to document NSPS Subpart H applicability.

Specific Condition 41: The compliance demonstration references should be corrected to indicate Specific Conditions 42, 43, 44, 45, and 46. Note that the re-numbering of these specific conditions considers the proposed deletion of draft Specific Conditions 42, 43, 46, and 47 that are redundant due to the addition of the NSPS Subpart H requirements in draft Specific Condition 49. Also, delete the Regulation 18 references and add "[Regulation 19, §19.501, 40 CFR §60.83(a), and 40 CFR Part 52, Subpart E]" to document NSPS Subpart H applicability.

Specific Conditions 42, 43, 46, and 47: These conditions should be deleted, as the requirements are redundant due to the addition of the NSPS Subpart H requirements in draft Specific Condition 49. In addition, the periodic stack testing requirement for sulfuric acid mist emissions from SN-07 should be deleted. The sulfuric acid plant is being modified to include double adsorption technology and is now subject to NSPS Subpart H rather than the requirements for sulfuric acid plants in Regulation 19.803. NSPS Subpart H only includes an initial performance test requirement for sulfuric acid mist emission. Control characteristics inherent to the double adsorption process significantly lower the potential for acid mist emissions, making the periodic monitoring requirement unnecessary.

**Response 4:**

See response 1. Regulatory references have been revised accordingly.

The Department agrees that with the double adsorption technology at the sulfuric acid plant (SN-07), the sulfuric acid mist emissions have been significantly reduced. The periodic testing requirement of sulfuric acid mist has been deleted. Also, continuous monitoring of sulfur dioxide assures proper continuous operation of the system.

**Issue 5:**

Specific Condition 49(c): The required method for conducting calibration checks on the SO<sub>2</sub> CEMS should be revised to Method 6C, to be consistent with ADEQ's preferred compliance demonstration guideline.

Specific Condition 50: The required method for conducting an initial performance test for SO<sub>2</sub> should be revised to Method 6C to be consistent with ADEQ's preferred method for compliance demonstration.

**Response 5:**

The Department has revised the test method to be Method 6C as requested.

**Issue 6:**

Specific Condition 54: The lb/hr emission rate for PM<sub>10</sub> at SN-41 should be revised from 3.3 lb/hr to 20.0 lb/hr to reflect the short term BACT limit as discussed in Comment 25 below.

Specific Condition 55: The lb/hr emission rate for PM at SN-41 should be revised from 3.3 lb/hr to 20.0 lb/hr to reflect the short term BACT limit as discussed in Comment 27 below.

Specific Condition 65: The compliance demonstration reference for SN-41 should be revised to indicate Specific Conditions 62 and 63 due to the deletion of draft Specific Conditions 42, 43, 46, and 47 as discussed in Comment 13 above. Additionally, the EPA has consistently approved permits where a facility can abide by two BACT limits for one pollutant at one source. The distinction between the two BACT limits is based on the time frame in which compliance is demonstrated. Because EDCC is establishing BACT for this type of source and due to the EPA's approval of this methodology, it is requested that the BACT limits in this condition be revised to read as follows:

*The permittee shall comply with the following BACT determinations for SN-41. Compliance with the emission limits set forth in the following table shall be demonstrated by Specific Condition 62 and 63 [Regulation 19, '19.901 and 40 CFR Part 52, Subpart E].*

<i>Pollutant</i>		<i>BACT Determination</i>	
<i>PM/PM<sub>10</sub></i>	<i>Chemical Steam Scrubber</i>	<i>0.325 lb/ton of AN produced</i>	<i>30-day rolling average</i>
		<i>0.054 lb/ton of AN produced</i>	<i>12-month rolling total</i>

**Response 6:**

Any revision to BACT limits established in a PSD application shall only be revised by a PSD application. No changes have been made.

However, the Department has extended the engineering studies of SN-41 for another six months after the issuance of this air permit. The purpose of the continued study is to either verify that PM/PM<sub>10</sub> emission limits of SN-41 are accurate or to establish accurate values for permit revision considering the equipment, operational, and monitoring improvements implemented by EDCC.

**Issue 7:**

Specific Condition 66: The compliance demonstration references in this condition should be revised consistent with the proposed language in EDCC's permit modification application dated June 11, 2007, as indicated below. The condition should also reference Appendix C to incorporate the sampling and analytical methodology approved by ADEQ for SN-41.

Consider that the test procedures in Appendix C generate particulate matter and ammonia results assuming that the vapor flows from the process equipment controlled by SN-41 are at their maximum rates. This assumption holds true for the Auxiliary Concentrator, but under normal operation, vapor flows from the E2 Low Concentrator, Fresh Neutralizer, Off-Gas Neutralizer, and the #4 Neutralizer are not always at maximum rates. In developing the compliance demonstration procedures proposed below, it was noted that the vapor flow rate from these process units is not monitored. However, the vapor flow from these units can be accurately calculated using other, monitored operational data.

Taking these factors into consideration, the following compliance demonstration procedure is proposed to allow an interim, or “first level”, compliance comparison against the permitted limits using the assumed maximum vapor flow rates. In most cases, compliance will be demonstrated adequately by the first level procedure. However, if the first level analysis/worst case calculations indicate an exceedance of the permit limit for particulate matter or ammonia, EDCC will have the opportunity to verify compliance by conducting a “second level verification procedure”, as proposed below, which generates the “actual emission rate” using calculated vapor flow rates. We believe this two-step compliance demonstration procedure is reasonable/practical considering all of the available information – this because compliance will likely be demonstrated using the first level procedure the majority of the time based on worst case assumptions, the installation of additional (and costly) flow monitors to generate more accurate flow data will not be necessary, and the second level verification procedure will not be burdensome (due to infrequent use) on EDCC staff.

*“The permittee shall conduct continuous sampling of the stack gas at SN-41 to produce two 12-hour composite samples each day. Each 12-hour composite sample shall be analyzed using Method EDCC-330.2 (to demonstrate compliance with ammonia limits) and Method EDCC-190 (for particulate matter). EDCC’s analysis procedures for ammonia and particulate matter shall be consistent with Method 4500-NH<sub>3</sub> and Method 4500-N<sub>org</sub>, respectively, from “Standard Methods for the Examination of Water and Wastewater, 19<sup>th</sup> Edition”(Appendix C) . The data from the two analyses shall be entered into an Excel spreadsheet on a daily basis to calculate the mass concentrations of ammonia (NH<sub>3</sub>) and condensable particulate (as NH<sub>4</sub>NO<sub>3</sub>) in the vapor stream leaving SN-41. Total vapor flow from process equipment controlled by SN-41 (i.e., Auxiliary Concentrator, E2 Low Concentrator, Fresh Neutralizer, Off-Gas Neutralizer, and the #4 Neutralizer) shall be assumed to be at maximum rates for initial calculations/compliance demonstration purposes. Should spreadsheet results indicate an exceedance of the permitted rate for ammonia/particulate matter, EDCC shall calculate the actual total vapor flow rate by mass balance around the operations that feed vapors to SN-41 to verify compliance, based on the following:*

- *The vapor stream from the Auxiliary Concentrator will be considered to be at its maximum rate if the unit is in operation.*
- *The vapor stream from the Low Concentrator will be calculated based on the measured prill production rate and solution concentrations.*
- *Vapor flow from the neutralizers will be calculated based on the acid and ammonia feed rates and the acid and product solution concentrations.*

*The permittee will maintain an emission inventory spreadsheet for particulate matter and ammonia emissions from SN-41. The spreadsheet will contain each 12-hour composite sample result and will be used to maintain a 30-day rolling average to demonstrate*



*compliance with the lb/hr emission limits and a 12-month rolling total to maintain compliance with the annual emission limits. A valid 12-hour period is defined as beginning at 8:00am and 8:00 p.m. This information shall be submitted in accordance with General Provision No. 7. [Regulation No. 19 '19.705, A.C.A. '8-4-203 as referenced by '8-4-304 and '8-4-311, and 40 CFR 70.6]*

**Response 7:**

The proposed language has been added.

**Issue 8:**

In numerous cases, the ADEQ has incorporated language removing the burden of filing upset condition reports for periods of startup and shutdown excess emissions. EDCC requests that the following condition be added as Specific Condition 64 to address startup and shutdown situations at SN-41:

*For purposes of this permit, "upset condition" reports as required by 19.601 of Regulation 19 shall not be required for periods of startup or shutdown excess emissions from SN-41 unless such periods of excess emissions exceed the permit limit for three consecutive composite samples. This shall only apply for "upset conditions" which directly result from the startup or shutdown of SN-41. All other "upset conditions" must be reported as required by Regulation 19. Additionally, the following conditions must be met during startup and shutdown periods.*

- a. Composite samples must still be taken during startup and shutdown. The emissions recorded during these periods shall count toward the annual ton per year limits.*
- b. The permittee shall maintain a log or equivalent electronic data storage which shall indicate the date, start time, and duration of each startup and shutdown procedure. This log or equivalent electronic data storage shall be made available to Department personnel upon request*
- c. Excess opacity is not included. If any excess opacity should ever occur, "upset condition" reporting is still required.*

*[ '19.601 of Regulation 19 and A.C.A. '8-4-203 as referenced by ' 8-4-304 and '8-4-311]*

**Response 8:**

The Department cannot "remove the burden" of submitting upset reports. In any event, since engineering studies for SN-41 are being continued for another six months, the proposed language will not be added into the permit.

**Issue 9:**

Plantwide Condition 10.A: Submittals referenced in this condition should include the major modification application dated June 11, 2007 and the application addendum dated September 14, 2007. Also, NSPS Subpart H should be identified in the table as being applicable to EDCC. Please add "SN-07, NSPS 40 CFR Subpart H, and New Source Performance Standards for Sulfuric Acid Plants" in the appropriate columns in the table.

**Response 9:**

Application addendum and NSPS Subpart H have been added to Plantwide Condition 10.

# ADEQ OPERATING AIR PERMIT

Pursuant to the Regulations of the Arkansas Operating Air Permit Program, Regulation #26:

Permit #: 0573-AOP-R8


IS ISSUED TO:  
El Dorado Chemical Company  
4500 North West Avenue  
El Dorado, AR 71730  
Union County  
AFIN: 70-00040

THIS PERMIT AUTHORIZES THE ABOVE REFERENCED PERMITTEE TO INSTALL, OPERATE, AND MAINTAIN THE EQUIPMENT AND EMISSION UNITS DESCRIBED IN THE PERMIT APPLICATION AND ON THE FOLLOWING PAGES. THIS PERMIT IS VALID BETWEEN:

April 12, 2005 and April 11, 2010

AND IS SUBJECT TO ALL LIMITS AND CONDITIONS CONTAINED HEREIN.

Signed:

  
\_\_\_\_\_  
Mike Bates  
Chief, Air Division

August 26, 2008

\_\_\_\_\_  
Date Modified

El Dorado Chemical Company  
Permit#: 0573-AOP-R8  
AFIN#: 70-00040

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### **List of Acronyms**

A.C.A.	Arkansas Code Annotated
CFR	Code of Federal Regulations
CO	Carbon Monoxide
AFIN	Arkansas Facility Identification Number
HAP	Hazardous Air Pollutant
lb/hr	Pound per hour
MVAC	Motor Vehicle Air Conditioner
NO <sub>x</sub>	Nitrogen Oxide
PM	Particulate matter
PM <sub>10</sub>	Particulate matter smaller than ten microns
SNAP	Significant New Alternatives Program
SO <sub>2</sub>	Sulfur dioxide
NH <sub>3</sub>	Ammonia
SSMP	Startup, Shutdown, and Malfunction Plan
tpy	Ton per year
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
RPM	Round Per Minute
scfm	Standard Cubic Feet Per Minute
Psig	Pounds Per Square Inch Gauge

El Dorado Chemical Company  
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AFIN#: 70-00040

**SECTION I: FACILITY INFORMATION**

PERMITTEE:	El Dorado Chemical Company
AFIN:	70-00040
PERMIT NUMBER:	0573-AOP-R8
FACILITY ADDRESS:	4500 North West Avenue El Dorado, AR 71731
COUNTY:	Union
CONTACT NAME:	Brent Parker, Environmental Manager
TELEPHONE NUMBER:	(870) 863-1400
REVIEWING ENGINEER:	Siew Low
UTM North-South (Y):	3681.5 km N
UTM East-West (X):	529.1 km E Zone 15

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## SECTION II: INTRODUCTION

### Summary of Permit Activity

El Dorado Chemical Company (EDCC) owns and operates a chemical manufacturing facility located at 4500 North West Avenue in El Dorado, Arkansas. This permitting action includes:

#### Sulfuric Acid Plant (SN-07)

1. To address Permit Condition #52 of Air Permit 0573-AOP-R7 and ADEQ Consent Administrative Order, LIS 03-175 which require EDCC to actually reduce SO<sub>2</sub> emissions to be equal to or less than the NSPS Subpart H standard of 4.0 pounds of SO<sub>2</sub> per ton of acid produced on a 100% H<sub>2</sub>SO<sub>4</sub> basis. EDCC is installing a double absorption technology (install three heat exchangers, one mist eliminator, one acid pump, one converter, one absorption tower, and one pump tank to existing unit).
2. To increase the daily sulfuric acid production capacity from 360 ton/day (131,400 ton/year) to 550 ton/day (200,750 ton/year);
3. To add a Startup, Shutdown, Malfunction Plan for SN-07;

The permitted emissions decrease from this modification is 2115.5 tpy of SO<sub>2</sub>. The actual to potential emission decrease is 1121 tpy of SO<sub>2</sub>. Permitted emission decreases for sulfuric acid mist is 20.55 tpy.

#### E2 Plant

4. To address Permit Condition # 68 of Air Permit 0573-AOP-R7, which requires EDCC to conduct an engineering study to verify the PM/PM<sub>10</sub> emission limits, and to establish the monitoring parameters/values necessary to demonstrate continuous compliance;
5. To monitor PM/PM<sub>10</sub> emissions from SN-41 on a continuous basis;
6. To add a SSMP for SN-41;

No permitted PM/PM<sub>10</sub> emissions change.

#### East and West Nitric Acid Plants

7. To address ADEQ Consent Administrative Order, LIS 06-167; which requires EDCC to include ammonia emissions from SN-08 and SN-09;
8. To incorporate ammonia emissions to account for "ammonia slippage" resulting from treatment of NO<sub>x</sub> emissions in the SCR units (SN-08 and SN-09);
9. To install an additional auxiliary air compressor in the East and West nitric acid plant process area;
10. To add a SSMP for SN-08 and SN-09;

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Permitted emission increases for ammonia is 124.4 tpy. No permitted NO<sub>x</sub> emissions change with the installation of this auxiliary air compressor.

Direct Strong Nitric Acid Plant and DM Weatherly Nitric Acid Plant

11. To install an additional auxiliary air compressor in the DM Weatherly Nitric Acid Plant;
12. To add a SSMP for SN-22 and SN-13.

No permitted NO<sub>x</sub> emissions change with the installation of this auxiliary air compressor.

Nitric Acid Vent Collection System and Car Barn Scrubber

13. To remove the Car Barn Scrubber (SN-37) and route the nitric acid emissions to Nitric Acid Vent Collection System (SN-10).

Permitted nitric acid emissions increase from 10.1 tpy to 10.8 tpy.

Sulfuric Acid Loading

14. To increase acid loading rate from 131,400 ton per year to 200,750 ton per year;

Permitted sulfuric acid emissions increase from 0.3 tpy to 0.4 tpy.

**Process Description**

This facility manufactures nitric acid (strengths from 48.0% to 98.5%), sulfuric acid (93.0% and 98.0%), and high and low density grades of ammonium nitrate. Emissions from this facility are particulate matter, sulfur dioxide, volatile organic compounds, carbon monoxide, nitrogen oxides, sulfuric acid, nitric acid, and ammonia.

**Regulations**

Regulations
Arkansas Air Pollution Control Code, Regulation 18, effective February 15, 1999
Regulations of the Arkansas Plan of Implementation for Air Pollution Control, Regulation 19, effective October 15, 2007
Regulations of the Arkansas Operating Air Permit Program, Regulation 26, effective September 26, 2002
EDCC is classified as a PSD major stationary source pursuant to 40 CFR 52.21
The DM Weatherly Nitric Acid Plant (SN-13) is subject to New Source Performance Standards 40 CFR 60 Subpart G, 60.70 through 60.74 ( <i>Standards of Performance for Nitric Acid Plants</i> )
The Sulfuric Acid Plant (SN-07) is subject to 40 CFR 60 Subpart H ( <i>Standards of Performance for Sulfuric Acid Plants</i> ).



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The following table is a summary of emissions from the facility. This table, in itself, is not an enforceable condition of the permit.

EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			Lb/hr	tpy	
Total Allowable Emissions		PM	161.4	333.3	
		PM <sub>10</sub>	161.4	333.3	
		SO <sub>2</sub>	601.7	411.3	
		VOC	18.5	4.5	
		CO	12.0	52.3	
		NO <sub>x</sub>	592.0	2410.2	
		HNO <sub>3</sub>	16.8	67.6	
		H <sub>2</sub> SO <sub>4</sub>	4.72	19.15	
		NH <sub>3</sub>	168.8	434.0	
		<i>Hexane</i>	0.6	1.2	
SN-01A	DELETED SOURCE – 2001				
SN-01B	DELETED SOURCE – 2001				
SN-02	DELETED SOURCE – now routed to SN-41				
SN-03	DELETED SOURCE – now routed to SN-41				
SN-04	DELETED SOURCE – now routed to SN-41				
SN-05	Ammonium Nitrate E2 Brinks Scrubber	PM	14.1	*	37
		PM <sub>10</sub>	14.1	*	
		NH <sub>3</sub>	8.5	37.3	
SN-06	E2 Ammonium Nitrate Prill Tower Fans	PM	67.0	*	37
		PM <sub>10</sub>	67.0	*	
SN-07	Sulfuric Acid Plant	SO <sub>2</sub>	600.0	401.5	31
		H <sub>2</sub> SO <sub>4</sub>	2.82	12.35	
SN-08	West (Weak) Nitric Acid Plant	NO <sub>x</sub>	200.1	876.5	15
		NH <sub>3</sub>	40.0	62.2	
SN-09	East (Weak) Nitric Acid Plant	NO <sub>x</sub>	200.1	876.5	15
		NH <sub>3</sub>	40.0	62.2	
SN-10	Nitric Acid Concentrator	NO <sub>x</sub>	19.5	85.5	23

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			Lb/hr	tpy	
	Vents	HNO <sub>3</sub>	3.4	10.8	
SN-11	DELETED SOURCE – SOURCE REMOVED				
SN-12	DELETED SOURCE – SOURCE REMOVED				
SN-13	DM Weatherly Nitric Acid Plant	NO <sub>x</sub>	50.1	210.0	19
SN-14	KT LDAN Prill Tower	PM PM <sub>10</sub>	44.2 44.2	* *	45
SN-15	KT Plant Dryer/Cooler	PM PM <sub>10</sub> NH <sub>3</sub>	17.0 17.0 18.0	* * 75.6	45
SN-16A	Boiler No. 2	PM PM <sub>10</sub> SO <sub>2</sub> VOC CO NO <sub>x</sub> <i>Hexane</i>	1.1 1.1 0.1 0.8 12.0 39.8 0.3	* * 0.4 3.5 52.3 174.2 1.2	52
SN-16B	Boiler No. 4	PM PM <sub>10</sub> SO <sub>2</sub> VOC CO NO <sub>x</sub> <i>Hexane</i>	1.1 1.1 0.1 0.8 12.0 39.8 0.3		52
SN-17	E2 HDAN Plant Cooling Train	Exhaust from Pease Anthony Scrubber is routed to SN-05			37
SN-18	KT Plant Clay Baghouse	PM PM <sub>10</sub>	1.0 1.0	* *	45
SN-19	E2 Plant Barometric Tower	PM PM <sub>10</sub> NH <sub>3</sub>	0.5 0.5 4.1	* * 17.7	37

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			Lb/hr	tpy	
SN-36	Diesel Storage Tank (1000 Gallon)	Insignificant Source – Group A3			
SN-37	Car Barn Scrubber	DELETED SOURCE – SOURCE REMOVED			
SN-38	DM Weatherly Nitric Acid Plant Cooling Tower	PM	1.5	6.3	19
		PM <sub>10</sub>	1.5	6.3	
SN-39	DSN Plant Cooling Tower	PM	2.3	9.8	26
		PM <sub>10</sub>	2.3	9.8	
SN-40	Ammonium Nitrate Solution Loading	NH <sub>3</sub>	3.8	1.4	60
SN-41	E2 Plant Chemical Steam Scrubber	PM	3.3	14.5	37
		PM <sub>10</sub>	3.3	14.5	
		NH <sub>3</sub>	10.0	43.8	
SN-42	East and West Nitric Acid Plant Cooling Tower	PM	0.3	1.2	14
		PM <sub>10</sub>	0.3	1.2	
SN-43	KT Plant Cooling Tower	PM	0.4	1.4	45
		PM <sub>10</sub>	0.4	1.4	
SN-44	Mixed Acid Plant Scrubber	SO <sub>2</sub>	1.5	6.4	61
		NO <sub>x</sub>	0.4	1.7	
		H <sub>2</sub> SO <sub>4</sub>	1.5	6.4	
		HNO <sub>3</sub>	0.2	0.9	

\* - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No.7.  
 Italic indicates HAP. HAP emissions are included in the VOC total.

