STATEMENT OF BASIS

for the issuance of Air Permit # 0573-AOP-R5

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
8001 National Drive
Post Office Box 8913
Little Rock, Arkansas 72219-8913

2. APPLICANT:

El Dorado Chemical Company
4500 North West Avenue
El Dorado, Arkansas 71730

3. PERMIT WRITER:

Siew Low

4. PROCESS DESCRIPTION AND NAICS CODE:

NAICS Description: Nitrogenous Fertilizers Manufacturing; All Other Basic Inorganic Chemical Manufacturing
NAICS Code: 325311; 325188

5. SUBMITTALS: April 16, 2004, July 21, 2004, August 30, 2004, and November 30, 2004.

6. REVIEWER'S NOTES: This Title V air permit renewal application includes 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 testing requirements for 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 KT Plant Brinks Scrubber (SN-21). Emission rates (SN-10 and SN-14) have been re-evaluated to reflect updated emission factors from stack test data. Maximum potential operation hours of SN-08 and SN-09 have been increased from 8400 hours per year to 8760 hours per year. Emission rates of the two boilers (SN-16A and SN-16B) have been updated using USEPA AP-42 emission factors. Two sources (SN-11 and SN-12) have been removed. The E2 Plant Barometric Tower (SN-19) once deleted from permit, is now incorporated back in the permit.

Stack testing definitions have been included in the permit as the results of the CAO (LIS-03-175). Stack testing on SN-10, SN-07, SN-17, SN-15, SN-21 (PM_{10}) are being changed from once every year to once every five years. This is because these sources have

been able to show consistent compliance in stack testing for the past five consecutive years.

7. COMPLIANCE STATUS: The following summarizes the current compliance status of the facility including active/pending enforcement actions and recent compliance activities and issues.

This facility is currently under two active CAOs.

8. APPLICABLE REGULATIONS:

A. Applicability

Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, et cetera) (Y/N) N
Has this facility underwent PSD review in the past (Y/N) N Permit # _____
Is this facility categorized as a major source for PSD? (Y/N) Y
≥ 100 tpy and on the list of 28 (100 tpy)? (Y/N) Y
≥ 250 tpy all other (Y/N) _____

B. PSD Netting

Was netting performed to avoid PSD review in this permit? (Y/N) N

C. Source and Pollutant Specific Regulatory Applicability

Source	**Pollutant**	**Regulation [NSPS, NESHAP (Part 61 & Part 63), or PSD only]**
SN-13	NO_x	NSPS Subpart G

9. EMISSION CHANGES:

The following table summarizes plantwide emission changes associated with this permitting action.

Plantwide Permitted Emissions (ton/yr)			
Pollutant	**Air Permit 0573-AOP-R4**	**Air Permit 0573-AOP-R5**	**Change**
PM/PM_{10}	297.1	318.7	+21.1
SO_2	2520.4	2520.4	0
VOC	2.7	4.5	+1.8

Plantwide Permitted Emissions (ton/yr)			
Pollutant	**Air Permit 0573-AOP-R4**	**Air Permit 0573-AOP-R5**	**Change**
CO	25.4	52.3	+26.9
NO_X	2739.7	2408.5	-331.2
H_2SO_4	33.2	33.2	0
NH_3	404.1	309.6	-94.5
HNO_3	132.8	74.4	-58.4
Hexane	0	1.2	+1.2

10. MODELING:

A. Criteria Pollutants

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu g/m^3$)	Averaging Time	Highest Concentration ($\mu g/m^3$)	% of NAAQS
PM_{10}	178.5	50	Annual	9.76	19%
		150	24-hour	86.92	59%*
SO_2	600.2	80	Annual	13.7	17%
		1,300	3-hour	494.6	38%
		365	24-hour	140.6	38%
NO_X	591.8	100	Annual	13.97	19%
VOC	18.5	0.12	1-hour (ppm)	NA	0%
CO	12.0	10,000	8-hour	NA	0%
		40,000	1-hour	NA	0%

* - Background (35 $\mu g/m^3$) plus modeled (86.92 $\mu g/m^3$) equals 121.68 $\mu g/m^3$ which does not exceed the NAAQS (150 $\mu g/m^3$).

