

STATEMENT OF BASIS

For the issuance of Air Permit # 0882-AR-9 AFIN: 14-00011

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Albemarle Corporation - West Plant
1550 Highway 371 West
Magnolia, Arkansas 71754

3. PERMIT WRITER:

Alexander Sudibjo

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Natural Gas Liquid Extraction
NAICS Code: 211112

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
7/2/2018	Deminimis	New 54 hp LPG-fired backup electrical generator

6. REVIEWER'S NOTES:

With this de minimis modification, the facility is requesting the following changes:

- Remove all references to the Hexabromocyclododecane (HBCD) process from the permit. The HBCD process has been removed from service. This includes SN-HB-02, 06, 08, and 09.
- Incorporate the provisions of NESHAP CCCCCC for the gasoline storage tank (SN-GS-01).

- Install a new 54 hp LPG-fired backup electrical generator (SN-EN-01). SN-EN-01 is subject to NSPS JJJJ and NESHAP ZZZZ. This generator will be used to provide backup power for the Bromine Caustic Scrubber Pump.

The facility's permitted annual emissions are increasing by 0.1 tpy SO₂, 0.6 tpy CO, 0.6 tpy NO_x, and 1.21 tpy total other HAPs. The facility's permitted annual emissions are decreasing by 14.8 tpy PM/PM₁₀, 7.6 tpy VOC, 0.9 tpy H₂S, and 8.2 tpy 1,4-dioxane.

7. COMPLIANCE STATUS:

As of July 2, 2018, there are no compliance issues with the facility.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? N
If yes, were GHG emission increases significant?

b) Is the facility categorized as a major source for PSD? N

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes for 8(b), explain why this permit modification is not PSD.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-SG-03, SN-SG-06, SN-SG-07	Records keeping	40 CFR 60, Subpart Dc
SN-EM-02, SN-EM-03, SN-EN-01	HAP	40 CFR 63, Subpart ZZZZ
SN-EN-01	VOC, CO, NO _x	40 CFR 60, Subpart JJJJ
SN-GS-01	-	40 CFR 63, Subpart CCCCC

10. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? N/A

(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any Regulation 18 requirement.)

If yes, are applicable requirements included and specifically identified in the permit?

If not, explain why.

For any requested inapplicable regulation in the permit shield, explain the reason why it is not applicable in the table below.

Source	Inapplicable Regulation	Reason
N/A		

11. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

12. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the ADEQ Air Permit Screening Modeling Instructions.

b) Non-Criteria Pollutants:

No new modeling was done for this permit modification. Modeling information was taken from permit #0882-AR-8.

The non-criteria pollutants listed below were evaluated. Based on Department procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m³), 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?
H ₂ S	13.94	1.533	1.97	No
Br ₂	0.66	0.073	2.60	No
HBr	9.93	1.092	0.17	Yes
NH ₃	17.42	1.916	1.20	Yes

Pollutant	TLV (mg/m ³)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Cl ₂ (HAP)	1.45	0.16	0.91	No
HCl (HAP)	7.46	0.821	0.10	Yes
Ethylene Glycol (HAP)	100	11	0.64	Yes
1,4 Dioxane (HAP)	73.20	8.06	1.88	Yes

2nd Tier Screening (PAIL)

AERMOD 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 (µg/m ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
H ₂ S	139.4	50.29	Yes
Br ₂	6.6	6.30	Yes
Cl ₂ (HAP)	14.5	2.21	Yes

c) H₂S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H₂S Standards N

If exempt, explain: _____

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H ₂ S	20 parts per million (5-minute average*)	0.056 ppm	Y
	80 parts per billion (8-hour average) residential area	19.99 ppb	Y
	100 parts per billion (8-hour average) nonresidential area	19.99 ppb	Y

*To determine the 5-minute average use the following equation

$$C_p = C_m (t_m/t_p)^{0.2} \text{ where}$$

C_p = 5-minute average concentration

C_m = 1-hour average concentration

t_m = 60 minutes

t_p = 5 minutes

13. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
GS-01	Tanks 4.0	-	None	-	-
BR-01	Aspen modeling	-	Scrubber	98%	-
BR-03	Mass Balance	-	Scrubber	99%	-
SR-01	AP-42 (flare)	See AP-42 Table 13.5-1.	None	-	-
SG-03	AP-42 (boiler)	See AP-42 Table 1.4-1 and 1.4-2.	None	-	-
SG-06	Dusty White of Power Equipment Company (boiler)	-	None	-	Emission data are from Cleaver-Brooks Boiler, Model CB-L2000-1500-200ST
SG-07	Dusty White of Power Equipment Company (boiler)	-	None	-	Emission data are derived from Cleaver-Brooks Boiler, Model CB-L2000-1500-200ST. Emission factor of SO ₂ is calculated from the combustion of sweetened field gas, which is 1.343 lb/MM Btu.
BD-03	Facility estimate, based upon process analysis.	-	None	-	-