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EMISSION SUMMARY					
Source No.	Description	Pollutant	Emission Rates		Cross Reference Page
			Lb/hr	tpy	
SN-20	DELETED SOURCE – now routed to SN-41				
SN-21	KT Plant Brinks Scrubber	PM	3.0	*	45
		PM <sub>10</sub>	3.0	*	
		NH <sub>3</sub>	30.0	126.0	
SN-22	UHDE Direct (Strong) Nitric Acid Plant	NO <sub>x</sub>	40.5	177.4	26
		HNO <sub>3</sub>	10.0	42.0	
SN-23	Molten Sulfur Storage Tank	Insignificant Source – Group B21			
SN-24	Diesel Storage Tank (500 Gallon)	Insignificant Source – Group A3			
SN-25	Gasoline Storage Tank (2000 Gallon)	VOC	16.9	1.0	54
SN-26	Ammonium Nitrate (90% Solution) Storage	NH <sub>3</sub>	1.6	0.9	55
SN-27	KT Plant LDAN Loading	PM	0.6	2.6	45
		PM <sub>10</sub>	0.6	2.6	
SN-28	E2 Plant HDAN/LDAN Loading	PM	1.1	4.7	37
		PM <sub>10</sub>	1.1	4.7	
SN-29	Nitric Acid Loading	HNO <sub>3</sub>	1.3	5.5	29
SN-30	Sulfuric Acid Loading	H <sub>2</sub> SO <sub>4</sub>	0.4	0.4	36
SN-31	Frick Ammonia Compressors	NH <sub>3</sub>	0.5	2.0	56
SN-32	Ammonia Storage/Distribution	NH <sub>3</sub>	1.3	5.7	57
SN-33	Nitric Acid Production Fugitives	NO <sub>x</sub>	1.9	8.4	30
		HNO <sub>3</sub>	1.9	8.4	
SN-34	E2 Plant Solution Reactor	PM	0.9	3.0	58
		PM <sub>10</sub>	0.9	3.0	
SN-35	Magnesium Oxide Silo Baghouse	PM	2.0	8.8	59
		PM <sub>10</sub>	2.0	8.8	

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### **SECTION III: PERMIT HISTORY**

The chemical plant located at 4500 North West Avenue in El Dorado, Arkansas and currently owned and operated by El Dorado Chemical Company has equipment that dates back to 1944 to the initial facility built by the U.S. Army Corps of Engineers and operated for the U.S. Government by Lion Oil Company.

Permit No. 122-A was issued July 13, 1972 to Monsanto Company for additional absorption trays and refrigeration to reduce the opacity from the East and West regular nitric acid plants (SN-08 and SN-09). Existing plants at that time and their date of installations were: Boilers (1944), Sulfuric Acid Plant (1949), the E2 Ammonium Nitrate Plant (1950), and East and West Nitric Acid Plants (1962).

Permit No. 123-A was issued July 13, 1972 to Monsanto Company to tie the Nitric Acid Concentrators exhausts into an existing fume scrubber to reduce opacity.

Permit No. 124-A was issued July 13, 1972 to Monsanto Company to install mist eliminators on the Ammonia Nitrate neutralizers and concentrators to reduce particulate matter emissions.

Permit No. 168-A was issued June 22, 1973 to Monsanto Company to install a wet scrubber to reduce the particulate matter emission from the ammonium nitrate prilling towers.

Permit No. 0573-A was issued to Monsanto Agricultural Products Company on August 8, 1979 for the installation of a mist eliminator for the emissions of the sulfuric acid plant to lower the emission factor from this equipment below 0.5 lb acid mist / ton of 100 percent acid produced, as required by Section 111(d) of the Clean Air Act.

Permit No. 0573-AR-1 was issued on September 23, 1983 when El Dorado Chemical, Inc. purchased the facility from Monsanto Company. All previous permits for this facility were rescinded. Permit Limits for SN-1 thru SN-10 were established in pounds per hour (not tpy) and the opacity limits for all sources except SN-8 and SN-9 (nitric acid plants) were established at 40%.

Permit No. 0573-AR-2 was issued on March 23, 1984 for the conversion of the E2 ammonium nitrate plant to allow some of its production to be low density product in addition to the high density product it was already producing.

Permit No. 0573-AR-3 was issued on September 11, 1989 for the expansion of the facility by adding the DM Weatherly nitric acid plant (subject to NSPS 40 CFR Part 60 Subpart G) and the KT ammonium nitrate plant and its associated prill tower. Emissions netting occurred with the

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issuance of this permit to avoid PSD review. The PSD trigger limits were established in this permit for particulate matter (203 tpy) and NO<sub>x</sub> (8076 tpy).

Permit No. 0573-AR-4 was issued on June 6, 1991 reflecting the stack testing results required by the previous permit. Additionally, comprehensive inventories on production and air emissions record keeping were started on particulate matter and NO<sub>x</sub> to insure that the annual emission limits due to PSD offsetting were not exceeded. The 1988/1989 (two years prior to 0573-AR-3) average actual emissions were recalculated and the PSD trigger limits were re-established at 281 tpy for particulate matter and 8202 tpy for NO<sub>x</sub>.

Permit No. 0573-AR-5 was issued on November 7, 1991 to further incorporate stack testing results obtained since the previous permit was issued.

Permit No. 0573-AR-6 was issued on March 15, 1993 to install a scrubber on the KT Prill Plant and a secondary ammonium nitrate concentrator in the Low Density Ammonium Nitrate Plant. This lowered the ammonia and particulate matter emissions from the KT Ammonium Nitrate Plant.

Permit No. 0573-AR-7 was issued on September 6, 1994 for a facility expansion to install the UHDE Concentrated Nitric Acid Plant with an increase in NO<sub>x</sub> emissions of 149.9 tpy. This Plant was incorrectly listed as being subject to NSPS 40 CFR Part 60 Subpart G when the permit was issued. The operation of the sulfuric acid concentrators (SN-01A and SN-01B) and the nitric acid concentrator (SN-10) with 288.1 tpy average actual NO<sub>x</sub> emissions over the previous 5 years (314.5 tpy permitted NO<sub>x</sub> emissions) were scheduled to cease six months after the plant start-up.

The UHDE Concentrated Nitric Acid Plant did not have a smooth startup when operation started in July, 1995. The permittee applied for a variance October 5, 1995 requesting continued operation of SN-01A, SN-01B, and SN-10 through July 1, 1996 while the concentrated nitric acid plant went through extended debugging.

A series of three Consent Administrative Orders were issued (CAO LIS No. 95-183, CAO LIS No. 95-183-001, CAO LIS No. 95-183-002) after the variance expired allowing the continued operation of SN-01A, SN-01B, and SN-10. These documents also required permitting of additional sources at the facility, installation of emission control equipment improvements by the permittee, and a thorough PSD review of all changes at the facility. The major emission control improvement was the installation of Selective Catalytic Reduction (SCR) units on SN-08 and SN-09. This resulted in a permitted reduction of 5,124 tpy NO<sub>x</sub> for these two sources, and an actual emission reduction in excess of 2,700 tpy NO<sub>x</sub>. A demister was also installed on the emissions from the North and South Sulfuric Acid Concentrator (SN-01A and SN-01B) which reduced sulfuric acid mist emissions by at least 50%.

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Permit No. 0573-AOP-R0 was issued to El Dorado Chemical Company on October 21, 1999. This permit allowed a small capacity increase for the UHDE DSN Plant (SN-22) resulting in a 27.5 tpy increase in the NO<sub>x</sub> emission limit for that source. The permittee was also granted an option of installing a CEM on the Sulfuric Acid Plant (SN-07) and after the completion of the CEM, a daily production increase to 360 tons. Emission limits for the permit were: PM/PM<sub>10</sub> - 297.0 tpy, SO<sub>2</sub> - 2520.4 tpy, VOC - 2.7 tpy, CO - 25.4 tpy, NO<sub>x</sub> - 3002.5 tpy, HNO<sub>3</sub> - 242.3 tpy, H<sub>2</sub>SO<sub>4</sub> - 66.6 tpy, and NH<sub>3</sub> - 404.1 tpy.

Permit No. 0573-AOP-R1 was issued to El Dorado Chemical Company on June 29, 2000. This permit modification was issued to resolve the appeal filed regarding the initial Title V permit. Primary changes are in the short term compliance mechanism in several of the Specific Conditions and the required testing Specific Conditions regarding opacity. One small source (SN-19) was deleted from the initial permit resulting in a 1.0 lb/hr reduction in the hourly particulate limits and no change in the yearly limit. Emission limits for the permit were: PM/PM<sub>10</sub> - 297.0 tpy, SO<sub>2</sub> - 2520.4 tpy, VOC - 2.7 tpy, CO - 25.4 tpy, NO<sub>x</sub> - 3002.5 tpy, HNO<sub>3</sub> - 242.3 tpy, H<sub>2</sub>SO<sub>4</sub> - 66.6 tpy, NH<sub>3</sub> - 404.1

Permit No. 0573-AOP-R2 was issued to El Dorado Chemical Company on December 3, 2001. This permit modification was issued to change the quantitative opacity observations for SN-27 and SN-28 from EPA Method 9 to EPA Method 22 (because both sources are non-point sources). The testing of the liquid in the peroxide scrubber in Specific Condition No. 24 was changed from a pH test to a hydrogen peroxide concentration test. ADEQ also modified the permit to clarify the reporting requirements and identify records that must be included in the semi-annual report specified in General Provision No. 7. The emission limits of the permit did not change in this modification.

Permit No. 0573-AOP-R3 was issued on February 20, 2003. This modification included the installation of a new ammonium nitrate transfer system to handle the finished ammonium nitrate product from the KT Ammonium Nitrate Plant, the installation of the new ammonium nitrate neutralizer in the E2 Ammonium Nitrate Plant, and the use of a Ahard wired@ PM<sub>10</sub> emission factor in demonstrating compliance with the Plantwide Applicability Limit for sources SN-01 through SN-21. Emissions of PM/PM<sub>10</sub> at SN-27 increased from 2.6 tpy to 2.7 tpy, as a result of the installation of a new ammonium nitrate transfer system (SN-27) at the KT Ammonium Nitrate Plant. Emissions of ammonia at SN-05 increased from 40.0 lb/hr to 45.7 lb/hr, as a result of the simultaneous operation of three ammonium neutralizers in the E2 Ammonium Nitrate Plant. The annual ammonia emissions remained the same. Additionally, there was no modification to the Prill Tower with this change. The increase in PM<sub>10</sub> actual emissions was 14.8 ton/year at SN-05 and SN-06, which was less than the 15.0 ton/year threshold for PSD significance level. In the ammonia dispersion modeling submitted with this application, the facility did not include

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ammonia emissions from SN-11. SN-11 was prohibited from operation until stack testing was performed at this unit. The air dispersion modeling results showed the maximum ambient impacts did not exceed any 1/100 TLV concentrations at any modeled receptor. Plantwide PM<sub>10</sub> emissions remained the same as listed in Permit #0573-AOP-R2.

Permit 0573-AOP-R4 was issued on June 30, 2003. This modification included the installation of a car barn scrubber (SN-37). Nitric acid emissions from cleaning and pressure checking rail cars were rerouted from the nitric acid concentrator vents (SN-10) to the scrubber (SN-37) at the car barn. There were no changes in plantwide nitric acid emissions.

Permit 0573-AOP-R5 was issued on April 12, 2005. This Title V air permit renewal included the installation of a new chemical steam scrubber (SN-41) at the E2 Plant, permitting four existing cooling towers (SN-38, SN-39, SN-42, and SN-43) and existing ammonium nitrate solution loading (SN-40), and revising the stack testing requirements for the Nitric Acid Vent Collection System (SN-10), Sulfuric Acid Plant (SN-07), E2 HDAN Plant Cooling Train (SN-17), KT Plant Dryer/Cooler (SN-15), and the KT Plant Brinks Scrubber (SN-21). Emission rates were re-evaluated to reflect updated emission factors and additional stack test data. Maximum potential operation hours at SN-08 and SN-09 were increased from 8400 hours per year to 8760 hours per year. Emission rates for the two boilers (SN-16A and SN-16B) were updated using USEPA AP-42 emission factors. Two sources (SN-11 and SN-12) were removed. The E2 Plant Barometric Tower (SN-19), at one time deleted from permit, was incorporated back into the permit.

Permit 0573-AOP-R6 was issued on April 13, 2006. This modification included the installation of a new Mixed Acid Plant Scrubber (SN-44), revision of the language of stack testing for SN-05, removal of stack testing requirements for SN-06, clarification of permit requirements and revision of control equipment monitoring parameters in the permit issued on April 12, 2005 and the agreed upon changes in the Permit Appeal Resolution (PAR). This modification also incorporated hard-wired emission factors for the E2 and KT plants, and a PSD application to increase the ammonium nitrate production limit of the E2 Plant to the maximum equipment potential. Plantwide condition #7 was revised to have the following language: "... does not include the quantity of condensable particulate measured through the back-half sampling train procedure of EPA Reference Method 5...". This was because the back-half sampling train procedure of Reference Method was not available when this condition was first put in the permit for PSD netting offset purposes.

Permit 0573-AOP-R7 was issued on February 16, 2007. This modification included the routing of the exhaust from Pease Anthony (Venturi) Scrubber on the E2 HDAN Plant Cooling Train (SN-17) to the Ammonium Nitrate E2 Brinks Scrubber (SN-05) for additional control, the removal of the particulate matter stack testing requirements for SN-17, and the revision of the PM<sub>10</sub> hard-wired emission factor for the E2 Plant.



## SECTION IV: SPECIFIC CONDITIONS

### SN-09, SN-08, and SN-42 East and West Regular Nitric Acid Plants

#### Source Description

The East and West Regular Nitric Acid Plants (SN-09 and SN-08) produce weak nitric acid at concentrations ranging from 52% to 58%. These nitric acid plants employ the DuPont single (high) pressure process. They were designed and built in 1962 by C&I Girdler. These plants are not subject to NSPS 40 CFR 60 Subpart G (New Source Performance Standard for Nitric Acid Plants) since they were constructed prior to August 17, 1971 and have had no process design or capacity modifications since installed.

Liquid ammonia (NH<sub>3</sub>) is received from a pipeline and placed in pressurized storage at a pressure of 65 psig, or in an atmospheric storage tank. Ambient air is compressed and preheated to approximately 125 psig and 475 °F. A mixture of approximately ten percent ammonia and the hot air are reacted over a platinum gauze catalyst where the ammonia is oxidized to nitrogen oxide(s) and water vapor. The nitrogen oxides are then absorbed into water in a cooled absorption process forming nitric acid (HNO<sub>3</sub>). The tail gases from the refrigerated absorption process then pass through Selective Catalytic Reduction (SCR) Units. The SCR Units were installed in 1996. These SCR Units remove most of the remaining nitrogen oxides by reacting them with ammonia in the presence of a catalyst to form elemental nitrogen and water. The tail gases are then vented to the atmosphere (East Regular Nitric Acid Plant through SN-09 and the West Regular Nitric Acid Plant through SN-08). The Cooling Tower (SN-42) is part of the West and East Nitric Acid Plant.

#### Specific Conditions

1. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rates are based on maximum capacity. Compliance with the emission limits for SN-08 and SN-09 is demonstrated by compliance with Specific Conditions 3, 4, 6, 7 and satisfactory operation of the SCR Units. Compliance with the emission limits for SN-42 is demonstrated by compliance with Specific Condition 8. [Regulation 19, 19.501 et seq., effective October 15, 2007 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
08	West Nitric Acid Plant	NO <sub>x</sub>	200.1	876.5
09	East Nitric Acid Plant	NO <sub>x</sub>	200.1	876.5
42	East and West Nitric Acid Plant	PM <sub>10</sub>	0.3	1.2

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SN	Description	Pollutant	lb/hr	tpy
	Cooling Tower			

2. The permittee shall not exceed the emission rates set forth in the following table. Compliance with the lb/hr limit for ammonia for SN-08 and SN-09 will be demonstrated by comparison of the limit to the result of the test conducted pursuant to Specific Condition 9. Compliance with the ton per year limit will be demonstrated by complying with the lb/hr limit. Compliance with the emission limits for SN-42 is demonstrated by compliance with Specific Condition 8. [Regulation 18, §18.801, effective February 15, 1999, and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

SN	Description	Pollutant	lb/hr	tpy
08	West Nitric Acid Plant	NH <sub>3</sub>	40.0	62.2
09	East Nitric Acid Plant	NH <sub>3</sub>	40.0	62.2
42	East and West Nitric Acid Plant Cooling Tower	PM	0.3	1.2

3. The permittee shall not operate either the west nitric acid plant or the east nitric acid plant without its associated SCR unit operating and fully functional except during start up and shut down of each plant. The permittee shall install, calibrate, maintain, and operate a continuous monitoring system for measuring NO<sub>x</sub> emissions from the West Nitric Acid Plant and the East Nitric Acid Plant. The CEM shall be installed, operated, maintained, and reports submitted per ADEQ's Continuous Emission Monitoring Systems Conditions, August 2004 Revision (listed as Appendix B in the back of this permit). Non-overlapping 3-hour averages, starting at midnight each calendar day, shall be used to demonstrate compliance with the emission rate limits in Specific Condition 1. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, 40 CFR Part 52, Subpart E]
4. The permittee shall not exceed 10% opacity from the West Nitric Acid Plant and the East Nitric Acid Plant as measured by EPA Reference Method No. 9. Compliance with the opacity limit set forth in this Specific Condition will be shown by compliance with Specific Condition 5. [Regulation 18, §18.501, effective February 15, 1999, and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
5. Daily observations of the opacity from SN-08 and SN-09 shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit, the

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permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.