B. Non-Criteria Pollutants

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The PAER was deemed by the Department to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11*TLV	Proposed lb/hr	Pass?
HNO_3	5.15	0.5665	19.8	No
H_2SO_4	0.2	0.022	7.6	No
NH_3	17.41	1.915	75.6	No
Hexane	1762	193	0.6	Yes

2nd Tier Screening (PAIL)

SCREEN3 air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass ?
HNO_3	51.5	28.4	Yes
H_2SO_4	2	1.8	Yes
NH_3	174.1	144.2	Yes

11. CALCULATIONS:

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
SN-05	Testing	PM_{10} - 13.0 lb/hr, 0.96 lb of PM_{10} per ton of ammonium nitrate produced.	Brinks Scrubber	-	97% particulate control efficiency.
SN-05	Engineering Estimate	NH_3 – 100 lb/hr x 0.1 x (100%-65%)	Brinks Scrubber	-	65 % control efficiency for ammonia emissions.
SN-06	Testing	PM_{10} - 67.0 lb/hr, 0.96 lb of PM_{10} per ton of ammonium nitrate produced.	-	-	Uncontrolled. Maximum prill production rate is 54 tons/hour.
SN-07	Testing	SO_2 - 600 lb/hr	Brinks Mist Eliminator	-	-
SN-07	Testing	H_2SO_4 - 7.5 lb/hr	Brinks Mist Eliminator	-	360 ton/day x 0.5 lb/ton
SN-08	Testing	NO_X - 200.1 lb/hr	Refrigeration SCR	~98.5%	11.5 lb/ton x 17.4 ton/hr = 200.1 lb/hr
SN-09	Testing	NO_X - 200.1 lb/hr	Refrigeration SCR	~98.5%	11.5 lb/ton x 17.4 ton/hr = 200.1 lb/hr
SN-10	AP-42	NO_X - 10.0 lb/ton	best operation	-	-
SN-10	Stack Test Data	HNO_3 – 0.389 lb/hr NO_X 3.3 lb/hr	-	-	Permitted lb/hr is stack test data plus 25% safety factor.
SN-13	NSPS	3.0 lb/ton of acid	refrigerated	-	-

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
			absorption		
SN-14	Testing	PM_{10} - 44.2 lb/hr	none	-	Hourly emission rate increase as a result of a fail stack testing. 44.2 lb/hr is based on March 2, 2004 stack test data. Average + Std. Deviation = 36.18 + 8.0
SN-15	Testing	PM_{10} - 17.0 lb/hr	none	-	-
SN-15	Testing	NH_3 - 18.0 lb/hr	none	-	-
SN-16A	AP-42	PM_{10} – 7.6 lb/MMSCF SO_2 - 0.6 lb/MMSCF VOC – 5.5 lb/MMSCF CO – 84 lb/MMSCF NO_X - 280 lb/MMSCF	none	-	-
SN-16B	AP-42	PM_{10} – 7.6 lb/MMSCF SO_2 - 0.6 lb/MMSCF VOC – 5.5 lb/MMSCF CO – 84 lb/MMSCF NO_X - 280 lb/MMSCF	none	-	-
SN-17	Testing	PM_{10} - 21.6 lb/hr	Pease-Anthony Scrubber	-	
SN-17	Testing	NH_3 - 5.0 lb/hr	Pease-Anthony Scrubber	-	-
SN-18	Process	PM_{10} - 0.033 lb/ton	Baghouse	-	-

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
	Knowledge				
SN-19	PM – 50,556 scfm x 011677 lb/mmft^3 x 60 min/hr x 1.2 NH_3 - 50,556 scfm x 25 ppm x 17.1 lb/lb-mol x lb-mol/385.2 ft^3 60min/hr x 1.2		-	-	-
SN-21	Testing	PM_{10} - 0.1 lb/ton	Brinks Scrubber	-	-
SN-21	Testing	NH_3 - 1.0 lb/ton	Brinks Scrubber	-	-
SN-22	CEM	NO_X - 3.0 lb/ton	cryogenic absorption	-	-
SN-22	Process Knowledge	HNO_3 - 10.0 lb/hr	cryogenic absorption	-	-
SN-25	TANKS3	VOC	none	-	-
SN-26	TANKS3	NH_3	none	-	-
SN-27	AP-42	PM_{10} - 0.0001 lb/ton	none	-	-
SN-28	AP-42	PM_{10} - 0.0001 lb/ton	none	-	-
SN-29	AP-42	HNO_3 - 0.53 lb/1000 gallons	none	-	-
SN-30	AP-42	H_2SO_4 - 0.0334 lb/1000 gallons	none	-	-
SN-31	SOCMI	NH_3 - 0.5 lb/hr	none	-	-
SN-32	SOCMI	NH_3 - 1.3 lb/hr	none	-	-