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
PT-01	EPA AProtocol for Equipment Leak Emission Estimates@.	-	-	-	-
EM-01	AP-42 Section 3.3 Vendor Test Data (CO, PM, NO _x)	lb/hp-hr: NO _x 6.58E-03 CO 5.76E-03 VOC 2.51E-03 PM ₁₀ 3.29E-04 SO ₂ 2.05E-03	None.	-	VOC emissions based on TOC emission factor, and SO ₂ emissions based on SO _x emission factor in AP-42
EM-02 EM-03	AP-42 Section 3.3	lb/hp-hr: NO _x 0.031 CO 6.68E-03 VOC 2.51E-03 PM ₁₀ 2.20E-04 SO ₂ 2.05E-03	None.	-	VOC emissions based on TOC emission factor, and SO ₂ emissions based on SO _x emission factor in AP-42
EN-01	AP-42, 3.2	<u>lb/MMBtu</u> PM/PM ₁₀ : 4.83e-2 SO ₂ : 5.88e-4 HAPs	None	-	0.59 MMBtu/hr 54 HP 500 hr/yr
	NSPS JJJJ	<u>g/bhp-hr</u> VOC: 10.1 CO: 387 NO _x : 10.1			

14. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
Amine Unit	H ₂ S, calculated to SO ₂ .	2D 15	Annual	To confirm amine unit efficiency and resulting emissions at process flare and at NaHS loading stations.
SG-03, SG-06 &, SG-07	NO _x CO	7E 10	Every 5 years	Permit limit (bubble) @ 98.5 ton/yr.

15. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
SG-03	Fuel inlet flow	Flow meter	Continuous	Yes-SO ₂ , CO and NO _x
SG-06	Fuel inlet flow	Flow meter	Continuous	Yes-SO ₂ , CO and NO _x
SG-07	Fuel inlet flow	Flow meter	Continuous	Yes-SO ₂ , CO and NO _x
SR-01	Fuel inlet flow	Flow meter	Continuous	Yes-SO ₂ , CO and NO _x
BR-03	Recirculating scrubbing liquor flow rate, weight percent of the scrubbing liquor	Flow meter, lab analysis	Daily	No

16. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
SR-01 SG-03 SG-06 SG-07	Purchased gas H ₂ S concentration	Maximum 6.5 ppm (vol) H ₂ S	As purchased	No
SR-01	H ₂ S concentration of sweetened gas and resulting SO ₂ emissions	22.1 lb/hr SO ₂ emissions	Once per day	Yes
SR-01 SG-03 SG-06 SG-07 EM-01 EM-02 EM-03	SO ₂ emissions	0.1 lb/hr SO ₂ , each boiler 22.1 lb/hr SO ₂ from flare 2.1 lb/hr SO ₂ from non-emergency generators 0.62 lb/hr SO ₂ from fire pumps	Once per month	Yes

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		7-source bubble: 98.1 ton/yr		
SR-01 SG-03 SG-06 SG-07 EM-01 EM-02 EM-03	NO _x emissions CO emissions VOC emissions PM ₁₀ emissions	See permit for lb/hr limits. 7-source bubble: 98.5 tpy, for both NO _x and CO, 20.7 tpy for VOC, and 15.8 tpy for PM ₁₀	Once per month	Yes
BR-03	Scrubbing liquor flow rate, scrubbing liquor weight percent	Flow = 25 gpm (min) Weight % = 1.5 (min)	Once per day	No
EM-02 EM-03	Records of maintenance Hours of operation	- 100 hr/yr non-emergency	As performed Monthly	No
GS-01	Gasoline Throughput	10,000 gallon/month	Monthly	No
EN-01	Hours of Operation	500 hours per calendar year	Monthly	No

17. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
BR-01	5%	Department guidance.	Weekly observations.
BR-03	5%	Department guidance.	Weekly observation.
SR-01	20%	Department guidance.	Weekly observation.
SG-03	5%	Department guidance.	Weekly observations.
SG-06	5%	Department guidance.	Weekly observations.
SG-07	5%	Department guidance.	Weekly observations.
BD-03	10%	Department guidance.	Weekly observations.
EM-01	20%	Department guidance.	Weekly observations.
EM-02	20%	Department guidance.	Weekly observations.

SN	Opacity	Justification for limit	Compliance Mechanism
EM-03	20%	Department guidance.	Weekly observations.
EN-01	5%	Department guidance.	Weekly observations.

18. DELETED CONDITIONS:

Former SC	Justification for removal
18, 20, 21, 22, and 23	HBCD process has been removed from the permit.

19. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/ PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Diesel Fuel Storage Tank	A-3							
Groundwater Collection Sump	A-11							
4 Recycle Water Storage Tanks	A-13							
Diethylene Glycol Storage Tank	A-3							
Bulk Cargo Containers (totes, containing aqueous ammonia or 35% HCl, less than 550 gallon capacity)	A-13							
Tail Brine Metal Extraction Process (skid mounted)	A-13							

20. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0882-AR-8

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