- a. The date and time of the observation
- b. If visible emissions which appeared to be above the permitted limit were detected
- c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
- d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.

[Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19, 19.705 and 40 CFR Part 52 Subpart E]

6. The permittee shall not manufacture in excess of 835 tons 100% acid equivalent per day, and 304,775 tons 100% acid equivalent per rolling 12 month total of weak nitric acid through the east and west nitric acid plants. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR 70.6]
7. The permittee shall keep records of the production manufactured in the east and west nitric acid plants. These records shall identify any day during which acid in excess of the quantities specified in Specific Condition No. 6 was produced, and shall contain each month's total and a rolling total for the previous 12 months. These records shall be updated

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by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19, 19.705 of Regulation 19 and 40 CFR Part 52, Subpart E]

8. The permittee shall test and record the total dissolved solids of the cooling water on a weekly basis when SN-42 is operating. Results less than 1,560 ppm total dissolved solids will demonstrate compliance with SN-42's requirements in Specific Conditions No. 1 and 2 of this permit. The results shall be kept on site and made available to Department personnel upon request. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR Part 52, Subpart E]
9. The permittee shall test SN-08 and SN-09 for ammonia emissions. This test shall be conducted within 180 days after the issuance of Air Permit 0573-AOP-R8 and every five years thereafter. Test method CTM-027 or an equivalent method approved by the Department shall be used. Upon a failure of a stack test, the permittee shall stack test annually until two consecutive years are less than the permitted emission rates specified in Specific Condition No. 2. This unit shall be operated at 90% or more of rated capacity when the tests are completed. The 5-year testing cycle shall commence after the issuance of Air Permit 573-AOP-R8 in accordance with Plantwide Condition No. 3. [Regulation 18, 18.1002, and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

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**SN-13 and SN-38  
 DM Weatherly Nitric Acid Plant**

**Source Description**

The DM Weatherly Nitric Acid Plant (SN-13) produces weak nitric acid at a concentration of about 61% - 67%. This nitric acid plant was originally installed at the American Cyanamid Company facility at Hannibal, Missouri and was relocated to the El Dorado Chemical location in 1990. This plant is subject to NSPS 40 CFR 60 Subpart G (New Source Performance Standard for Nitric Acid Plants) since it was constructed or modified after August 17, 1971 and produces weak nitric acid (between 30% and 70 % strength). The cooling tower (SN-38) is part of the DM Weatherly Nitric Acid Plant.

The DM Weatherly Nitric Acid Plant produces nitric acid by the oxidation of ammonia in the presence of a catalyst in a similar process to the east and west nitric acid plants. The refrigerated absorption system on this unit is lengthier than those on the east and west nitric acid plants allowing this unit to meet the requirements of NSPS 40 CFR Subpart G which limits nitrogen oxide emissions to 3.0 pounds per ton of 100 percent acid production.

**Specific Conditions**

10. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rates are based on maximum capacity. Compliance with this Specific Condition will be verified by compliance with Specific Conditions No. 13, 14, 16, and 17. [Regulation 19, 19.501, NSPS 40 CFR Subpart G, and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
13	DM Weatherly Nitric Acid Plant	NO <sub>x</sub>	50.1	210.0
38	DM Weatherly Nitric Acid Plant Cooling Tower	PM <sub>10</sub>	1.5	6.3

11. The permittee shall not exceed the emission rates set forth in the following table. The permittee shall demonstrate compliance with this condition by Specific Condition No. 12. [Regulation 18, §18.801, effective February 15, 1999, and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

SN	Description	Pollutant	lb/hr	Tpy
38	DM Weatherly Nitric Acid Plant Cooling Tower	PM	1.5	6.3

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12. The permittee shall test and record the total dissolved solids of the cooling water on a weekly basis when SN-38 is operating. Results less than 1,560 ppm total dissolved solids will demonstrate compliance with SN-38's requirements in Specific Conditions No. 10 and 11 of this permit. The results shall be kept on site and made available to Department personnel upon request. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR Part 52, Subpart E]
13. The permittee shall install, calibrate, maintain and operate a continuous monitoring system for measuring nitrogen oxides emissions from the DM Weatherly Nitric Acid Plant (60.73(a)). The CEM shall be installed, operated, maintained, and reports submitted per ADEQ's Continuous Emission Monitoring Systems Conditions, August 2004 Revision (listed as Appendix B in the back of this permit). The span value shall be 500 ppm of NO<sub>2</sub>. The permittee shall establish a conversion factor for converting this reading to pounds NO<sub>2</sub> per ton of 100 percent acid produced (60.73(b)). An hourly value shall be computed by the system for each hour the plant is operating. The permittee shall keep records of daily production rates and hours of operation (60.73(c)). The permittee shall report to the Department as excess emissions any 3-hour period which the average emissions (arithmetic average of any 3 consecutive hours) from the facility exceed 3.0 pounds per ton of 100 percent acid production (60.73(e)). During periods of start up, shut down, malfunction events, compliance with the limits shall be demonstrated using a CEM to measure the NO<sub>x</sub> concentration and flow monitor. The permittee shall report any 3-hour period in which the NO<sub>x</sub> emissions (arithmetic average of any 3 consecutive hours) from the facility exceeds 50.1 lb/hr. [NSPS 40 CFR 60 Subpart G (New Source Performance Standard for Nitric Acid Plants) (listed as Appendix A in the back of this permit)]
14. The permittee shall not exceed 10% opacity from the DM Weatherly Nitric Acid Plant as measured by EPA Reference Method No. 9. Compliance with the opacity limit set forth in this Specific Condition will be shown by compliance with Specific Condition No. 15. [Regulation 1818.501 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
15. Daily observations of the opacity from this source shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit, the permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to

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determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.

- a. The date and time of the observation
- b. If visible emissions which appeared to be above the permitted limit were detected
- c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
- d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.

[Regulation 18, 18.1004, and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19, 19.705, and 40 CFR Part 52 Subpart E]

16. The permittee shall not manufacture in excess of 140,000 tons 100% acid equivalent per rolling 12 month total of weak nitric acid through the DM Weatherly Nitric Acid Plant. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]
17. The permittee shall keep records of the production manufactured in the DM Weatherly Nitric Acid Plant. These records shall contain each months total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19, 19.705 of Regulation 19 and 40 CFR Part 52, Subpart E]

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18. The DM Weatherly Nitric Acid Plant (SN-13) must continuously have nitrogen oxide emissions that do not exceed 3.0 pounds per ton of 100 percent acid production. Compliance with this condition is demonstrated by Specific Condition No. 13. [NSPS 40 CFR 60 Subpart G]



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**SN-10  
 Nitric Acid Vent Collection System**

**Source Description**

The top portion of the Nitric Acid Vent Collection System scrubber collects and treats nitric oxide emissions from the weak nitric acid storage vents (Tanks 49, 50, and 51). The bottom section of the new scrubber accumulates and handles nitrogen oxide emissions present in the Blend Acid Tanks bleaching air stream. The nitric acid loading system vents from rail car and truck loading as well as rail car cleaning and is processed through the nitric acid vent collection system control devices. The overheads from the new scrubber are routed to the Venturi/Brinks Scrubber for additional treatment before being vented to the atmosphere. The strong nitric acid storage tank vents (Tanks 47, 48, 66, 67, 68, 69, 70 and 71) are still directed to the Brinks/Venturi Scrubber (i.e. the vents bypass the new scrubber). Overall nitrogen oxide and visible emissions are reduced due to these pollution control devices.

**Specific Conditions**

19. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rates are based on maximum capacity. Compliance with this Specific Condition will be verified by proper operation of the Venturi and Packed Tower Scrubber and compliance with Specific Condition No. 25. [Regulation 19, 19.501 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
10	Nitric Acid Vent Collection System	NO <sub>x</sub>	19.5	85.5

20. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rates are based on maximum capacity. Compliance with this Specific Condition will be verified by proper operation of the Venturi and Packed Tower Scrubber and compliance with Specific Condition No. 25. [Regulation 18, 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
10	Nitric Acid Vent Collection System	Nitric Acid	3.4	10.8

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21. The permittee shall not exceed 20% opacity from the Nitric Acid vent collection system as measured by EPA Reference Method No. 9. Compliance with the opacity limit set forth in this Specific Condition will be shown by compliance with Specific Condition No. 22. [Regulation 18, 18.501 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
  
22. Daily observations of the opacity from SN-10 shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit, the permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.
  - a. The date and time of the observation
  - b. If visible emissions which appeared to be above the permitted limit were detected
  - c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
  - d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.

[Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19, 19.705 and 40 CFR Part 52 Subpart E]

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23. The permittee shall have a third party stack test once every five years the nitrogen oxides emissions from the nitric acid vent collection system using EPA Method 7E and the nitrogen oxides emissions shall be less than the hourly limit specified in Specific Condition No. 19. Upon failure of a stack test, the permittee shall stack test annually until two consecutive years are below the limits specified in Specific Condition 19. The facility will conduct rail car/truck loading and/or acid blending operations at normal operational rates when the stack test is performed. [Regulation 19, 19.702 and 40 CFR Part 52, Subpart E]
24. The permittee shall have a third party stack test once every five years the nitric acid emissions from the nitric acid vent collection system using an approved method and the nitric acid emissions shall be less than the hourly limit specified in Specific Condition No. 20. Upon failure of a stack test, the permittee shall stack test annually until two consecutive years are below the limit specified in Specific Condition 20. The equipment which the nitric acid vent collection system serves as a pollution control device shall be operating at normal capacity when the testing is performed. [Regulation 18, 18.1002 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]
25. The permittee shall not operate the nitric acid vent collection system without a functional hydrogen peroxide scrubber and a Venturi and Packed Tower Scrubber. The permittee shall sample, test and record daily the hydrogen peroxide concentration of the chemical condensate circulated at the scrubber outlet. These records shall be updated by the fifteenth of the month following which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. The permittee shall submit a summary of data including all information as required in the General Provision #8 if applicable. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]

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**SN-22 and SN-39  
Hoescht-UHDE Direct Strong Nitric Acid Plant**

**Process Description**

This plant produces strong nitric acid (~98% strength) directly from ammonia oxidation utilizing technology designed by Hoescht-UHDE. This process plant uses multistage oxidation processes and low and high pressures and temperatures instead of the simple process used in older plants. The elimination of the dehydration process utilized in older simpler plants greatly reduces the pollutants produced per ton of output. The cooling tower (SN-39) is part of the UHDE DSN Plant.

This plant was originally built at the United States Army Arsenal in Joliet, Illinois in the 1970s. This plant was purchased by El Dorado Chemical Company and installed at their facility in 1994. This facility was listed as being subject to NSPS 40 CFR Subpart G (New Source Performance Standard for Nitric Acid Plants) when it was originally permitted. This is in error because the facility produces ~98% strength nitric acid and Subpart G applies only to plants that produce nitric acid in between 30% and 70% concentration.

**Specific Conditions**

26. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on normal operation. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 28, 30, 32, 33, and the CEM required by Specific Condition No. 34. [Regulation 19, 19.501 of Regulation 19 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
22	UHDE Direct (Strong) Nitric Acid Plant	NO <sub>x</sub>	40.5	177.4
39	DSN Plant Cooling Tower	PM <sub>10</sub>	2.3	9.8

27. The permittee shall not exceed the emission rates set forth in the following table. The permittee shall demonstrate compliance with this condition by Specific Condition 28. [Regulation 18 §18.801, and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

SN	Description	Pollutant	lb/hr	Tpy
39	DSN Plant Cooling Tower	PM	2.3	9.8

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28. The permittee shall test and record the total dissolved solids of the cooling water on a weekly basis when SN-39 is operating. Results less than 1,560 ppm total dissolved solids will demonstrate compliance with SN-39's PM/ PM<sub>10</sub> emission limits in Specific Conditions No. 26 and 27 of this permit. The results shall be kept on site and made available to Department personnel upon request. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR Part 52, Subpart E]
29. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on maximum capacity. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 32 and 33. [Regulation 18, 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
22	UHDE Direct (Strong) Nitric Acid Plant	HNO <sub>3</sub>	10.0	42.0

30. The permittee shall not exceed 10% opacity from the UHDE Direct (Strong) Nitric Acid Plant as measured by EPA Reference Method No. 9. Compliance with the opacity limit set forth in this Specific Condition will be shown by compliance with Specific Condition No. 31. [Regulation 18, 18.501 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
31. Daily observations of the opacity from this source shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit, the permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to

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demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.

- a. The date and time of the observation
- b. If visible emissions which appeared to be above the permitted limit were detected
- c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
- d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.

[Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19, 19.705 and 40 CFR Part 52 Subpart E]

32. The permittee shall not manufacture in excess of 118,260 tons 100% acid equivalent per rolling 12 month total of concentrated nitric acid through the UHDE Direct (Strong) Nitric Acid Plant (SN-22). [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]
33. The permittee shall keep records of the concentrated nitric acid production manufactured in the UHDE Direct (Strong) Nitric Acid Plant (SN-22). These records contain each months total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19, 19.705 and 40 CFR Part 52, Subpart E]
34. The permittee shall install, calibrate, maintain and operate a continuous monitoring system for measuring nitrogen oxides emissions from the UHDE Direct (Strong) Nitric Acid Plant. The CEM shall be installed, operated, maintained, and reports submitted per ADEQ's Continuous Emission Monitoring Systems Conditions, August 2004 Revision (listed as Appendix B). The pound per hour of nitrogen oxides quantity shall be computed as described in ADEQ's Continuous Emission Monitoring Systems Conditions, August, 2004 Revision. The nitrogen oxides emission shall be less than hourly limit specified in Specific Condition 26. [A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

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**SN-29**  
**Nitric Acid Loading**

**Process Description**

Mist emissions occur due to the loading of nitric acid into rail cars or trucks.

**Specific Conditions**

35. The permittee shall not exceed the emission rates set forth in the following table. The pound per hour emission rate limit is based on engineering estimates. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 36 and 37. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
29	Nitric Acid Loading	HNO <sub>3</sub>	1.3	5.5

36. The permittee shall not load in excess of 200,000 tons of nitric acid (100% acid equivalent) per rolling 12 month total. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]
37. The permittee shall keep records of the nitric acid shipped by truck and by rail from the facility. These records shall contain each months total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

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**SN-33**  
**Nitric Acid Plants Non-stack Emissions**

**Process Description**

Non-stack nitrogen oxide and nitric acid emissions occur at leaks in flanges, valve packing, etc. as nitric acid is produced, handled, mixed, blended, decolorized, and stored.

**Specific Conditions**

38. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on facility maximum capacity. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 6, 7, 16, 17, 32, and 33. [Regulation 19, 19.501 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
33	Nitric Acid Plants Non-stack Emissions	NO <sub>x</sub>	1.9	8.4

39. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on facility maximum capacity. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 6, 16, and 32. [Regulation 18, 18.801 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
33	Nitric Acid Plants Non-stack Emissions	HNO <sub>3</sub>	1.9	8.4



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**SN-07**  
**Sulfuric Acid Plant**

**Process Description**

The Sulfuric Acid Plant (SN-07) was originally constructed in 1949 as a single absorption contact process of the Chemico design. In Air Permit 573-AOP-R8, the Sulfuric Acid Plant is converted to a double adsorption process with a maximum daily production capacity of 550 tons of 100% acid equivalent per day. There are three principal steps in the manufacturing process for sulfuric acid. First, elemental sulfur is removed from a storage tank and burned to form sulfur dioxide. Second, the sulfur dioxide is further oxidized utilizing a reactor with a vanadium pentoxide catalyst to form sulfur trioxide. Third, the sulfur trioxide is absorbed with water to form a 93-99% sulfuric acid solution. The gas stream exiting the absorption tower contains nitrogen, oxygen, un-reacted sulfur dioxide and entrained sulfuric acid mist. This stream enters a Brinks Mist Eliminator, which captures some of the sulfuric acid mist, prior to the gases being exhausted to the atmosphere through a stack (SN-07).

This plant is subject to 40 CFR 60 Subpart H (Standard of Performance for Sulfuric Acid Plants), which limits sulfur dioxide (SO<sub>2</sub>) and sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>) emissions to 4.0 lbs per ton of 100% acid production and 0.15 lbs per ton of 100% acid production, respectively.

**Specific Conditions**

40. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions 43, 44, 45 and 46. Compliance is also demonstrated by the CEM required in Specific Conditions 42. [Regulation 19, 19.501, 40 CFR 60.82, and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
SN-07	Sulfuric Acid Plant	SO <sub>2</sub>	600.0	401.5

41. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions 43, 44, 45, and 46. [Regulation 18, 18.801, Regulation 19, 19.501, 40 CFR 60.83(a), 40 CFR Part 52, Subpart E and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

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SN	Description	Air Contaminant	lb/hr	tpy
SN-07	Sulfuric Acid Plant	H <sub>2</sub> SO <sub>4</sub>	2.82	12.35

42. Daily observations of the opacity from this source shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit, the permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.
- a. The date and time of the observation
  - b. If visible emissions which appeared to be above the permitted limit were detected
  - c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
  - d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.  
 [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19, 19.705 and 40 CFR Part 52 Subpart E]

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43. The permittee shall not manufacture in excess of 200,750 tons of 100% sulfuric acid per rolling 12 month total through the sulfuric acid plant. These records shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]
44. The permittee shall install and operate SO<sub>2</sub> removal technology at the Sulfuric Acid Plant (SN-07) which actually reduces SO<sub>2</sub> emissions to be equal to or less than the 40 CFR Part 60, Subpart H standard of 4.0 pounds of SO<sub>2</sub> per ton of acid produced on a 100% H<sub>2</sub>SO<sub>4</sub> basis by February 10, 2010. [A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311, and ADEQ Consent Administrative Order, LIS 03-175, dated December 31, 2003]
45. Sulfuric Acid Plant (SN-07) is subject to and shall comply with applicable provisions of 40 CFR Part 60, Subpart H – *Standards of Performance for Sulfuric Acid Plants*. Applicable provisions of Subpart H include, but are not limited to, the following: [Regulation No. 19 §19.304 and 40 CFR §60.80]
  - a. The permittee shall not cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb per ton), the production being expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>. [Regulation No. 19 §19.304 and 40 CFR §60.82]
  - b. The permittee shall not cause to be discharged into the atmosphere from any affected facility any gases which:
    - (1) Contain acid mist, expressed as H<sub>2</sub>SO<sub>4</sub>, in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>.
    - (2) Exhibit 10 percent opacity, or greater.[Regulation No. 19 §19.304 and 40 CFR §60.83]
  - c. A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under Performance Specification 2 and for calibration checks under §60.13(d), shall be sulfur dioxide (SO<sub>2</sub>). Method 6C shall be used for conducting monitoring system performance evaluations under §60.13(c). The span value shall be set at 1000 ppm of sulfur dioxide. [Regulation No. 19 §19.304 and 40 CFR §60.84(a)]
  - d. The permittee shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration

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Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF=k[(1.000-0.015r)/(r-s)]$$

where:

CF=conversion factor (kg/metric ton per ppm, lb/ton per ppm).

k=constant derived from material balance. For determining CF in metric units, k=0.0653. For determining CF in English units, k=0.1306.

r=percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Department's approval.

s=percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under §60.84(a). [Regulation No. 19 §19.304 and 40 CFR §60.84(b)]

- e. The owner or operator shall record all conversion factors and values under §60.84(b) from which they were computed (i.e., CF, r, and s). [Regulation No. 19 §19.304 and 40 CFR §60.84(c)]

- f. Alternatively, a source that processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen may use the following continuous emission monitoring approach and calculation procedures in determining SO<sub>2</sub> emission rates in terms of the standard. This procedure is not required, but is an alternative that would alleviate problems encountered in the measurement of gas velocities or production rate. Continuous emission monitoring systems for measuring SO<sub>2</sub>, O<sub>2</sub>, and CO<sub>2</sub> (if required) shall be installed, calibrated, maintained, and operated by the owner or operator and subjected to the certification procedures in Performance Specifications 2 and 3. The calibration procedure and span value for the SO<sub>2</sub> monitor shall be as specified in §60.84(b). The span value for CO<sub>2</sub> (if required) shall be 10 percent and for O<sub>2</sub> shall be 20.9 percent (air). A conversion factor based on process rate data is not necessary. Calculate the SO<sub>2</sub> emission rate as follows:

$$Es=(CsS)/[0.265-(0.126 \%O_2)-(A \%CO_2)]$$

where:

Es=emission rate of SO<sub>2</sub>, kg/metric ton (lb/ton) of 100 percent of H<sub>2</sub>SO<sub>4</sub> produced.