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
SN-33	Process Knowledge	NO_X - 1.9 lb/hr	none	-	-
SN-33	Process Knowledge	HNO_3 - 1.8 lb/hr	none	-	-
SN-34	Process Knowledge	PM_{10} – 0.7 lb/ton x 1.16 ton/hr	none	-	-
SN-35	Process Knowledge	PM_{10} - 2.0 lb/hr	baghouse	99%	-
SN-37	Process knowledge	3 gal HNO_3/car x 2 car/day, 37.65 lb HNO_3/car x efficiency x 1 vent period/106 minutes.	scrubber	80%	-
SN-38	EF_{PM} = Total liquid drift (lb/1000 gal) x TDS Fraction (ppm) = 1.7 lb/1000 gal x 1,560 ppm PM10 = EF_{PM} x flowrate = 9,000 gpm x EF_{PM}				0.17 lb/1000 gal is design drift loss percent provided by AP-42. Table 13.4-1
SN-39	EF_{PM} = Total liquid drift (lb/1000 gal) x TDS Fraction (ppm) = 1.7 lb/1000 gal x 1,560 ppm PM10 = EF_{PM} x flowrate = 14,000 gpm x EF_{PM}				1.7 lb/1000 gal is design drift loss percent provided by AP-42. Table 13.4-1
SN-40	Engineering estimate	NH_3 – 1.6 lb/hr during laoding			1.6 lb/hr per truck x 2 trucks per day
SN-41	Engineering estimate	NH_3 – 10.0 lb/hr	Chemical steam scrubber	-	The facility will conduct a one time stack testing to verify emission rate.

SN	Emission Factor Source (AP-42, Testing, etc)	Emission Factor and units (lbs/ton, lbs/hr, etc)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc)
					Specific Condition #63.
SN-42	EF_{PM} = Total liquid drift (lb/1000 gal) x TDS Fraction (ppm) = 0.17 lb/1000 gal x 1,560 ppm PM10 = EF_{PM} x flowrate = 16,000 gpm x EF_{PM}		-	-	0.17 lb/1000 gal is design drift loss percent provided by manufacturer.
SN-43	EF_{PM} = Total liquid drift (lb/1000 gal) x TDS Fraction (ppm) = 1.7 lb/1000 gal x 1,560 ppm PM10 = EF_{PM} x flowrate = 2,000 gpm x EF_{PM}				1.7 lb/1000 gal is design drift loss percent provided by AP-42. Table 13.4-1

13. TESTING REQUIREMENTS:

This permit requires stack testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
SN08 & SN-09	NOx	7E	Yearly	Necessary for efficiency check on SCR's
SN08 & SN-09	NOx	approved method	monthly	Necessary for efficiency check on SCR's
SN-10	NOx	7E	Every five years	Necessary for efficiency check on Venturi & Packed Tower Scrubber
SN-10	HNO_3	approved method	Every five years	Necessary for efficiency check on Venturi & Packed Tower Scrubber
SN-07	SO_2	6C	Every five years	Necessary for efficiency check on operation of the sulfuric acid plant
SN-07	H_2SO_4	8	Every five years	Necessary for efficiency check on operation of the sulfuric acid plant
SN-05,	PM_{10}	approved	Yearly	Necessary to prove that PSD has not

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
SN-06 & SN-14		method		been triggered.
SN-15, SN-17, and SN-21	PM_{10}	Modified 5	Every five years	Necessary to prove that PSD has not been triggered.
SN-15	NH_3	approved method	Yearly	Necessary to prove adherence to the non-criteria pollutant strategy.
SN-21, SN-17	NH_3	approved method	Every five years	Necessary to prove adherence to the non-criteria pollutant strategy.
SN-41	NH_3	approved method	One time test	To verify propose emission rate.

14. MONITORING OR CEMS

The following are parameters that must be monitored with CEMs or other monitoring equipment (temperature, pressure differential, etc), frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
SN-13, SN- 22	NOx emission rate	CEM	Continuously	Y
SN-07***	SO_2 emission rate	CEM	Continuously	Y
SN-08, SN- 09	Inlet and outlet temperatures	Temperature probes and an electronic data logger	Continuously	Y
SN-10	chemical condensate solution hydrogen peroxide concentration		Daily	N

*** Indicate frequency of recording required for the parameter (Continuously, hourly, daily, etc.)**
**** Indicates whether the parameter needs to be included in reports.**
***** Applicable if the plant is operated at a rate greater than 300 tpd**

15. RECORD KEEPING REQUIREMENTS

The following are items (such as throughput, fuel usage, VOC content of coating, etc) that must be tracked and recorded, frequency of recording and whether records are needed to be included in any annual, semiannual or other reports.