Cs=concentration of SO<sub>2</sub>, kg/dscm (lb/dscf).

S=acid production rate factor, 368 dscm/metric ton (11,800 dscf/ton) of 100 percent H<sub>2</sub>SO<sub>4</sub> produced.

%O<sub>2</sub>=oxygen concentration, percent dry basis.

A=auxiliary fuel factor,

=0.00 for no fuel.

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=0.00 for no fuel.  
=0.0226 for methane.  
=0.0217 for natural gas.  
=0.0196 for propane.  
=0.0172 for No 2 oil.  
=0.0161 for No 6 oil.  
=0.0148 for coal.  
=0.0126 for coke.  
%CO<sub>2</sub>= carbon dioxide concentration, percent dry basis.

[Regulation No. 19 §19.304 and 40 CFR §60.84(d)]

- g. For the purpose of reports under §60.7(c), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under §60.82. [Regulation No. 19 §19.304 and 40 CFR §60.84(e)]
- h. The permittee shall comply with the test methods and procedures in 40 CFR §60.85. [Regulation No. 19 §19.304 and 40 CFR §60.85]

- 46. The permittee shall conduct initial performance tests for SO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, and opacity with 60 days of achieving maximum production following installation of the double absorption system, but no later than 180 days after initial startup. The permittee shall use EPA Method 6C for SO<sub>2</sub>; EPA Method 8 for H<sub>2</sub>SO<sub>4</sub>; and EPA Method 9 for opacity. [Regulation 19, 19.702 and 40 CFR 60.8]

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**SN-30**  
**Sulfuric Acid Loading**

**Process Description**

Mist emissions occur due to the loading of sulfuric acid into rail cars or trucks.

**Specific Conditions**

47. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on engineering estimates and production. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 48 and 49. [Regulation 18, 18.801 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
30	Sulfuric Acid Loading	H <sub>2</sub> SO <sub>4</sub>	0.4	0.4

48. The permittee shall not load in excess of 200,750 tons of sulfuric acid (100% acid equivalent) per rolling 12 month total. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]
49. The permittee shall keep records of the sulfuric acid shipped by truck and by rail from the facility. These records shall contain each month's total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by A.C.A. 8-4-304 and A.C.A. 8-4-311]

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**SN-05, SN-06, SN-11, SN-12, SN-17, SN-19, SN-28, and SN-41  
E2 Ammonium Nitrate Plant**

**Process Description**

The E2 Ammonium Nitrate Plant has been in operation at El Dorado Chemical Company since the 1950s. It was modified in the early 1980s to allow for the production of either high density ammonium nitrate (fertilizer grade) or low density ammonium nitrate (industrial grade).

Both grades require the reaction of weak nitric acid with ammonia to produce an ammonium nitrate solution. Prior to being prilled, the ammonium nitrate is concentrated to strength greater than 99% for high density prills and 97% for low density prills.

Weak nitric acid and ammonia are reacted in three ammonium nitrate neutralizers (reactors) piped in parallel. The maximum capacity of the three neutralizers is 61.5 ton/hr. After the reaction, the ammonium nitrate solution (approximately 90% concentration) is fed to a sealed tank where a pH analyzer adds enough ammonia to complete the reaction with the excess nitric acid. The emissions from the E2 prill towers shroud, intermediate ammonium nitrate storage tanks, and the E2 chemical condensate tank overheads are processed through the E2 Plant Brinks mist eliminator (SN-05). The Brinks mist eliminator has a pre-filter for larger particles and 84 filter cartridges constantly wetted by spray nozzles for the reduction of particulate matter emissions.

The ammonium nitrate solution passes through 2 concentration steps (controlled by SN-05). A cooling tower is used to create a "barometric leg" (SN-19) for the High Concentrator to concentrate ammonium nitrate from 95% to about 99% concentration. The concentrated ammonium nitrate solution then flows to the E2 plant prilling towers. The ammonium nitrate concentrated solution is broken into droplets by the prill plate and falls countercurrent to cooling air forming prills. The air is pulled through the tower by the E2 ammonium nitrate prill tower fans (SN-06) and E2 Plant Brinks mist eliminator (SN-05). The prills are further cooled and screened when they exit the prill tower. The air from the cooling process is vented to the Pease-Anthony (Venturi) Scrubber (SN-17). The exhaust of SN-17 is routed to SN-05 for additional particulate emissions control. The cooled prills are loaded directly onto rail cars or trucks through a common conveyor system (SN-28).

The chemical steam scrubber (SN-41) is used to control particulate matter and ammonia emissions from the three E2 Plant neutralizers (formerly SN-02 and SN-03, and a third neutralizer added with 0573-AOP-R3), the Ammonium Nitrate Low Concentrator (formerly SN-04), and the E2 Auxiliary Ammonium Nitrate Concentrator (formerly SN-20).

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A particulate matter emission limit bubble was established with the issuance of Permit No. 0573-AR-2 at 281.0 tpy PM. This PM bubble is continued with this permit for the sources listed in Permit No. 0573-AR-3.

### Specific Conditions

50. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour limits are based on engineering estimates, maximum capacity, and stack testing results. Compliance with the emission limits for SN-05 is demonstrated by compliance with Specific Conditions 52, 56, 57, 58, 59, 60, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-06 is demonstrated by compliance with Specific Conditions 52, 57, 58, 60, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-19 is demonstrated by compliance with Specific Conditions 57, 58, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-28 is demonstrated by compliance with Specific Conditions 52, 57, and 58. Compliance with the emission limits for SN-41 is demonstrated by compliance with Specific Conditions 53, 59, 61, and the reporting required in Plantwide Condition No. 7. [Regulation 19 19.501, 19.901, and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
SN-05	Ammonium Nitrate E2 Brinks Scrubber	PM <sub>10</sub>	14.1	*
SN-06	E2 Ammonium Nitrate Prill Tower Fans	PM <sub>10</sub>	67.0	*
SN-11	DELETED SOURCE – SOURCE REMOVED			
SN-12	DELETED SOURCE – SOURCE REMOVED			
SN-17	E2 HDAN Plant Cooling Train	Exhaust from Pease Anthony Scrubber is routed to SN-05		
SN-19	E2 Plant Barometric Tower	PM <sub>10</sub>	0.5	*
SN-28	E2 Plant HDAN/LDAN Loading	PM <sub>10</sub>	1.1	4.7
SN-41	E2 Plant Chemical Steam Scrubber	PM <sub>10</sub>	3.3	14.5

\* - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No.7

51. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour limits are based on engineering estimates, maximum capacity, and stack testing results. Compliance with the emission limits for SN-05 is demonstrated by compliance with Specific Conditions 52, 55, 56, 57, 58, 59, 60, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-06 is demonstrated by compliance with Specific Conditions 52, 57, 58, 60, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-19 is



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demonstrated by compliance with Specific Condition 57, 58 and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-28 is demonstrated by compliance with Specific Conditions 56 and 61. Compliance with the emission limits for SN-41 is demonstrated by compliance with Specific Conditions 53, 59 and 61 and the reporting required in Plantwide Condition No. 7. [Regulation 18, 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
SN-05	Ammonium Nitrate E2 Brinks Scrubber	NH <sub>3</sub>	8.5	37.3
		PM	14.1	*
SN-06	E2 Ammonium Nitrate Prill Tower Fans	PM	67.0	*
SN-11	DELETED SOURCE – SOURCE REMOVED			
SN-12	DELETED SOURCE – SOURCE REMOVED			
SN-17	E2 HDAN Plant Cooling Train	Exhaust from Pease Anthony Scrubber is routed to SN-05		
SN-19	E2 Plant Barometric Tower	PM	0.5	*
		NH <sub>3</sub>	4.1	17.7
SN-28	E2 Plant HDAN/LDAN Loading	PM	1.1	4.7
SN-41	E2 Plant Chemical Steam Scrubber	PM	3.3	14.5
		NH <sub>3</sub>	10.0	43.8

\* - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No.7.

52. The permittee shall not exceed 20% opacity from SN-05, and 25% opacity from SN-06 and SN-28 as measured by EPA Reference Method No. 9. Compliance with the opacity limits set forth in this Specific Condition will be shown by compliance with Specific Condition No. 54. [Regulation 18, 18.501 of Regulation 18 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
53. The permittee shall not exceed 15% opacity from SN-41 as measured by EPA Reference Method No. 9. Compliance with the opacity limits set forth in this Specific Condition will be shown by compliance with Specific Condition No. 54. [Regulation 18, 18.501 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
54. Daily observations of the opacity from SN-05, SN-06, SN-28, and SN-41 shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit,

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the permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.

- a. The date and time of the observation
- b. If visible emissions which appeared to be above the permitted limit were detected
- c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
- d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.

[Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19, 19.705 and 40 CFR Part 52 Subpart E]

55. The permittee shall have a third party test once every five years the NH<sub>3</sub> emissions from SN-17's exhaust prior to the inlet of SN-05 using an approved method. The NH<sub>3</sub> emissions from SN-17 shall be less than 5.0 lb/hr. Upon failure of a test, the permittee shall test annually until two consecutive years are less than 5.0 lb/hr. The units shall be operated at least at 90% of rated capacity when the stack test is completed. For SN-17, 90% rated capacity is defined as:
  - a. The 90% of the rated capacity of the prill towers will be on an ammonium nitrate production basis.

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- b. The product exit temperature at the prill towers at the time of test must be less than 275°F.  
[Regulation 18, 18.1002 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
56. The permittee shall have a third party analyze the PM<sub>10</sub> emissions from SN-05 once every five years. Analysis for SN-05 shall be conducted using a method approved in advance by the Department. If the analysis predicts PM<sub>10</sub> emissions may exceed 13.0 lb/hr, then an audit shall be conducted by an independent third party to evaluate the operating condition of SN-05 and shall recommend any maintenance and/or repairs needed. A copy of the audit report shall be forwarded directly to the Department by the auditor within fifteen (15) days of the completion of the audit. Any necessary maintenance and/or repairs shall be performed by the permittee as expeditiously as possible. The permittee shall repeat the emissions analysis within thirty (30) days after completion of any maintenance and/or repairs. The permittee shall submit the compliance analysis results to the Department with thirty (30) days after completing the analysis. The unit shall be operated at 90% or more of rated capacity when the analysis is conducted. For SN-05, 90% of rated capacity is defined as:
  - a. The 90% of the rated capacity of the prill towers will be on an ammonium nitrate production basis.
  - b. The product exit temperature at the prill towers at the time of test must be less than 275°F.  
[Regulation 19 19.702 and 40 CFR Part 52, Subpart E]
57. The permittee shall not manufacture in excess of 473,040 tons of ammonium nitrate prill through the E2 Ammonium Nitrate Plant during any consecutive 12-month period.  
[Regulation 19 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]
58. The permittee shall keep records of the ammonium nitrate prill production in the E2 Ammonium Nitrate Plant. These records shall contain each month's total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19 ' 19.705 and 40 CFR Part 52, Subpart E]
59. The E2 plant brinks scrubber (SN-05), the E2 Plant HDAN Cooling Train Pease/Anthony Scrubber (SN-17), and the E2 Plant Chemical Steam Scrubber (SN-41) shall be kept in good working condition at all times. SN-05 and SN-17 shall meet the conditions shown in the following table when the plant is operating. The monitoring parameters for SN-05 and

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SN-17 shall be measured and recorded daily. All hourly data recorded during a calendar day shall be averaged to demonstrate compliance with the daily limit. A valid daily period is defined as the period from 12 a.m. to 12 a.m. where at least 67% of the data or at least 16 hourly readings collected in the 24-hour period when the plant is operating must be recorded. All data recorded once per 12-hour shift when the plant is operating shall be averaged to demonstrate compliance with the daily limit. In the event that a daily parameter is outside the range, the permittee shall take immediate action to identify the cause of the parametric exceedance, implement corrective action, and document that the parameter was back inside the range following corrective action by the end of the next 24-hour period. The results shall be kept on site and be made available to Department personnel upon request. The permittee shall submit a summary of data including all information as required in the General Provision #8 if applicable.

SN	Description	Parameter	Units	Operation Limits
05	E2 plant brinks scrubber	Scrubber Liquid Flow Rate for Each Scrubber	gal/min	225 (minimum)
		Gas Pressure Drop Across Unit for Each Scrubber	in. H <sub>2</sub> O	2.5 (minimum)
		pH	-	0.5-4.5
17	E2 Plant HDAN Cooling Train Pease/Anthony Scrubber	Scrubber Liquor pH	-	0.5 - 6.0
		Scrubber Liquid Flow Rate (dual scrubbers)	gal/min	120 (minimum per scrubber)
		Amperage	amps	100 (minimum)

[Regulation 18 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

60. The permittee shall calculate PM<sub>10</sub> emissions for Plantwide condition #7 from the E2 Plant Brinks Scrubber (SN-05), and the E2 Prill Tower (SN-06) using a total emission factor of 0.967 lb of PM<sub>10</sub> per ton of ammonium nitrate produced. These records shall be updated by the fifteenth of the month following the month which the records represent. These records shall be kept on site and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19 19.705 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
61. PM<sub>10</sub> emission from SN-41 shall not exceed 0.054 pound per ton of ammonium nitrate produced at the neutralizers. Compliance is demonstrated by compliance with the PM<sub>10</sub> testing requirement of Specific Condition No 62. [Regulation 19, §19.901 and 40 CFR Part 52 Subpart E]

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62. The permittee shall continue the continuous engineering study for SN-41 for an additional 6 months. The purpose of the continued study is to either verify that the PM/PM<sub>10</sub> emission limits in Specific Condition 50, 51, and 61 are accurate or to establish accurate values for permit revision considering the equipment, operational, and monitoring improvements implemented by the permittee. Within 30 days of the end of the study period, the permittee shall submit a complete study report containing the results of the study, any deviation from the study plan, an assessment of the accuracy of the PM/PM<sub>10</sub> emission limits, and if necessary, revised PM/PM<sub>10</sub> emission limits. Within 60 days of the end of the study period, the permittee shall submit a PSD permit modification application to revise the PM/PM<sub>10</sub> emission limits (if applicable) in the permit and incorporate accurate monitoring procedures for compliance demonstration purposes. During the study and until such time as a revised permit can be issued by the Department, if applicable, the permittee shall operate SN-41 according to the emission limits contained in Specific Conditions 50, 51, and 61

During the study and until such time as a revised permit can be issued by the Department, (if necessary based on the study results), the permittee shall conduct continuous sampling of the stack gas at SN-41 to produce two 12-hour composite samples each day. Each 12-hour composite sample shall be analyzed using Method EDCC-330.2 (to determine ammonia concentration) and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography" (to determine nitrate concentration). EDCC's analysis procedure for ammonia shall be consistent with Method 4500-NH<sub>3</sub> from "Standard Methods for the Examination of Water and Wastewater, 19<sup>th</sup> Edition". The data from the analyses shall be entered into an Excel spreadsheet on a daily basis to calculate the mass concentrations of ammonia (NH<sub>3</sub>) and condensable particulate (as NH<sub>4</sub>NO<sub>3</sub>) in the vapor stream leaving SN-41. Total vapor flow from process equipment controlled by SN-41 (i.e., Auxiliary Concentrator, E2 Low Concentrator, Fresh Neutralizer, Off-Gas Neutralizer, and the #4 Neutralizer) shall be assumed to be at maximum rates for initial calculations/compliance demonstration purposes. Should spreadsheet results indicate an exceedance of the permitted rate for ammonia/particulate matter, EDCC shall calculate the actual total vapor flow rate by mass balance around the operations that feed vapors to SN-41 to verify compliance, based on the following:

- The vapor stream from the Auxiliary Concentrator will be considered to be at its maximum rate if the unit is in operation.
- The vapor stream from the Low Concentrator will be calculated based on the measured prill production rate and solution concentrations.
- Vapor flow from the neutralizers will be calculated based on the acid and ammonia feed rates and the acid and product solution concentrations.

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The permittee shall maintain an emission inventory spreadsheet for particulate matter and ammonia emissions from SN-41. The spreadsheet shall contain each 12-hour composite sample result and shall be used to maintain a daily, 24-hour average result to demonstrate compliance with the lb/hr emission limits and a 12-month rolling total to demonstrate compliance with the annual emission limits. A valid 12-hour period is defined as beginning at 8:00 a.m. and at 8:00 p.m.

In the event that a daily average emission rate exceeds the permit limit due to process variability, startup, shutdown, or malfunction, the permittee shall take immediate action to identify the cause of the exceedance, implement corrective action, and document that the emission rate returns to a level below the permit limit. During the study and until such time as a revised permit can be issued by the Department, if applicable, if corrective action is taken consistent with standard operating procedures and is documented, then no further action is needed, and the permittee will be considered in compliance. The permittee shall maintain records of all exceedance, the cause of any exceedance, and the corrective action taken. The permittee must keep these records onsite and make them available to Department personnel upon request. [Regulation No. 19 19.702, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR 70.6]

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**SN-14, SN-15, SN-18, SN-21, SN-27, and SN-43  
KT Ammonium Nitrate Plant**

**Process Description**

The Kaltenbach Thuring Ammonium Nitrate Plant manufactures low-density ammonium nitrate for industrial blasting customers. This plant was originally installed at American Cyanamid Corporation in Hannibal, Missouri and was purchased and relocated to El Dorado Chemical Company in 1989.

Weak Nitric Acid from one of the weak nitric acid plants (SN-08, SN-09, or SN-13) and anhydrous ammonia are heated and fed to the neutralizer (reaction vessel). The highly exothermic reaction of these two chemicals forms ammonium nitrate and steam. The ammonium nitrate solution exits the neutralizer to a pump tank and the steam condensate is used in the nitric acid plants as an absorption medium. The ammonium nitrate solution is concentrated in the dehydrator to 97% concentration by blowing heated air through the solution. The concentrated ammonium nitrate solution is then pumped to the KT Plant Prilling Tower (SN-14). The overheads dehydrator stream is directed to the Brink's Scrubber (SN-21) prior to being vented to the atmosphere.

The Brink's Scrubber (SN-21) has 32 elements which have an absorption medium continuously sprayed on them to increase their effectiveness for removing both solids and vapors. The KT Plant Prilling Tower (SN-14) allows droplets of concentrated ammonium nitrate solution to flow for 150 feet countercurrent to cold air. The droplets crystallize forming solid prills. Air and entrained particulates exit the top of the tower.