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
SN-08 SN-09	weak nitric acid production	292,320 tons/12 months	monthly	Y
SN-08 SN-09	Inlet and outlet temperatures	See Specific Condition #3	continuously	Y
SN-13	weak nitric acid production	140,000 tons/12 months	monthly	Y
SN-22 SN-10 Facility	concentrated nitric acid production	SN-22 - 118,260 tons/12 months; SN-10 - 62,900 tons/12months;	monthly	Y

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
		facility - 126,056 tons/12 months		
SN-10	Scrubber parameter	hydrogen peroxide concentration	daily	N
SN-22	start-up and shutdown emissions of NOx lb/hr and opacity over limits	see S.C. 30 & 31	daily	Y
SN-29	nitric acid shipped	200,000 tons/12 months	monthly	Y
SN-07	daily production	300 TPD w/o CEM 360 TPD w/ CEM	daily	Y
SN-30	sulfuric acid shipped	126,000 tons/12 months	monthly	Y
All E2 Plant	Production	228,071 tons/12 months	Monthly	Y
SN-05	Scrubber liquid flow rate Gas pressure drop across unit Scrubber liquid pH	450 gal/min (minimum) 2.5 in. H_2O (minimum) 0.5 – 4.5	daily	N
SN-17	Scrubber liquid flow rate Gas pressure drop across unit Scrubber liquid ammonia nitrate concentration	120 gal/min (minimum) 4.0 in. H_2O (minimum) 0.5 – 4.5 less than 50%	daily	N
SN-41	Scrubber liquid flow rate Gas pressure drop across unit Scrubber liquid pH	334 gal/min (minimum) 20 - 35 in. H_2O 0.5 – 6.0	daily	N
All KT plant	production	252,000 tons/12 months	monthly	Y
SN-25	usage of gasoline	40,000 gallons/12 months	monthly	Y
SN-37	minimum gas pressure	10 in. H_2O (minimum)	When scrubber in operation	N
SN-38	Total Dissolve solid	1,560 ppm	weekly	N
SN-39	Total Dissolve solid	900 ppm	weekly	N
SN-40	Loading tonnage	no more than 468,660 tons	monthly	N
SN-42	Total Dissolve solid	1,560 ppm	weekly	N

SN	Recorded Item	Limit (as established in permit)	Frequency*	Report (Y/N)**
SN-43	Total Dissolve solid	1,560 ppm	weekly	N

*** Indicate frequency of recording required for the item (Continuously, hourly, daily, etc.)**
**** Indicates whether the item needs to be included in reports**

16. OPACITY

SN	Opacity %	Justification (NSPS limit, Dept. Guidance, etc)	Compliance Mechanism (daily observation, weekly, control equipment operation, etc)
SN-08 SN-09	10%	Compliance assurance for SCR operation	daily observation
SN-13	10%	NSPS limit	daily observation
SN-10	20%	Previous permit	daily observation
SN-01A SN-01B	10%	Previous permit	daily observation
SN-22	10%*	Previous permit	daily observation
SN-07	15%	Previous permit	daily observation
SN-12 SN-18	5%	Department Guidance	daily observation
SN-21	10%	Previous permit	daily observation
SN-14 SN-17	15%	Previous permit	daily observation
SN-05 SN-11 SN-15	20%	Previous permit	daily observation
SN-06 SN-27 SN-28	25%	Previous permit	daily observation

* - except for startup and shutdown situations covered by S.C. 30 & 31

17. DELETED CONDITIONS:

The following Specific Conditions were included in the previous permit, but deleted for the current permitting action.

Former SC	Justification for removal
9, 48, 61, 62, 75, 76	This specific condition is a carry over from the facility's SIP permit. General Provision 21 in the Title V air permit is sufficient to show compliance.
11	This specific condition is about the initial compliance test. The facility has conducted the initial compliance test, therefore this specific condition is no longer necessary.
46	This specific condition requires the facility to conduct annual stack testing if the sulfuric acid plant is not equipped with CEM. This specific condition is no longer necessary since the sulfuric acid plant has a CEM installed.
59, 67	SN-11 has been removed from the permit. Any requirement for SN-11 will no longer be necessary.

18. VOIDED, SUPERSEDED OR SUBSUMED PERMITS

List all active permits for this facility which are voided/superseded/subsumed by issuance of this permit.

Permit #
0573-AOP-R4

19. CONCURRENCE BY:

The following supervisor concurs with the permitting decision:

_____
Lyndon Poole, P.E.