The solid prills are removed from the prilling tower and are sent to the predryer and dryer where heated air is used to remove the remaining moisture. The exhaust air streams from the predryer and dryer are processed through a Ducon type wet scrubber (SN-15) equipped with a mist eliminator. The prills are cooled (SN-21) and coated with a wax and talc coating to improve flowability. The cooler air is fed to the Brinks Scrubber for particulate removal. The talc is stored in an enclosed silo which pneumatically feed in the bulk talc hopper. The silo and hopper is equipped with a baghouse (SN-18) to control particulate matter emissions. The finished product ammonium nitrate prill stream exits the coater by a discharge elevator into product loading bins. The product is unloaded into either rail cars or trucks (SN-27).

The Cooling Tower (SN-43) is part of the KT Ammonium Nitrate Plant. The cooling tower is used to condense chemical steam from the neutralizers.

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A particulate matter emission limit bubble was established with the issuance of Permit No. 0573-AR-4 at 281.0 tpy PM. This PM bubble is continued with this permit for the sources listed in Permit No. 0573-AR-4.

**Specific Conditions**

63. The permittee shall not exceed the emission rates set forth in the following table. The emission limits are based on maximum capacity. Compliance with the emission limits for SN-14 is demonstrated by compliance with Specific Conditions 65, 68, 70, 71, 74 and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-15 is demonstrated by compliance with Specific Conditions 66, 68, 70, 71, 74, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-18 is demonstrated by compliance with Specific Conditions 65, 70, 71, 72, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-21 is demonstrated by compliance with Specific Conditions 65, 68, 70, 71, 72, 74 and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-27 is demonstrated by compliance with Specific Conditions 66, 70, and 71. Compliance with the emission limits for SN-43 is demonstrated by compliance with Specific Condition 73. [Regulation 19 19.501 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
SN-14	KT LDAN Prill Tower	PM <sub>10</sub>	44.2	*
SN-15	KT Plant Dryer/Cooler	PM <sub>10</sub>	17.0	*
SN-18	KT Plant Clay Baghouse	PM <sub>10</sub>	1.0	*
SN-21	KT Plant Brinks Scrubber	PM <sub>10</sub>	3.0	*
SN-27	KT Plant LDAN Loading	PM <sub>10</sub>	0.6	2.6
SN-43	KT Plant Cooling Tower	PM <sub>10</sub>	0.4	1.4

\* - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No.7

64. The permittee shall not exceed the emission rates set forth in the following table. The emission limits are based on maximum capacity. Compliance with the emission limits for SN-14 is demonstrated by compliance with Specific Conditions 65, 68, 70, 71, 73, 74 and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-15 is demonstrated by compliance with Specific Conditions 66, 68, 69, 70, 71, 72, 74 and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-18 is demonstrated by compliance with Specific Conditions 65, 70, 71, 72, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-21 is demonstrated by compliance with Specific Conditions 65, 68, 70, 71,



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72, 74, and the reporting required in Plantwide Condition No. 7. Compliance with the emission limits for SN-27 is demonstrated by compliance with Specific Conditions 66, 70, and 71. Compliance with the emission limits for SN-43 is demonstrated by compliance with Specific Condition 73. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
SN-14	KT LDAN Prill Tower	PM	44.2	*
SN-15	KT Plant Dryer/Cooler	NH <sub>3</sub>	18.0	75.6
		PM	17.0	*
SN-18	KT Plant Clay Baghouse	PM	1.0	*
SN-21	KT Plant Brinks Scrubber	NH <sub>3</sub>	30.0	126.0
		PM	3.0	*
SN-27	KT Plant LDAN Loading	PM	0.6	2.6
SN-43	KT Plant Cooling Tower	PM	0.4	1.4

\* - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No.7

65. The permittee shall not exceed 5% opacity from SN-18, 10% opacity from SN-21, and 15% opacity from SN-14, as measured by EPA Reference Method No. 9. Compliance with the opacity limits set forth in this Specific Condition will be shown by compliance with Specific Condition No. 67. [Regulation 18 18.501 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
66. The permittee shall not exceed 20% opacity from SN-15 as measured by EPA Reference Method No. 9, and 25% opacity from SN-27 as measured by EPA Reference Method No. 9. Compliance with the opacity limits set forth in this Specific Condition will be shown by compliance with Specific Condition No. 67. [Regulation 1919.503 and 40 CFR 52, Subpart E]
67. Daily observations of the opacity from SN-14, SN-15, SN-18, SN-21, and SN-27 shall be conducted by a person trained, but not necessarily certified, in EPA Reference Method 9. If emissions which appear to be in excess of the permitted level are observed, the permittee shall take immediate action to identify and correct the cause of the visible emissions. After corrective action has been taken, which may include shutting down and restarting the unit, the permittee shall conduct another observation of the opacity from this source. If the opacity observed does not appear to be in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted

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opacity limit. If visible emissions which appear to be in excess of the permitted level are still observed, a 6-minute visible emissions reading shall be conducted by a person certified in EPA Reference Method 9 to determine if the opacity is less than the permitted level. If the opacity observed is not in excess of the permitted level, then no further action is needed, and the permittee will be considered in compliance with the permitted opacity limit and 19.705 of Regulation #19. If no Method 9 reading is conducted despite emissions appearing to be in excess of the permitted level after corrective action has been taken, the permittee shall be considered out of compliance with the permitted opacity limit and 19.705 of Regulation #19 for that day. The permittee shall maintain records which contain the following items in order to demonstrate compliance with this specific condition. These records shall be updated daily, kept on site, and made available to Department personnel upon request.

- a. The date and time of the observation.
- b. If visible emissions which appeared to be above the permitted limit were detected.
- c. If visible emissions which appeared to be above the permitted limit were detected, the cause of the exceedance of the opacity limit, the corrective action taken, and if the visible emissions appeared to be below the permitted limit after the corrective action was taken.
- d. The name of the person conducting the opacity observations. For observations made on weekends or holidays, the report may be prepared by a member of the environmental compliance staff who may not have actually observed the emissions. This report will be based upon an interview with the person who actually observed the emissions conducted by a member of the environmental compliance staff who is certified in EPA Reference Method 9. This report must be completed on or before the next business day.

[Regulation 18 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, Regulation 19 19.705 and 40 CFR Part 52 Subpart E]

68. The permittee shall have a third party annually stack test the PM<sub>10</sub> emissions from SN-14 using a method approved in advance by the Department and the permittee shall maintain the approved method with the permit. The permittee shall have a third party stack test once every five years the PM<sub>10</sub> emissions from SN-15 using EPA Reference Method 5 with the inclusion of back-half sampling train for particulate. The permittee shall have a third party stack test once every five year for the PM<sub>10</sub> emissions from SN-21 using a method approved in advance by the Department and the permittee shall maintain the approved method with the permit. PM<sub>10</sub> emission rates measured during this testing shall be less than the permitted emission rates specified in Specific Condition No. 63. For SN-14, if the stack test passes three consecutive years of annual testing, the permittee shall stack test once every three years. Upon failure of a stack test, the permittee shall stack test annually until

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three consecutive years yield results less than the permitted emission rates specified in Specific Condition 63. For SN-15 and SN-21, upon failure of a stack test, the permittee shall stack test annually until two consecutive years yield results less than the permitted emission rates. By using EPA Reference Method 5 with inclusion of back-half sampling train for particulate, the permittee will assume all collected particulate is PM<sub>10</sub>. These units shall be operated at 90% or more of rated capacity when the stack tests are performed. For SN-14, SN-15, and SN-21, 90% of rated capacity is defined as:

- a. 90% of the rated capacity of the prill tower on an ammonium nitrate production basis.
- b. The product exit temperature at the prill tower at the time of the test must be less than 180°F.
- c. The moisture content of the product exiting the dryer must be less than 0.1%.

[Regulation 19 19.702 and 40 CFR Part 52, Subpart E]

69. The permittee shall have a third party annually stack test the NH<sub>3</sub> emissions from SN-21 using a method approved in advance by the Department to capture ammonia, and the NH<sub>3</sub> emissions shall be less than the permitted emission rates specified in Specific Condition No. 64. The permittee shall maintain the approved method with the permit. The permittee shall have a third party stack test once every five years the NH<sub>3</sub> emissions from SN-15 using a EPA Method 5 modified to simultaneously capture ammonia, and the NH<sub>3</sub> emissions shall be less than the permitted emission rates specified in Specific Condition No. 64. For SN-21, if the stack tests pass three consecutive years of annual testing, the permittee shall perform stack test once every three years. Upon failure of a stack test, the permittee shall stack test annually until three consecutive years yield results less than the permitted emission rates. For SN-15, upon failure of a stack test, the permittee shall stack test annually until two consecutive years are less than the permitted emission rates specified in Specific Condition No. 64. The units shall be operated at 90% or more of rated capacity when the stack tests are performed. The 90% of rated capacity is defined as:
- a. For SN-15, 90% of the rated capacity during NH<sub>3</sub> testing is defined as:
    - i. 90% of the rated capacity of the prill tower on an ammonium nitrate production basis.
    - ii. The product exit temperature at the prill tower at the time of the test must be less than 180°F.
    - iii. The moisture content of the product exiting the dryer must be less than 0.1%.
  - b. For SN-21, 90% of rated capacity during NH<sub>3</sub> testing is defined as:
    - i. 90% of the rated capacity of the prill tower on an ammonium nitrate production basis.

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- ii. Maximum input rate to dehydrator (i.e. ammonium nitrate solution) is 105 gpm; therefore, 90% would be 94.5 gpm.
- iii. The product exit temperature at the prill tower at the time of the test must be less than 180<sup>o</sup>F.
- iv. The moisture content of the product exiting the dryer must be less than 0.1%.

[Regulation 18 18.1002 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

- 70. The permittee shall not manufacture in excess of 252,000 tons of ammonium nitrate per rolling 12 month total through the KT Ammonium Nitrate Plant. [Regulation 19 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]
- 71. The permittee shall keep records of the ammonium nitrate production manufactured in the KT Ammonium Nitrate Plant. These records shall contain each month's total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19 19.705 and 40 CFR Part 52, Subpart E]
- 72. The KT brinks scrubber, the KT Plant Dryer/Cooler Scrubber, and the KT Plant Clay Baghouse shall be kept in good working condition at all times and shall meet the conditions shown in the following table when the plant is operating. The monitoring parameters for SN-15, and SN-18, and SN-21 shall be measured and recorded daily. All hourly data recorded during a calendar day shall be averaged to demonstrate compliance with the daily limit. A valid daily period is defined as the period from 12 a.m. to 12 a.m. where at least 67% of the data or at least 16 hourly readings collected in the 24-hour period when the plant is operating must be recorded. All data recorded every 4 hours when the plant is operating shall be averaged to demonstrate compliance with the daily limit. In the event that a daily parameter is outside the range, the permittee shall take immediate action to identify the cause of the parameter to be outside the range, implement corrective action, and document that the parameter was back inside the range following corrective action. The results shall be kept on site and be available to Department personnel upon request. The permittee shall submit a summary of data including all information as required in the General Provision #8 if applicable.

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SN	Description	Parameter	Units	Operation Limits
15	KT Plant Dryer/Cooler Scrubber	Scrubber Liquor pH	-	0.5 – 4.5
		Liquid Flow Rate (combination of fan and ductwork)	gal/min	80 (minimum)
		Amperage	amps	290 (minimum)
18	KT Plant Baghouse	Gas Pressure Drop	in. H <sub>2</sub> O	0.5 - 8.0
21	KT Brinks Scrubber	Liquid Gas Pressure to Top Spray Nozzles	psig	80 - 100
		Gas Pressure Drop Across Unit	in. H <sub>2</sub> O	2.5 (minimum)
		pH	-	0.5 – 4.5

[Regulation 18 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

73. The permittee shall test and record the total dissolved solids of the cooling water on a weekly basis when SN-43 is operating. Results less than 1,560 ppm total dissolved solids will demonstrate compliance with SN-43's requirements in Specific Conditions No. 63 and 64. The results shall be kept on site and made available to Department personnel upon request. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR Part 52, Subpart E]
74. The permittee shall calculate PM<sub>10</sub> emissions for Plantwide Condition #7 from the KT LDAN Prill Tower (SN-14), the KT Plant Dryer/Cooler (SN-15), and the KT Plant Brinks Scrubber (SN-21) using a total emission factor of 1.13 lb of PM<sub>10</sub> per ton of ammonium nitrate produced at the KT Plant. These records shall be updated by the fifteenth of the month following the month which the records represent. These records shall be kept on site and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19 19.705 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

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**SN-16A and SN-16B  
 Natural Gas Fired Boilers**

**Process Description**

Boilers No. 2 (SN-16A) and No. 4 (SN-16B) are used to supply steam throughout the various plants at the facility. Both units are fired only with natural gas and each has a design heat input of 145 million Btu per hour. One boiler can provide steam adequately for the entire facility and only one boiler is allowed to be in operation per the netting this facility underwent in 1990 to avoid PSD (except when they are being switched). It requires about 24 hours for an inactive boiler to warm-up and to take the plant loads. Both boilers will be operated during these switching periods.

Since the boilers at this facility were constructed in 1944, New Source Performance Standards 40 CFR 60 Subparts D, Da, Db, and Dc are not applicable.

**Specific Conditions**

75. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rate limits are based on engineering estimates and the maximum capacity of each boiler and the tons per year emission rate limits are based on the maximum capacity of one boiler. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 77. [Regulation 19 19.501 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
SN-16A	Boiler No. 2	PM <sub>10</sub>	1.1	*
		SO <sub>2</sub>	0.1	0.4
		VOC	0.8	3.5
		CO	12.0	52.3
		NO <sub>x</sub>	39.8	174.2
SN-16B	Boiler No. 4	PM <sub>10</sub>	1.1	
		SO <sub>2</sub>	0.1	
		VOC	0.8	
		CO	12.0	
		NO <sub>x</sub>	39.8	

( - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No.7

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76. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rate limits are based on engineering estimates and the maximum capacity of each boiler and the tons per year emission rate limits are based on maximum capacity of one boiler. Compliance with this Specific Condition is demonstrated by compliance with Specific Conditions No. 82. [Regulation 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
SN-16A	Boiler No. 2	PM	1.1	*
		<i>Hexane</i>	0.3	1.2
SN-16B	Boiler No. 4	PM	1.1	
		<i>Hexane</i>	0.3	

\* - included in a plantwide limit of 281.0 tpy shown in Plantwide Condition No. 7

77. The permittee shall keep records of the operating hours when both boilers are operating. The permittee shall not operate the two (2) boilers simultaneously for more than 240 hours per year. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No.7. [Regulation 19 19.705 and 40 CFR Part 52, Subpart E]

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**SN-25  
Gasoline Storage Tank**

**Process Description**

This 2,000 gallon aboveground storage tank (SN-25) is used to fuel facility vehicles and equipment.

**Specific Conditions**

78. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Conditions No. 79 and 80. [Regulation 19 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]

SN	Description	Pollutant	lb/hr	tpy
25	Gasoline Storage Tank (2000 Gallon)	VOC	16.9	1.0

79. The permittee shall not use in excess of 40,000 gallons of gasoline per rolling 12 month total. [Regulation 19 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311 and 40 CFR 70.6]
80. The permittee shall keep records of the gasoline usage through the gasoline storage tank. These records shall contain each month's total and a rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent, shall be kept on site, and shall be made available to Department personnel upon request. This information shall be submitted in accordance with General Provision No. 7. [Regulation 19 19.705 and 40 CFR 52, Subpart E]



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**SN-26**  
**Ammonium Nitrate (90% Solution) Storage Tanks**

**Process Description**

Six above ground storage tanks (SN-26) are used to store 90% ammonium nitrate solution for prilling operations. Air emissions occur due to steam line heaters degrading the ammonium nitrate solution to ammonia.

**Specific Conditions**

81. The permittee shall not exceed the emission rates set forth in the following table. The pound per hour emission rate limit is based on maximum capacity and tons per year emission rate limits are based on compliance with Specific Conditions No. 57 and 58. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
26	Ammonium Nitrate Storage Tanks	NH <sub>3</sub>	1.6	0.9

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**SN-31**  
**Frick Ammonia Compressors**

**Process Description**

Non-stack emissions occur from the handling of ammonia in the Frick Compressor Building (SN-31).

**Specific Conditions**

82. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on maximum capacity. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
31	Frick Ammonia Compressors	NH <sub>3</sub>	0.5	2.0

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**SN-32**  
**Ammonia Storage/Distribution Losses**

**Process Description**

Non-Stack emissions are released from compressor, pumps, flanges, and valves in the ammonia storage and distribution systems (SN-32).

**Specific Conditions**

83. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on maximum capacity. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
32	Ammonia Storage/Distribution Losses	NH <sub>3</sub>	1.3	5.7

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**SN-34  
 E2 Plant Solution Reactor**

**Process Description**

A 35% E2 solution is created by reacting weak nitric acid with magnesium oxide through agitation. Approximately 0.5% of the magnesium nitrate is contained in the final ammonium nitrate product. The solution reactor (SN-34) has the capability of producing seven batches of E2 solution a day while the Ammonium Nitrate Plant is running at its maximum rate.

**Specific Conditions**

84. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rate limits are based on maximum capacity. The tons per year emission rate limits are based on yearly throughput through the E2 Ammonium Nitrate Plant. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition Nos. 57 and 58. [Regulation 19 19.501 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
SN-34	E2 Plant Solution Reactor	PM <sub>10</sub>	0.9	3.0

85. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour emission rate limit is based on maximum capacity. Tons per year emission rate limits are based on yearly throughput through the E2 Ammonium Nitrate Plant. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition Nos. 57 and 58. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
SN-34	E2 Plant Solution Reactor	PM	0.9	3.0

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**SN-35  
 Magnesium Oxide Silo Baghouse**

**Process Description**

The magnesium oxide silo baghouse (SN-35) pneumatically receives magnesium oxide powder from semi-truck transport or railcar. The baghouse is situated on top of the silo structure which is approximately 50 feet tall.

**Specific Conditions**

86. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on yearly throughput through the E2 Ammonium Nitrate Plant as limited by Specific Condition Nos. 57 and 58. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition No. 63. [Regulation 19 19.501 and 40 CFR Part 52, Subpart E]

SN	Description	Pollutant	lb/hr	tpy
SN-35	Magnesium Oxide Silo Baghouse	PM <sub>10</sub>	2.0	8.8

87. The permittee shall not exceed the emission rates set forth in the following table. The pounds per hour and tons per year emission rate limits are based on yearly throughput through the E2 Ammonium Nitrate Plant as limited by Specific Condition No. 57. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition No. 58. [Regulation 18.801 and A.C.A. 8-4-203.as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
SN-35	Magnesium Oxide Silo Baghouse	PM	2.0	8.8

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### SN-40 Ammonium Nitrate Solution Loading

#### Process Description

Ammonium nitrate solution is shipped to customers via railcars or trucks. The content of the solution ranges from 83% to 90% ammonium nitrate. Ammonium emissions occur as a result of the loading of the trucks.

#### Specific Conditions

88. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition Nos. 89 and 90. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

SN	Description	Air Contaminant	lb/hr	tpy
SN-40	Ammonium Nitrate Solution Loading	NH <sub>3</sub>	3.8	1.4

89. The permittee shall not load more than 468,660 tons per rolling 12 month total of ammonium nitrate solution into railcars and/or trucks. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]
90. The permittee shall keep records of the amount of ammonium nitrate solution loaded into railcars and/or trucks. These records shall contain each month's total and the rolling total for the previous 12 months. These records shall be updated by the fifteenth of the month following the month which the records represent. These records shall be kept on site, made available to the Department personnel upon request, and submitted in accordance with General Provision No.7. [Regulation 18, 18.1004 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

### SN-44 Mixed Acid Plant Scrubber

#### Process Description

The Mixed Acid Plant manufactures mixed acid by mixing 15% - 65% Oleum and/or 98% Sulfuric Acid with 98% Nitric acid. Emissions from SN-44 are controlled by a scrubber.

#### Specific Conditions

91. The permittee shall not exceed the emission rates set forth in the following table. The permittee shall demonstrate compliance with this condition through compliance with Specific Conditions # 93 - 98. [Regulation 19, §19.501 et seq., and 40 CFR Part 52, Subpart E]

Pollutant	lb/hr	tpy
SO <sub>2</sub>	1.5	6.4
NO <sub>x</sub>	0.4	1.7

92. The permittee shall not exceed the emission rates set forth in the following table. Compliance with this Specific Condition shall be demonstrated by compliance with Specific Condition Nos. 93 - 98. [Regulation 18 18.801 and A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311]

Pollutant	lb/hr	tpy
HNO <sub>3</sub>	0.2	0.9
H <sub>2</sub> SO <sub>4</sub>	1.5	6.4

93. The permittee shall offload no more than 394,200 tons of Oleum into the Oleum Storage Tank per consecutive 12 month period. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR 70.6]
94. The permittee shall not use Oleum in excess of 65% in strength. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR 70.6]
95. The permittee shall not produce more than 219,000 tons of mixed acid per consecutive 12 month period. [Regulation 19, 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR 70.6]

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96. The permittee shall maintain monthly records of the amount of Oleum offloaded into the Oleum Storage Tank, the percent strength of the Oleum, and the amount of mixed acid produced. These records shall be updated on monthly basis, kept on site, and made available to Department personnel upon request. An annual total and each month's individual total shall be submitted to the Department in accordance with General Provision 7. [Regulation No. 19 19.705, A.C.A. 8-4-203 as referenced by 8-4-304 and 8-4-311, and 40 CFR 70.6]
97. The permittee shall have a third party stack test SN-44 once every five years for HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, SO<sub>2</sub>, and NO<sub>x</sub> emissions using an approved method, and the emissions shall be less than the hourly limit specified in Specific Conditions 91 and 92. Upon failure of a stack test, the permittee shall stack test annually until two consecutive years are below the permitted emission rates. During stack testing, the mixed acid plant shall be operating at a rate greater than or equal to 90% capacity. [Regulation 19, 19.702 and 40 CFR Part 52, Subpart E]
98. The Mixed Acid Scrubber shall be kept in good working condition at all times. The following monitoring parameters for SN-44 shall be measured and recorded daily. All hourly data recorded during a calendar day shall be averaged to demonstrate compliance with the daily limit. A valid daily period is defined as the period from 12 a.m. to 12 a.m. where at least 67% of the data or at least 16 hourly readings collected in the 24-hour period when the plant is operating must be recorded. All data recorded once per 12-hour shift when the plant is operating shall be averaged to demonstrate compliance with the daily limit. In the event that a daily parameter is outside the range, the permittee shall take immediate action to identify the cause of the parameter to be outside the range, implement corrective action, and document that the parameter was back inside the range following corrective action. The results shall be kept on site and made available to Department personnel upon request. [Regulation 18, §18.1004 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

SN	Description	Parameter	Units	Operation Limits
44	Mixed Acid Plant Scrubber	Scrubber Liquid Flow Rate	gal/min	5.0 (minimum)
		Gas Pressure Drop Across Unit	in. H <sub>2</sub> O	10 - 35
		Scrubber liquid pH	-	0.5 - 7.5



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## **SECTION V: COMPLIANCE PLAN AND SCHEDULE**

El Dorado Chemical Company (EDCC) will continue to operate in compliance with those identified regulatory provisions. The facility will examine and analyze future regulations that may apply and determine their applicability with any necessary action taken on a timely basis.

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## SECTION VI: PLANTWIDE CONDITIONS

1. The permittee must notify the Director in writing within thirty (30) days after commencing construction, completing construction, first placing the equipment and/or facility in operation, and reaching the equipment and/or facility target production rate. [Regulation 19, §19.704, 40 CFR Part 52, Subpart E, and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
2. The Director may cancel all or part of this permit if the construction or modification authorized herein is not begun within 18 months from the date of the permit issuance or if the work involved in the construction or modification is suspended for a total of 18 months or more. [Regulation 19, §19.410(B) and 40 CFR Part 52, Subpart E]
3. The permittee must test any equipment scheduled for testing, unless stated in the Specific Conditions of this permit or by any federally regulated requirements, within the following time frames: (1) new equipment or newly modified equipment within sixty (60) days of achieving the maximum production rate, but no later than 180 days after initial start up of the permitted source or (2) operating equipment according to the time frames set forth by the Department or within 180 days of permit issuance if no date is specified. The permittee must notify the Department of the scheduled date of compliance testing at least fifteen (15) days in advance of such test. The permittee shall submit the compliance test results to the Department within thirty (30) days after completing the testing. [Regulation 19, §19.702 and/or Regulation 18 §18.1002 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
4. The permittee must provide: [Regulation 19, §19.702 and/or Regulation 18, §18.1002 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
  - a. Sampling ports adequate for applicable test methods;
  - b. Safe sampling platforms;
  - c. Safe access to sampling platforms; and
  - d. Utilities for sampling and testing equipment.
5. The permittee must operate the equipment, control apparatus and emission monitoring equipment within the design limitations. The permittee shall maintain the equipment in good condition at all times. [Regulation 19, §19.303 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
6. This permit subsumes and incorporates all previously issued air permits for this facility. [Regulation 26 and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

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7. The permittee must complete a monthly production/emission inventory spreadsheet for particulate emissions from sources SN-05, SN-06, SN-14, SN-15, SN-16A/B, SN-18, SN-19, and SN-21 (those listed in the permit in 1989) in order to keep track of the monthly particulate emissions from these sources. The permittee shall not exceed the 12 month rolling total of 281 tons that was accepted for PSD offsetting in 1989. The Plantwide PM limit of 281.0 ton/year does not include the quantity of condensable particulate measured through the back-half sampling train procedure of EPA Reference Method 5. An exceedance of this 12 month rate shall constitute a violation of PSD regulations. The permittee shall notify this Department immediately if the 12 month rolling total limit is exceeded. [Regulation 19, 19.901 et seq., and 40 CFR Part 52, Subpart E]
8. The permittee must submit a 12 month summary of the monthly particulate emissions in accordance with General Provision No. 7. [Regulation 19, 19.901 et seq., and 40 CFR Part 52, Subpart E]
9. The permittee shall prepare and implement a Startup, Shutdown, and Malfunction Plan for SN-07, SN-08, SN-09, SN-22, SN-13, and SN-41 within 180 days after the issuance of Air Permit 573-AOP-R8. If the Department requests a review of the SSM, the permittee will make the SSM available for review. The permittee must keep a copy of the SSM at the source's location and retain all previous versions of the SSM plan for five years. The SSMP shall include requirements to record any downtime, malfunction, startup, or shutdown. Any deviations from a permit requirement shall be reported to the Department in accordance with General Provision #8 with the exception that exceedances to which procedures exist in the SSM Plan may be reported as part of the semi-annual reporting. The Department reserves the right to review any such exceedances in accordance with provisions of §19.601. [Regulation No. 18, §18.801, §18.1004, Regulation No. 19 §19.601 and A.C.A. §8-4-203 as referenced by §8-4-304 and §8-4-311]

#### PERMIT SHIELD LANGUAGE

10. Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements, as of the date of permit issuance, included in and specifically identified in item A of this condition:
  - A. The following have been specifically identified as applicable requirements based upon information submitted by the permittee in an application dated June 11, 2007 and a later addendum dated September 14, 2007.

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Source No.	Regulation	Description
Facility	Arkansas Regulation 19	Compilation of Regulations of the Arkansas State Implementation Plan for Air Pollution Control
Facility	Arkansas Regulation 26	Regulations of the Arkansas Operating Air Permit Program
SN-13	NSPS 40 CFR Subpart G	New Source Performance Standard for Nitric Acid Plants
SN-07	NSPS 40 CFR Subpart H	New Source Performance Standard for Sulfuric Acid Plants
Facility	40 CFR 52.21	Prevention of Significant Deterioration*

\* - The facility had a significant increase of nitrogen oxides and particulate emissions where restrictions in operations were taken to avoid a Anet emissions increase@ when Permit No. 0573-AR-4 was issued. The facility had a significant increase of nitrogen oxide emissions when Permit No. 0573-AR-7 was issued where restrictions in operations were taken to avoid a Anet emissions increase@. There has not been a significant increase for any pollutant during the history of the facility that has not been Anetted out@.

B. The following requirements have been specifically identified as not applicable, based upon information submitted by the permittee in an application dated June 11, 2007.

Description of Regulation	Regulatory Citation	Affected Source	Basis for Determination
New Source Performance Standard for Nitric Acid Plants	NSPS 40 CFR Subpart G	SN-08 SN-09	Built prior to August 17, 1971
New Source Performance Standard for Nitric Acid Plants	NSPS 40 CFR Subpart G	SN-22	Produces nitric acid at greater than 70% concentration
Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971	NSPS 40 CFR Subpart D	SN-16A SN-16B	Built prior to August 17, 1971
Standards of Performance for Electricity Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978	NSPS 40 CFR Subpart Da	SN-16A SN-16B	Built prior to September 18, 1978
Standards of Performance for Industrial-Commercial-Institutional Steam	NSPS 40 CFR Subpart Db	SN-16A SN-16B	Built prior to June 19, 1984

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Description of Regulation	Regulatory Citation	Affected Source	Basis for Determination
Generating Units			
Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	NSPS 40 CFR Subpart Dc	SN-16A SN-16B	Built prior to June 9, 1989
New Source Performance Standards for Storage Vessels for Petroleum Liquids	NSPS 40 CFR Subpart K	Facility	No storage tanks have a capacity greater than 40,000 gallons
New Source Performance Standards for Storage Vessels for Petroleum Liquids	NSPS 40 CFR Subpart Ka	Facility	No storage tanks have a capacity greater than 40,000 gallons
New Source Performance Standards for Volatile Organic Liquid Storage Vessels	NSPS 40 CFR Subpart Kb	Facility	No storage tanks have a capacity greater than 75 m <sup>3</sup> .
National Emission Standards for Hazardous Air Pollutants	NESHAP 40 CFR 63	Facility	None of the specified HAPs are manufactured, processed, or used.
National Emission Standards for Hazardous Air Pollutants	NESHAP 40 CFR 63	Facility	No currently established NESHAPs for the chemicals manufactured.

C. Nothing shall alter or affect the following:

Provisions of Section 303 of the Clean Air Act;

The liability of an owner or operator for any violation of applicable requirements prior to or at the time of permit issuance;

The applicable requirements of the acid rain program, consistent with section 408(a) of the Clean Air Act; or

The ability of the EPA to obtain information under Section 114 of the Clean Air Act.

**Title VI Provisions**

11. The permittee shall comply with the standards for labeling of products using ozone depleting substances. [40 CFR Part 82, Subpart E]

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- a. All containers containing a class I or class II substance stored or transported, all products containing a class I substance, and all products directly manufactured with a class I substance must bear the required warning statement if it is being introduced to interstate commerce pursuant to 82.106.
  - b. The placement of the required warning statement must comply with the requirements pursuant to 82.108.
  - c. The form of the label bearing the required warning must comply with the requirements pursuant to 82.110.
  - d. No person may modify, remove, or interfere with the required warning statement except as described in 82.112.
12. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F, except as provided for MVACs in Subpart B:
- a. Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 82.156.
  - b. Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 82.158.
  - c. Persons performing maintenance, service repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 82.161.
  - d. Persons disposing of small appliances, MVACs, and MVAC-like appliances must comply with record keeping requirements pursuant to 82.166. (“MVAC-like appliance” as defined at 82.152.)
  - e. Persons owning commercial or industrial process refrigeration equipment must comply with leak repair requirements pursuant to 82.156.
  - f. Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep records of refrigerant purchased and added to such appliances pursuant to 82.166.
13. If the permittee manufactures, transforms, destroys, imports, or exports a class I or class II substance, the permittee is subject to all requirements as specified in 40 CFR Part 82, Subpart A, Production and Consumption Controls.
14. If the permittee performs a service on motor (fleet) vehicles when this service involves ozone-depleting substance refrigerant (or regulated substitute substance) in the motor vehicle air conditioner (MVAC), the permittee is subject to all the applicable requirements as specified in 40 CFR part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners.

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The term “motor vehicle” as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed. The term “MVAC” as used in Subpart B does not include the air-tight sealed refrigeration system used as refrigerated cargo, or the system used on passenger buses using HCFC-22 refrigerant.

15. The permittee shall be allowed to switch from any ozone-depleting substance to any alternative that is listed in the Significant New Alternatives Program (SNAP) promulgated pursuant to 40 CFR Part 82, Subpart G, Significant New Alternatives Policy Program.

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### SECTION VII: INSIGNIFICANT ACTIVITIES

The following sources are insignificant activities. Any activity that has a state or federal applicable requirement shall be considered a significant activity even if this activity meets the criteria of §26.304 of Regulation 26 or listed in the table below. Insignificant activity determinations rely upon the information submitted by the permittee in an application dated June 11, 2007.

Source No.	Description	Category
SN-23	Molten Sulfur Storage Tank	Insignificant Source - Group B21
SN-24	Diesel Storage Tank (500 Gallon)	Insignificant Source - Group A3
SN-36	Diesel Storage Tank (500 Gallon)	Insignificant Source - Group A3
SN-45	Diesel Storage Tank (2,000 Gallon)	Insignificant Source - Group A3
-	80 HP Emergency Fire Pump Engine	Insignificant Source - Group A 13
-	Ammonia Flare	Insignificant Source - Group A 13
-	Air Liquide Cooling Tower	Insignificant Source - Group A 13
-	Sulfur Unloading/Storage	Insignificant Source - Group A 13



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### **SECTION VIII: GENERAL PROVISIONS**

- 1) Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 et seq.) as the sole origin of and authority for the terms or conditions are not required under the Clean Air Act or any of its applicable requirements, and are not federally enforceable under the Clean Air Act. Arkansas Pollution Control & Ecology Commission Regulation 18 was adopted pursuant to the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 et seq.). Any terms or conditions included in this permit which specify and reference Arkansas Pollution Control & Ecology Commission Regulation 18 or the Arkansas Water and Air Pollution Control Act (A.C.A. §8-4-101 et seq.) as the origin of and authority for the terms or conditions are enforceable under this Arkansas statute. [40 CFR 70.6(b)(2)]
- 2) This permit shall be valid for a period of five (5) years beginning on the date this permit becomes effective and ending five (5) years later. [40 CFR 70.6(a)(2) and §26.701(B) of the Regulations of the Arkansas Operating Air Permit Program (Regulation 26), effective August 10, 2000]
- 3) The permittee must submit a complete application for permit renewal at least six (6) months before permit expiration. Permit expiration terminates the permittee's right to operate unless the permittee submitted a complete renewal application at least six (6) months before permit expiration. If the permittee submits a complete application, the existing permit will remain in effect until the Department takes final action on the renewal application. The Department will not necessarily notify the permittee when the permit renewal application is due. [Regulation 26, §26.406]
- 4) Where an applicable requirement of the Clean Air Act, as amended, 42 U.S.C. 7401, et seq. (Act) is more stringent than an applicable requirement of regulations promulgated under Title IV of the Act, the permit incorporates both provisions into the permit, and the Director or the Administrator can enforce both provisions. [40 CFR 70.6(a)(1)(ii) and Regulation 26, §26.701(A)(2)]
- 5) The permittee must maintain the following records of monitoring information as required by this permit. [40 CFR 70.6(a)(3)(ii)(A) and Regulation 26, §26.701(C)(2)]
  - a. The date, place as defined in this permit, and time of sampling or measurements;
  - b. The date(s) analyses performed;
  - c. The company or entity performing the analyses;
  - d. The analytical techniques or methods used;

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- e. The results of such analyses; and
  - f. The operating conditions existing at the time of sampling or measurement.
- 6) The permittee must retain the records of all required monitoring data and support information for at least five (5) years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. [40 CFR 70.6(a)(3)(ii)(B) and Regulation 26, §26.701(C)(2)(b)]
- 7) The permittee must submit reports of all required monitoring every six (6) months. If permit establishes no other reporting period, the reporting period shall end on the last day of the anniversary month of the initial Title V permit. The report is due within thirty (30) days of the end of the reporting period. Although the reports are due every six months, each report shall contain a full year of data. The report must clearly identify all instances of deviations from permit requirements. A responsible official as defined in Regulation No. 26, §26.2 must certify all required reports. The permittee will send the reports to the address below: [40 C.F.R. 70.6(a)(3)(iii)(A) and Regulation 26, §26.701(C)(3)(a)]

Arkansas Department of Environmental Quality  
Air Division  
ATTN: Compliance Inspector Supervisor  
5301 Northshore Drive  
North Little Rock, AR 72118

- 8) The permittee will report to the Department all deviations from permit requirements, including those attributable to upset conditions as defined in the permit.
- a) For all upset conditions (as defined in Regulation 19.601), the permittee will make an initial report to the Department by the next business day after the discovery of the occurrence. The initial report may be made by telephone and shall include:
    - i. The facility name and location
    - ii. The process unit or emission source deviating from the permit limit,
    - iii. The permit limit, including the identification of pollutants, from which deviation occurs,
    - iv. The date and time the deviation started,
    - v. The duration of the deviation,
    - vi. The average emissions during the deviation,
    - vii. The probable cause of such deviations,

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- viii. Any corrective actions or preventive measures taken or being taken to prevent such deviations in the future, and
- ix. The name of the person submitting the report.

The permittee shall make a full report in writing to the Department within five (5) business days of discovery of the occurrence. The report must include, in addition to the information required by the initial report, a schedule of actions taken or planned to eliminate future occurrences and/or to minimize the amount the permit's limits were exceeded and to reduce the length of time the limits were exceeded. The permittee may submit a full report in writing (by facsimile, overnight courier, or other means) by the next business day after discovery of the occurrence, and the report will serve as both the initial report and full report.

- b. For all deviations, the permittee will report such events in semi-annual reporting and annual certifications required in this permit. This includes all upset conditions reported in 8a. above. The semi-annual report must include all the information as required in the initial and full report required in 8a.

[40 CFR 70.6(a)(3)(iii)(B), Regulation 26, §26.701(C)(3)(b), Regulation 19, §19.601 and §19.602]

- 9) If any provision of the permit or the application thereof to any person or circumstance is held invalid, such invalidity will not affect other provisions or applications hereof which can be given effect without the invalid provision or application, and to this end, provisions of this Regulation are declared to be separable and severable. [40 CFR 70.6(a)(5), Regulation 26, §26.701(E), and A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]
- 10) The permittee must comply with all conditions of this Part 70 permit. Any permit noncompliance with applicable requirements as defined in Regulation 26 constitutes a violation of the Clean Air Act, as amended, 42 U.S.C. §7401, et seq. and is grounds for enforcement action; for permit termination, revocation and reissuance, for permit modification; or for denial of a permit renewal application. [40 CFR 70.6(a)(6)(i) and Regulation 26, §26.701(F)(1)]
- 11) It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit. [40 CFR 70.6(a)(6)(ii) and Regulation 26, §26.701(F)(2)]
- 12) The Department may modify, revoke, reopen and reissue the permit or terminate the permit for cause. The filing of a request by the permittee for a permit modification, revocation and

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- reissuance, termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [40 CFR 70.6(a)(6)(iii) and Regulation 26, §26.701(F)(3)]
- 13) This permit does not convey any property rights of any sort, or any exclusive privilege. [40 CFR 70.6(a)(6)(iv) and Regulation 26, §26.701(F)(4)]
  - 14) The permittee must furnish to the Director, within the time specified by the Director, any information that the Director may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee must also furnish to the Director copies of records required by the permit. For information the permittee claims confidentiality, the Department may require the permittee to furnish such records directly to the Director along with a claim of confidentiality. [40 CFR 70.6(a)(6)(v) and Regulation 26, §26.701(F)(5)]
  - 15) The permittee must pay all permit fees in accordance with the procedures established in Regulation 9. [40 CFR 70.6(a)(7) and Regulation 26, §26.701(G)]
  - 16) No permit revision shall be required, under any approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes provided for elsewhere in this permit. [40 CFR 70.6(a)(8) and Regulation 26, §26.701(H)]
  - 17) If the permit allows different operating scenarios, the permittee shall, contemporaneously with making a change from one operating scenario to another, record in a log at the permitted facility a record of the operational scenario. [40 CFR 70.6(a)(9)(i) and Regulation 26, §26.701(I)(1)]
  - 18) The Administrator and citizens may enforce under the Act all terms and conditions in this permit, including any provisions designed to limit a source's potential to emit, unless the Department specifically designates terms and conditions of the permit as being federally unenforceable under the Act or under any of its applicable requirements. [40 CFR 70.6(b) and Regulation 26, §26.702(A) and (B)]
  - 19) Any document (including reports) required by this permit must contain a certification by a responsible official as defined in Regulation 26, §26.2. [40 CFR 70.6(c)(1) and Regulation 26, §26.703(A)]
  - 20) The permittee must allow an authorized representative of the Department, upon presentation of credentials, to perform the following: [40 CFR 70.6(c)(2) and Regulation 26, §26.703(B)]

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- a. Enter upon the permittee's premises where the permitted source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records required under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
- d. As authorized by the Act, sample or monitor at reasonable times substances or parameters for assuring compliance with this permit or applicable requirements.

21) The permittee shall submit a compliance certification with the terms and conditions contained in the permit, including emission limitations, standards, or work practices. The permittee must submit the compliance certification annually within 30 days following the last day of the anniversary month of the initial Title V permit. The permittee must also submit the compliance certification to the Administrator as well as to the Department. All compliance certifications required by this permit must include the following: [40 CFR 70.6(c)(5) and Regulation 26, §26.703(E)(3)]

- a. The identification of each term or condition of the permit that is the basis of the certification;
- b. The compliance status;
- c. Whether compliance was continuous or intermittent;
- d. The method(s) used for determining the compliance status of the source, currently and over the reporting period established by the monitoring requirements of this permit;
- e. and such other facts as the Department may require elsewhere in this permit or by §114(a)(3) and §504(b) of the Act.

22) Nothing in this permit will alter or affect the following: [Regulation 26, §26.704(C)]

- a) The provisions of Section 303 of the Act (emergency orders), including the authority of the Administrator under that section;
- b) The liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance;
- c) The applicable requirements of the acid rain program, consistent with §408(a) of the Act or,
- d) The ability of EPA to obtain information from a source pursuant to §114 of the Act.

23) This permit authorizes only those pollutant emitting activities addressed in this permit. [A.C.A. §8-4-203 as referenced by A.C.A. §8-4-304 and §8-4-311]

## **Subpart G—Standards of Performance for Nitric Acid Plants**

### **§ 60.70 Applicability and designation of affected facility.**

- (a) The provisions of this subpart are applicable to each nitric acid production unit, which is the affected facility.
- (b) Any facility under paragraph (a) of this section that commences construction or modification after August 17, 1971, is subject to the requirements of this subpart.

[42 FR 37936, July 25, 1977]

### **§ 60.71 Definitions.**

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

- (a) *Nitric acid production unit* means any facility producing weak nitric acid by either the pressure or atmospheric pressure process.
- (b) *Weak nitric acid* means acid which is 30 to 70 percent in strength.

### **§ 60.72 Standard for nitrogen oxides.**

- (a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which:
- (1) Contain nitrogen oxides, expressed as NO<sub>2</sub>, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.
  - (2) Exhibit 10 percent opacity, or greater.

[39 FR 20794, June 14, 1974, as amended at 40 FR 46258, Oct. 6, 1975]

### **§ 60.73 Emission monitoring.**

- (a) The source owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system for measuring nitrogen oxides (NO<sub>x</sub>). The pollutant gas mixtures under Performance Specification 2 and for calibration checks under §60.13(d) of this part shall be nitrogen dioxide (NO<sub>2</sub>). The span value shall be 500 ppm of NO<sub>2</sub>. Method 7 shall be used for the performance evaluations under §60.13(c). Acceptable alternative methods to Method 7 are given in §60.74(c).
- (b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standard to units of the monitoring data, i.e., kg/metric ton per ppm (lb/ton per ppm). The conversion factor shall be reestablished during any performance test under §60.8 or any continuous monitoring system performance evaluation under §60.13(c).
- (c) The owner or operator shall record the daily production rate and hours of operation.
- (d) [Reserved]
- (e) For the purpose of reports required under §60.7(c), periods of excess emissions that shall be reported are defined as any 3-hour period during which the average nitrogen oxides emissions (arithmetic average of three contiguous 1-hour periods) as measured by a continuous monitoring system exceed the standard under §60.72(a).

[39 FR 20794, June 14, 1974, as amended at 40 FR 46258, Oct. 6, 1975; 50 FR 15894, Apr. 22, 1985; 54 FR 6666, Feb. 14, 1989]

#### **§ 60.74 Test methods and procedures.**

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b). Acceptable alternative methods and procedures are given in paragraph (c) of this section.

(b) The owner or operator shall determine compliance with the NO<sub>x</sub> standard in §60.72 as follows:

(1) The emission rate (E) of NO<sub>x</sub> shall be computed for each run using the following equation:

$$E=(C_s Q_{sd})/(P K)$$

where:

E=emission rate of NO<sub>x</sub> as NO<sub>2</sub>, kg/metric ton (lb/ton) of 100 percent nitric acid.

C<sub>s</sub>=concentration of NO<sub>x</sub> as NO<sub>2</sub>, g/dscm (lb/dscf).

Q<sub>sd</sub>=volumetric flow rate of effluent gas, dscm/hr (dscf/hr).

P=acid production rate, metric ton/hr (ton/hr) or 100 percent nitric acid.

K=conversion factor, 1000 g/kg (1.0 lb/lb).

(2) Method 7 shall be used to determine the NO<sub>x</sub> concentration of each grab sample. Method 1 shall be used to select the sampling site, and the sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Four grab samples shall be taken at approximately 15-minute intervals. The arithmetic mean of the four sample concentrations shall constitute the run value (C<sub>s</sub>).

(3) Method 2 shall be used to determine the volumetric flow rate (Q<sub>sd</sub>) of the effluent gas. The measurement site shall be the same as for the NO<sub>x</sub> sample. A velocity traverse shall be made once per run within the hour that the NO<sub>x</sub> samples are taken.

(4) The methods of §60.73(c) shall be used to determine the production rate (P) of 100 percent nitric acid for each run. Material balance over the production system shall be used to confirm the production rate.

(c) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

(1) For Method 7, Method 7A, 7B, 7C, or 7D may be used. If Method 7C or 7D is used, the sampling time shall be at least 1 hour.

(d) The owner or operator shall use the procedure in §60.73(b) to determine the conversion factor for converting the monitoring data to the units of the standard.

[54 FR 6666, Feb. 14, 1989]

# Arkansas Department of Environmental Quality



## CONTINUOUS EMISSION MONITORING SYSTEMS CONDITIONS

Revised August 2004



## PREAMBLE

These conditions are intended to outline the requirements for facilities required to operate Continuous Emission Monitoring Systems/Continuous Opacity Monitoring Systems (CEMS/COMS). Generally there are three types of sources required to operate CEMS/COMS:

1. CEMS/COMS required by 40 CFR Part 60 or 63,
2. CEMS required by 40 CFR Part 75,
3. CEMS/COMS required by ADEQ permit for reasons other than Part 60, 63 or 75.

These CEMS/COMS conditions are not intended to supercede Part 60, 63 or 75 requirements.

- Only CEMS/COMS in the third category (those required by ADEQ permit for reasons other than Part 60, 63, or 75) shall comply with SECTION II, MONITORING REQUIREMENTS and SECTION IV, QUALITY ASSURANCE/QUALITY CONTROL.
- All CEMS/COMS shall comply with Section III, NOTIFICATION AND RECORDKEEPING.

## SECTION I

### DEFINITIONS

**Continuous Emission Monitoring System (CEMS)** - The total equipment required for the determination of a gas concentration and/or emission rate so as to include sampling, analysis and recording of emission data.

**Continuous Opacity Monitoring System (COMS)** - The total equipment required for the determination of opacity as to include sampling, analysis and recording of emission data.

**Calibration Drift (CD)** - The difference in the CEMS output reading from the established reference value after a stated period of operation during which no unscheduled maintenance, repair, or adjustments took place.

**Back-up CEMS (Secondary CEMS)** - A CEMS with the ability to sample, analyze and record stack pollutant to determine gas concentration and/or emission rate. This CEMS is to serve as a back-up to the primary CEMS to minimize monitor downtime.

**Excess Emissions** - Any period in which the emissions exceed the permit limits.

**Monitor Downtime** - Any period during which the CEMS/COMS is unable to sample, analyze and record a minimum of four evenly spaced data points over an hour, except during one daily zero-span check during which two data points per hour are sufficient.

**Out-of-Control Period** - Begins with the time corresponding to the completion of the fifth, consecutive, daily CD check with a CD in excess of two times the allowable limit, or the time corresponding to the completion of the daily CD check preceding the daily CD check that results in a CD in excess of four times the allowable limit and the time corresponding to the completion of the sampling for the RATA, RAA, or CGA which exceeds the limits outlined in Section IV. Out-of-Control Period ends with the time corresponding to the completion of the CD check following corrective action with the results being within the allowable CD limit or the completion of the sampling of the subsequent successful RATA, RAA, or CGA.

**Primary CEMS** - The main reporting CEMS with the ability to sample, analyze, and record stack pollutant to determine gas concentration and/or emission rate.

**Relative Accuracy (RA)** - The absolute mean difference between the gas concentration or emission rate determined by the CEMS and the value determined by the reference method plus the 2.5 percent error confidence coefficient of a series of tests divided by the mean of the reference method tests of the applicable emission limit.

**Span Value** – The upper limit of a gas concentration measurement range.

## SECTION II

### MONITORING REQUIREMENTS

- A. For new sources, the installation date for the CEMS/COMS shall be no later than thirty (30) days from the date of start-up of the source.
- B. For existing sources, the installation date for the CEMS/COMS shall be no later than sixty (60) days from the issuance of the permit unless the permit requires a specific date.
- C. Within sixty (60) days of installation of a CEMS/COMS, a performance specification test (PST) must be completed. PST's are defined in 40 CFR, Part 60, Appendix B, PS 1-9. The Department may accept alternate PST's for pollutants not covered by Appendix B on a case-by-case basis. Alternate PST's shall be approved, in writing, by the ADEQ CEM Coordinator prior to testing.
- D. Each CEMS/COMS shall have, as a minimum, a daily zero-span check. The zero-span shall be adjusted whenever the 24-hour zero or 24-hour span drift exceeds two times the limits in the applicable performance specification in 40 CFR, Part 60, Appendix B. Before any adjustments are made to either the zero or span drifts measured at the 24-hour interval the excess zero and span drifts measured must be quantified and recorded.
- E. All CEMS/COMS shall be in continuous operation and shall meet minimum frequency of operation requirements of 95% up-time for each quarter for each pollutant measured. Percent of monitor down-time is calculated by dividing the total minutes the monitor is not in operation by the total time in the calendar quarter and multiplying by one hundred. Failure to maintain operation time shall constitute a violation of the CEMS conditions.
- F. Percent of excess emissions are calculated by dividing the total minutes of excess emissions by the total time the source operated and multiplying by one hundred. Failure to maintain compliance may constitute a violation of the CEMS conditions.
- G. All CEMS measuring emissions shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive fifteen minute period unless more cycles are required by the permit. For each CEMS, one-hour averages shall be computed from four or more data points equally spaced over each one hour period unless more data points are required by the permit.
- H. All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.
- I. When the pollutant from a single affected facility is released through more than one point, a CEMS/COMS shall be installed on each point unless installation of fewer systems is approved, in writing, by the ADEQ CEM Coordinator. When more than one CEM/COM is used to monitor emissions from one affected facility the owner or operator shall report the results as required from each CEMS/COMS.

## SECTION III

### NOTIFICATION AND RECORD KEEPING

- A. When requested to do so by an owner or operator, the ADEQ CEM Coordinator will review plans for installation or modification for the purpose of providing technical advice to the owner or operator.
- B. Each facility which operates a CEMS/COMS shall notify the ADEQ CEM Coordinator of the date for which the demonstration of the CEMS/COMS performance will commence (i.e. PST, RATA, RAA, CGA). Notification shall be received in writing no less than 15 days prior to testing. Performance test results shall be submitted to the Department within thirty days after completion of testing.
- C. Each facility which operates a CEMS/COMS shall maintain records of the occurrence and duration of start up/shut down, cleaning/soot blowing, process problems, fuel problems, or other malfunction in the operation of the affected facility which causes excess emissions. This includes any malfunction of the air pollution control equipment or any period during which a continuous monitoring device/system is inoperative.
- D. Except for Part 75 CEMs, each facility required to install a CEMS/COMS shall submit an excess emission and monitoring system performance report to the Department (Attention: Air Division, CEM Coordinator) at least quarterly, unless more frequent submittals are warranted to assess the compliance status of the facility. Quarterly reports shall be postmarked no later than the 30th day of the month following the end of each calendar quarter. Part 75 CEMs shall submit this information semi-annually and as part of Title V six (6) month reporting requirement if the facility is a Title V facility.
- E. All excess emissions shall be reported in terms of the applicable standard. Each report shall be submitted on ADEQ Quarterly Excess Emission Report Forms. Alternate forms may be used with prior written approval from the Department.
- F. Each facility which operates a CEMS/COMS must maintain on site a file of CEMS/COMS data including all raw data, corrected and adjusted, repair logs, calibration checks, adjustments, and test audits. This file must be retained for a period of at least five years, and is required to be maintained in such a condition that it can easily be audited by an inspector.
- G. Except for Part 75 CEMs, quarterly reports shall be used by the Department to determine compliance with the permit. For Part 75 CEMs, the semi-annual report shall be used.

## SECTION IV

### QUALITY ASSURANCE/QUALITY CONTROL

- A. For each CEMS/COMS a Quality Assurance/Quality Control (QA/QC) plan shall be submitted to the Department (Attn.: Air Division, CEM Coordinator). CEMS quality assurance procedures are defined in 40 CFR, Part 60, Appendix F. This plan shall be submitted within 180 days of the CEMS/COMS installation. A QA/QC plan shall consist of procedure and practices which assures acceptable level of monitor data accuracy, precision, representativeness, and availability.
- B. The submitted QA/QC plan for each CEMS/COMS shall not be considered as accepted until the facility receives a written notification of acceptance from the Department.
- C. Facilities responsible for one, or more, CEMS/COMS used for compliance monitoring shall meet these minimum requirements and are encouraged to develop and implement a more extensive QA/QC program, or to continue such programs where they already exist. Each QA/QC program must include written procedures which should describe in detail, complete, step-by-step procedures and operations for each of the following activities:
1. Calibration of CEMS/COMS
    - a. Daily calibrations (including the approximate time(s) that the daily zero and span drifts will be checked and the time required to perform these checks and return to stable operation)
  2. Calibration drift determination and adjustment of CEMS/COMS
    - a. Out-of-control period determination
    - b. Steps of corrective action
  3. Preventive maintenance of CEMS/COMS
    - a. CEMS/COMS information
      - 1) Manufacture
      - 2) Model number
      - 3) Serial number
    - b. Scheduled activities (check list)
    - c. Spare part inventory
  4. Data recording, calculations, and reporting
  5. Accuracy audit procedures including sampling and analysis methods
  6. Program of corrective action for malfunctioning CEMS/COMS
- D. A Relative Accuracy Test Audit (RATA), shall be conducted at least once every four calendar quarters. A Relative Accuracy Audit (RAA), or a Cylinder Gas Audit (CGA), may be conducted in the other three quarters but in no more than three quarters in succession. The RATA should be conducted in accordance with the applicable test procedure in 40 CFR Part 60 Appendix A and calculated in accordance with the applicable performance specification in 40 CFR Part 60 Appendix B. CGA's and RAA's should be conducted and the data calculated in accordance with the procedures outlined on 40 CFR Part 60 Appendix F.

If alternative testing procedures or methods of calculation are to be used in the RATA, RAA or CGA audits prior authorization must be obtained from the ADEQ CEM Coordinator.

E. Criteria for excessive audit inaccuracy.

**RATA**

All Pollutants except Carbon Monoxide	> 20% Relative Accuracy
Carbon Monoxide	> 10% Relative Accuracy
All Pollutants except Carbon Monoxide	> 10% of the Applicable Standard
Carbon Monoxide	> 5% of the Applicable Standard
Diluent (O <sub>2</sub> & CO <sub>2</sub> )	> 1.0 % O <sub>2</sub> or CO <sub>2</sub>
Flow	> 20% Relative Accuracy

**CGA**

Pollutant	> 15% of average audit value or 5 ppm difference
Diluent (O <sub>2</sub> & CO <sub>2</sub> )	> 15% of average audit value or 5 ppm difference

**RAA**

Pollutant	> 15% of the three run average or > 7.5 % of the applicable standard
Diluent (O <sub>2</sub> & CO <sub>2</sub> )	> 15% of the three run average or > 7.5 % of the applicable standard

- F. If either the zero or span drift results exceed two times the applicable drift specification in 40 CFR, Part 60, Appendix B for five consecutive, daily periods, the CEMS is out-of-control. If either the zero or span drift results exceed four times the applicable drift specification in Appendix B during a calibration drift check, the CEMS is out-of-control. If the CEMS exceeds the audit inaccuracies listed above, the CEMS is out-of-control. If a CEMS is out-of-control, the data from that out-of-control period is not counted towards meeting the minimum data availability as required and described in the applicable subpart. The end of the out-of-control period is the time corresponding to the completion of the successful daily zero or span drift or completion of the successful CGA, RAA or RATA.
- G. A back-up monitor may be placed on an emission source to minimize monitor downtime. This back-up CEMS is subject to the same QA/QC procedure and practices as the primary CEMS. The back-up CEMS shall be certified by a PST. Daily zero-span checks must be performed and recorded in accordance with standard practices. When the primary CEMS goes down, the back-up CEMS may then be engaged to sample, analyze and record the emission source pollutant until repairs are made and the primary unit is placed back in service. Records must be maintained on site when the back-up CEMS is placed in service, these records shall include at a minimum the reason the primary CEMS is out of service, the date and time the primary CEMS was out of service and the date and time the primary CEMS was placed back in service.

## **Subpart H—Standards of Performance for Sulfuric Acid Plants**

### **§ 60.80 Applicability and designation of affected facility.**

(a) The provisions of this subpart are applicable to each sulfuric acid production unit, which is the affected facility.

(b) Any facility under paragraph (a) of this section that commences construction or modification after August 17, 1971, is subject to the requirements of this subpart.

[42 FR 37936, July 25, 1977]

### **§ 60.81 Definitions.**

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act and in subpart A of this part.

(a) *Sulfuric acid production unit* means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

(b) *Acid mist* means sulfuric acid mist, as measured by Method 8 of appendix A to this part or an equivalent or alternative method.

[36 FR 24877, Dec. 23, 1971, as amended at 39 FR 20794, June 14, 1974]

### **§ 60.82 Standard for sulfur dioxide.**

(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb per ton), the production being expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>.

[39 FR 20794, June 14, 1974]

### **§ 60.83 Standard for acid mist.**

(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases which:

(1) Contain acid mist, expressed as H<sub>2</sub>SO<sub>4</sub>, in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H<sub>2</sub>SO<sub>4</sub>.

(2) Exhibit 10 percent opacity, or greater.

[39 FR 20794, June 14, 1974, as amended at 40 FR 46258, Oct. 6, 1975]

### **§ 60.84 Emission monitoring.**

(a) A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under Performance Specification 2 and for calibration checks under §60.13(d), shall be sulfur dioxide (SO<sub>2</sub>). Method 8 shall be used for conducting monitoring system performance evaluations under §60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span value shall be set at 1000 ppm of sulfur dioxide.

(b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF=k\{(1.000-0.015r)/(r-s)\}$$



where:

CF=conversion factor (kg/metric ton per ppm, lb/ton per ppm).

k=constant derived from material balance. For determining CF in metric units,  $k=0.0653$ . For determining CF in English units,  $k=0.1306$ .

r=percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Administrator's approval.

s=percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under paragraph (a) of this section.

(c) The owner or operator shall record all conversion factors and values under paragraph (b) of this section from which they were computed (i.e., CF, r, and s).

(d) Alternatively, a source that processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen may use the following continuous emission monitoring approach and calculation procedures in determining SO<sub>2</sub> emission rates in terms of the standard. This procedure is not required, but is an alternative that would alleviate problems encountered in the measurement of gas velocities or production rate. Continuous emission monitoring systems for measuring SO<sub>2</sub>, O<sub>2</sub>, and CO<sub>2</sub> (if required) shall be installed, calibrated, maintained, and operated by the owner or operator and subjected to the certification procedures in Performance Specifications 2 and 3. The calibration procedure and span value for the SO<sub>2</sub> monitor shall be as specified in paragraph (b) of this section. The span value for CO<sub>2</sub> (if required) shall be 10 percent and for O<sub>2</sub> shall be 20.9 percent (air). A conversion factor based on process rate data is not necessary. Calculate the SO<sub>2</sub> emission rate as follows:

$$E_s = (C_s S) / [0.265 - (0.126 \%O_2) - (A \%CO_2)]$$

where:

E<sub>s</sub>=emission rate of SO<sub>2</sub>, kg/metric ton (lb/ton) of 100 percent of H<sub>2</sub>SO<sub>4</sub> produced.

C<sub>s</sub>=concentration of SO<sub>2</sub>, kg/dscm (lb/dscf).

S=acid production rate factor, 368 dscm/metric ton (11,800 dscf/ton) of 100 percent H<sub>2</sub>SO<sub>4</sub> produced.

%O<sub>2</sub>=oxygen concentration, percent dry basis.

A=auxiliary fuel factor,

=0.00 for no fuel.

=0.0226 for methane.

=0.0217 for natural gas.

=0.0196 for propane.

=0.0172 for No 2 oil.

=0.0161 for No 6 oil.

=0.0148 for coal.

=0.0126 for coke.

%CO<sub>2</sub>= carbon dioxide concentration, percent dry basis.

Note: It is necessary in some cases to convert measured concentration units to other units for these calculations:

Use the following table for such conversions:

From—	To—	Multiply by—
g/scm	kg/scm	10 <sup>-3</sup>
mg/scm	kg/scm	10 <sup>-6</sup>
ppm (SO <sub>2</sub> )	kg/scm	2.660×10 <sup>-6</sup>
ppm (SO <sub>2</sub> )	lb/scf	1.660×10 <sup>-7</sup>

(e) For the purpose of reports under §60.7(c), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under §60.82.

[39 FR 20794, June 14, 1974, as amended at 40 FR 46258, Oct. 6, 1975; 48 FR 23611, May 25, 1983; 48 FR 4700, Sept. 29, 1983; 48 FR 48669, Oct. 20, 1983; 54 FR 6666, Feb. 14, 1989; 65 FR 61753, Oct. 17, 2000]

#### § 60.85 Test methods and procedures.

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b). Acceptable alternative methods and procedures are given in paragraph (c) of this section.

(b) The owner or operator shall determine compliance with the SO<sub>2</sub>acid mist, and visible emission standards in §§60.82 and 60.83 as follows:

(1) The emission rate (E) of acid mist or SO<sub>2</sub> shall be computed for each run using the following equation:

$$E=(CQ_{sd})/(PK)$$

where:

E=emission rate of acid mist or SO<sub>2</sub>kg/metric ton (lb/ton) of 100 percent H<sub>2</sub>SO<sub>4</sub>produced.

C=concentration of acid mist or SO<sub>2</sub>, g/dscm (lb/dscf).

Q<sub>sd</sub>=volumetric flow rate of the effluent gas, dscm/hr (dscf/hr).

P=production rate of 100 percent H<sub>2</sub>SO<sub>4</sub>, metric ton/hr (ton/hr).

K=conversion factor, 1000 g/kg (1.0 lb/lb).

(2) Method 8 shall be used to determine the acid mist and SO<sub>2</sub>concentrations (C's) and the volumetric flow rate (Q<sub>sd</sub>) of the effluent gas. The moisture content may be considered to be zero. The sampling time and sample volume for each run shall be at least 60 minutes and 1.15 dscm (40.6 dscf).

(3) Suitable methods shall be used to determine the production rate (P) of 100 percent H<sub>2</sub>SO<sub>4</sub> for each run. Material balance over the production system shall be used to confirm the production rate.

(4) Method 9 and the procedures in §60.11 shall be used to determine opacity.

(c) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

(1) If a source processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen, the following procedure may be used instead of determining the volumetric flow rate and production rate:

(i) The integrated technique of Method 3 is used to determine the O<sub>2</sub> concentration and, if required, CO<sub>2</sub> concentration.

(ii) The SO<sub>2</sub> or acid mist emission rate is calculated as described in §60.84(d), substituting the acid mist concentration for C<sub>s</sub> as appropriate.

[54 FR 6666, Feb. 14, 1989]

# ELDORADO

## CHEMICAL COMPANY

Date: 8/31/04  
To: Wes Morgan  
From: Joe La Veer  
Re: Proposed method of measuring PM and NH<sub>3</sub> Emissions from SN-41

The Standard Method for analyzing for Particulate Matter (PM) in Stack Gasses (Method 5) cannot be used in the case of SN-41 because nearly 100% of the stack gas is condensable and is mostly water. We have attempted to analyze the PM emissions using the EPA Method 5 and found that the filters plugged very quickly with water. We propose to use the following method to measure the PM and NH<sub>3</sub> content in SN-41. The PM content is to be determined by condensing a representative sample of the vapors (Chemical Steam) and analyzing for NH<sub>4</sub>NO<sub>3</sub> in the condensate. Though the NH<sub>4</sub>NO<sub>3</sub> is not in the solid form as it is leaving the stack, it is included as PM as it would be in Method 5 (Back half).

### SAMPLING:

The sample is drawn from the stack to a condensing coil, where the vapor is converted to a liquid. The liquid is collected in a 10-liter vessel continuously. The flow of the condensed vapors creates a vacuum to draw more vapors from the stack. The rate of liquid is sufficient to fill the 10-liter vessel in 12 hours. The sample to be analyzed is drawn from the composite, therefore making it a twelve-hour composite sample. Then the vessel is emptied to receive the next composite.

### FREQUENCY:

The sampling frequency will be two composites per day when any of the concentrators or neutralizers feeding the Scrubber are in operation.

### DURATION:

Sampling activities will continue under the study until a statistically valid data set is developed which can be used to establish proposed PM emission limits. Sampling efforts will also be conducted to verify compliance with the proposed PM limits as well as the emission limits for NH<sub>3</sub> that are currently included in the plant's Title V permit. The data set used to establish the PM emission limits will include a minimum of 10 days of data.

#### ANALYSIS:

A portion of the sample is titrated with  $H_2SO_4$  per method EDCC-330.2 (attached) to determine the molar concentration of free ammonia in the sample. This procedure is based on 4500-NH<sub>3</sub> from "Standard Methods for the Examination of Water and Wastewater, 19<sup>th</sup> Edition".

A second portion of the sample is analyzed per method EDCC-190 (attached) to determine the total molar concentration of NH<sub>3</sub> (both free and as NH<sub>4</sub>NO<sub>3</sub>). This procedure is based on 4500-N<sub>org</sub> from "Standard Methods for the Examination of Water and Wastewater, 19<sup>th</sup> Edition". The data from these two analyses is entered into the "NEW E2 SCRUBBER CONDENSATE" worksheet. These calculations give the mass concentrations of NH<sub>3</sub> and NH<sub>4</sub>NO<sub>3</sub> in the vapor stream leaving SN-41. The NH<sub>4</sub>NO<sub>3</sub> will be reported as Particulate Matter (PM).

#### ESTIMATION OF TOTAL VAPOR FLOW RATE:

The total vapor flow rate will be calculated by mass balance around the operations that feed vapors to the scrubber. The vapors entering the scrubber are from the following sources:

- Auxiliary Concentrator
- E2 Low Concentrator
- Fresh Neutralizer
- Off-Gas Neutralizer
- #4 Neutralizer

The vapor stream from the auxiliary concentrator will be considered at it's maximum capacity if it is in operation. That from the low concentrator will be dependent on the amount and concentration of solution being prilled. The Prill production rates as well as the solution concentrations are measured and will be used to calculate the vapors entering the scrubber from the low concentrator.

Some of the water entering the neutralizers in the acid is vaporized by the heat of reaction. The vapor flow rate from the neutralizers is dependent on the acid and ammonia feed rates, as well as the acid and product solution concentrations. These are measured and recorded and will be used to calculate the rate of vapors entering the scrubber from the neutralizers.

The total mass flow rate can also be measured using a pitot tube. Pitot will be performed to conform calculated mass flow rates.

**Ammonium Nitrate (NH<sub>4</sub>NO<sub>3</sub>)**

**EDCC-330.2**

**Test for: Free NH<sub>3</sub> in  
Condensate**

**Date: 4/03/97**

**Approved:**

**PAGE 1 of 2**

**1.0 SCOPE**

This method determines the free ammonia available in the aqueous condensate. The method incorporates a titration with 0.5 N H<sub>2</sub>SO<sub>4</sub> to a methyl red endpoint or a pH of 4.5.

**2.0 APPARATUS**

- 2.1 50ml buret
- 2.2 Magnetic stirrer
- 2.3 500ml Erlenmeyer flask
- 2.4 50ml pipet
- 2.5 Analytical balance
- 2.6 PH meter
- 2.7 400ml beaker

**3.0 REAGENTS**

- 3.1 0.5 N H<sub>2</sub>SO<sub>4</sub> as standardized.
- 3.2 Methyl red indicator. Dissolve 1.0 grams of methyl red in one liter of isopropyl alcohol.

**4.0 Procedure**

- 4.1 To a 400ml beaker, add 50 ml sample(50g) and 100ml of deionized water.
- 4.2 Add 4 or 5 drops of methyl red indicator and titrate to a methyl red endpoint using 0.5 N H<sub>2</sub>SO<sub>4</sub> (See note 6.1).

**5.0 CALCULATIONS**

5.1 
$$\%NH_3 = \frac{(ml\ H_2SO_4)(N)(1.703)}{Aliquot\ Wt.}$$

EDCC-330.2

DATE: 4/03/97

APPROVED:

### 5.2 Calculation Theory

$$\frac{(\text{mls H}_2\text{SO}_4) \times \frac{1\text{L}}{1000\text{mls}} \times \frac{\text{eq H}_2\text{SO}_4}{\text{L}} \times \frac{1\text{eq NH}_3}{1\text{eq}} \times \frac{17.03\text{g NH}_3}{1\text{eq NH}_3} \times 100 = \% \text{NH}_3$$

g Sample

### 6. NOTES

- 6.1 For more accuracy titrate sample to 4.5 pH, using a buffered and Calibrated pH meter.
- 6.2 If you have less than 3ml titration using 0.5 N H<sub>2</sub>SO<sub>4</sub> on 50g sample, repeat analysis but use 0.1 N H<sub>2</sub>SO<sub>4</sub> for titration and calculations.
- 6.3 To report results as nitrogen(N) multiply by 0.82 = NH<sub>3</sub>-N.

KJELDAHL NITROGEN CONTENT OF ACID EDC-190

02/17/99

PAGE 1 OF 2

1.0 SCOPE

1.1- This method is used to determine the ammonia nitrogen and organic nitrogen (from many amino nitrogen compounds) contained in an acid sample.

1.2- This method covers the Kjeldahl digestion/distillation and the titration of the distilled ammonium contents.

1.3- This method is applicable to all process water and nitric acid strengths.

2.0 APPARATUS

2.1- pH meter with temperature compensation

2.2- magnetic stirrer

2.3- 600 ml beaker and 800 ml beaker

2.4- Kjeldahl distillation unit (Labconco #2128501 or equivalent)

2.5- 800 ml Kjeldahl flask

3.0 REAGENTS

3.1- Methyl red indicator- purchased as VWR # VW3541-2 or dissolve 200mg methyl red indicator in 100mls of 95% ethyl or isopropyl alcohol. \* (pH 4.2) pink, (pH 6.3) yellow

3.2- 50% w/w Sodium hydroxide

3.3- Boric acid solution 2% w/w - Dissolve 20g H<sub>3</sub>BO<sub>3</sub> in deionized water, add 10 mls of methyl red indicator and dilute to 1 liter.

3.4- Kel Pak II powder purchased as CMS #237-719 Kjeldahl digestion mixture #7 or prepare by dissolving 134g K<sub>2</sub>SO<sub>4</sub> and 7.3g CuSO<sub>4</sub> in about 800 mls of water. Carefully add 134 mls conc. H<sub>2</sub>SO<sub>4</sub>. When cooled to room temperature dilute to 1 liter.

3.5- 0.02 H<sub>2</sub>SO<sub>4</sub> (Standardized) - Add 0.55mls of conc. H<sub>2</sub>SO<sub>4</sub> for each 1 liter of solution desired. For 5 gallon (18.9 L) use 10.4mls conc. H<sub>2</sub>SO<sub>4</sub>. Standardize against THAM.



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#### 4.0 PROCEDURE

- 4.1- Weigh 100g of sample to .01g into a 600ml beaker.
- 4.2- Add 300-400mls water carefully.
- 4.3- Place on a stirrer.
- 4.4- Using 50% NaOH dropwise, raise the pH to between 1.8 to 2.0.
- 4.5- Transfer to an 800ml Kjeldahl flask
- 4.6- Using a 100ml graduated cylinder place 50mls of 2% Boric acid (with indicator) into an 800ml beaker and place the end of the distilled tube just below the surface of the Boric acid solution.
- 4.7- Transfer the contents of one Kel PAK to the 800ml Kjeldahl flask. Place the distillation stopper on the flask and swirl the flask. Rinse down the sides of the flask with water. Add boiling beads.
- 4.8- Using a 100ml graduated cylinder add 80mls of 50% w/w NaOH to the Kjeldahl flask and quickly re-stopper the flask. Swirl to mix.
- 4.9- Turn on the heating mantle and distill the solution for at least 1 hour. Turn off heat and let the solution come to room temperature.
- 4.10- Titrate the Boric acid solution with standardized 0.02 N H<sub>2</sub>SO<sub>4</sub> (0.5 N H<sub>2</sub>SO<sub>4</sub> sulfuric can be used for high concentration of NH<sub>4</sub>). Record mls of titrate to pH of 4.5

#### 5.0 CALCULATIONS

$$5.1- \text{ ppm NH}_4\text{NO}_3 = \frac{(\text{mls H}_2\text{SO}_4 - \text{mls Blank})(\text{N H}_2\text{SO}_4)(80.05)(1000)}{\text{grams of sample}}$$

#### 6.0 NOTES

- 6.1- Determine a blank with each new bottle of sulfuric acid by titrating the distillate(70% Nitric Acid) in the Boric acid and solution with 0.02 N H<sub>2</sub>SO<sub>4</sub>.

NEW E-2 SCRUBBER CONDENSATE

ANALYST: \_\_\_\_\_

TIME COLLECTED: \_\_\_\_\_

SAMPLE DATE: \_\_\_\_\_

pH= \_\_\_\_\_

Free Ammonia Calculations:

$$\% \text{NH}_3 = \frac{(\text{mls Titration}) (\text{H}_2\text{SO}_4 \text{ Norm.}) (1.703)}{(\text{Sample Wt.})}$$

$$\% \text{NH}_3 = \frac{(\quad) (\quad) (1.703)}{(\quad)} = \quad \%$$

$$\text{ppm NH}_3 \text{ Free} = (\% \text{NH}_3) (10,000)$$

$$\text{ppm NH}_3 \text{ Free} = (\quad) (10,000) = \quad \text{ppm}$$

Ammonia Kjeldahl Calculations:

$$\% \text{NH}_3 \text{ Kjeldahl} = \frac{(\text{mls Titration}) (\text{H}_2\text{SO}_4 \text{ Norm.}) (1.703)}{(\text{Sample Wt.})}$$

$$\% \text{NH}_3 \text{ Kjeldahl} = \frac{(\quad) (\quad) (1.703)}{(\quad)} = \quad \% \text{NH}_3$$

$$\text{ppm NH}_3 \text{ Kjeldahl} = (\% \text{NH}_3) \times (10,000)$$

$$\text{ppm NH}_3 \text{ Kjeldahl} = (\quad) (10,000) = \quad \text{ppm}$$

Ammonium Nitrate Calculations:

$$\text{ppm NH}_4\text{NO}_3 = \text{ppm NH}_3 \text{ Kjeldahl} - \text{ppm NH}_3 \text{ Free} \times (80 \text{ divided by } 17) = \quad \text{ppm}$$

$$\text{ppm NH}_4\text{NO}_3 = \quad - \quad (4.705) = \quad \text{ppm}$$

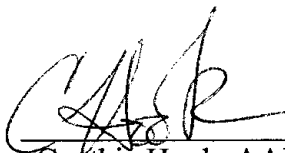
NH<sub>4</sub>NO<sub>3</sub>

ANALYTICAL TIME (START): \_\_\_\_\_

(FINISH): \_\_\_\_\_

**CERTIFICATE OF SERVICE**

I, Cynthia Hook, hereby certify that a copy of this permit has been mailed by first class mail to El Dorado Chemical Company, PO Box 231, El Dorado, AR, 71730, on this 26<sup>th</sup> day of August, 2008.



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Cynthia Hook, AAIL, Air Division