

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2253-AR-11 AFIN: 14-00730

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Bonanza Creek Energy Resources - Dorcheat Gas Processing Plant
488 Columbia 204
Magnolia, Arkansas 71753

3. PERMIT WRITER:

Jesse Smith

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
5/25/2018	Deminimis Modification	Addition of SN-25

6. REVIEWER'S NOTES:

Bonanza Creek Energy Resources – Dorcheat Gas Processing Plant is located 7 ½ miles southwest of Magnolia in Columbia County, Arkansas.

This permit modification is to add a new 145 horsepower lean-burn engine as SN-25. Permitted emission changes are as follows: 0.1 tpy PM/PM₁₀, 0.1 tpy SO₂, 0.3 tpy VOC, 1.4 tpy CO, and 0.7 tpy NO_x.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

The facility was last inspected on April 26, 2017. There were no areas of concern noted during this inspection.

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? N

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-09	VOC	NSPS Subpart KKK
SN-04, 17, 18, 22, 23, 25	NO _x CO, VOC, HAP	NSPS JJJJ
SN-20	HAP	NESHAP HH
SN-20	VOC	NSPS OOOO
SN-01, 02	CO, HAP	NESHAP ZZZZ

10. PERMIT SHIELD – TITLE V PERMITS ONLY:

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

(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? N
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:

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?
Acrolein	0.2293	0.025221	0.4300	Fail
POM/PAH	0.2	0.022	0.0076	Pass

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?
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Pollutant	PAIL ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Acrolein	2.293	2.069	Pass

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 Y

If exempt, explain: No H₂S emissions

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

*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 without Control (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01, 02, 04, 18	AP-42 Table 3.2-2	7.71E-05 lb PM/PM10 /MMBtu 5.88E-04 lb SO ₂ /MMBtu 2.67E-04 lb 1,3-Butadiene/MMBtu 8.36E-03 lb Acetaldehyde/MMBtu 5.14E-03 lb Acrolein/MMBtu 4.4E-04 lb Benzene/MMBtu 4.43E-05 lb Ethylene Dibromide/MMBtu	N/A	N/A	All 4SLB

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor without Control (lb/ton, lb/hr, etc.)					Control Equipment	Control Equipment Efficiency		Comments
								DC68	ELH	
		1.11E-03 lb Hexane/MMBtu 2.69E-05 lb POM/PAH /MMBtu								
01, 02	Manufacturer's Specification G3606	0.63 g VOC/bhp-hr 2.75 g CO/hp-hr 0.26 g Formaldehyde/bhp-hr					Catalytic converter	DC68 45 %	ELH 50 %	DC68 (01/02) Emit (ELH) (15/16)
		0.5 g NO _x /hp-hr						N/A	N/A	
04	Manufacturer's Specification G3516LE	0.32 g VOC/bhp-hr 1.8 g CO/hp-hr 0.25 g Formaldehyde/bhp-hr					Catalytic converter DC65	45 %	93 %	DC65
		2.0 g NO _x /hp-hr						N/A	N/A	
18	Manufacturer's Specification G3508B	0.55 g VOC/bhp-hr 2.58 g CO/hp-hr 0.40 g Formaldehyde/bhp-hr					Catalytic converter	DC68 45 %	EAH 50 %	DC68 (05) EAH (18)
		0.5 g NO _x /hp-hr						N/A	N/A	
09	EPA 453/R-95-017 (Nov, 1995) Oil and Gas Production Operations Average Emission Factors (kg/hr/Source) Table 2-8		Gas	Heavy Oil	Light Oil	Water/Oil	EPA LDAR BMP Monthly 10,000 ppmv Leak Definition	Valves – Gas Service		88 %
		Valves	2.50E-05	8.40E-06	1.90E-05	9.70E-06		Valves – Light Liquid Service		76%
		Pump seals	3.50E-04	NA	5.10E-04	2.40E-05		Pumps – Light Liquid Service		68%
		Others (compressors and others)	1.20E-04	3.20E-05	1.10E-04	5.90E-05		Connectors – All Services		81%
		Connectors	1.00E-05	7.50E-06	9.70E-06	1.00E-05				
		Flanges	5.70E-06	3.90E-07	2.40E-06	2.90E-06				
		Open-Ended Lines	1.50E-05	1.40E-04	1.40E-05	3.50E-06				
	EPA 453/R-95-017 (Nov, 1995) Oil and Gas Production Operations Average Emission Factors (kg/hr/Source) Table 2-4 (used for Dorcheat CS)		Gas	Heavy Oil	Light Oil	Water/Oil	EPA LDAR BMP Monthly 10,000 ppmv Leak Definition	Valves – Gas Service		88 %
		Valves	4.50E-03	8.40E-06	2.50E-03	9.80E-05		Valves – Light Liquid Service		76%
		Pump seals	2.40E-03	NA	1.30E-02	2.40E-05		Pumps – Light Liquid Service		68%
		Others (compressors and others)	8.80E-03	3.20E-05	7.50E-03	1.40E-02		Connectors – All Services		81%
		Connectors	2.00E-04	7.50E-06	2.10E-04	1.10E-04				
		Flanges	3.90E-04	3.90E-07	1.10E-04	2.90E-06				
		Open-Ended Lines	2.00E-03	1.40E-04	1.40E-03	2.50E-04				
10, 19	AP-42 13.5-1	0.068 lb NO _x /MMBtu 0.37 lb CO/MMBtu					Flare	98%		Flare Max Flaring

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor without Control (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	1.4-2	0.14 lb TOC/MMBtu 7.6 lb PM/PM ₁₀ /MMscf 0.6 lb SO ₂ /MMscf			rate = 583,333 scf/h Total (both flares) – 270 MMscf/yr Per gas analysis VOC = 24.11% TOC
17	AP-42 Table 3.2-3	9.50E-03 lb PM/PM ₁₀ /MMBtu 5.88E-04 lb SO ₂ /MMBtu 6.63E-04 lb 1,3-Butadiene/MMBtu 2.79E-03 lb Acetaldehyde/MMBtu 2.63E-03 lb Acrolein/MMBtu 1.58E-03 lb Benzene/MMBtu 2.13E-05 lb Ethylene Dibromide/MMBtu 1.41E-04 lb POM/PAH /MMBtu			4SRB Emit (EAH)
	Manufacturer's Specification G3516RB	13.25 g NO _x /hp-hr 13.25 g CO/hp-hr 0.27 g VOC/bhp-hr	Catalytic converter Emit EAH	96.2 % 84.9 % 7.4 %	
		0.27 g Formaldehyde/bhp-hr	N/A	N/A	
20	GRI-GYLCalc 4.0		BTEX	98%	10220 MMSCF/yr
21	AP-42 Table 13.5-1 (Flare)	0.068 lb NO _x /MMBtu 0.37 lb CO/MMBtu 0.14 lb TOC/MMBtu		98%	1137.5 SCF/Hr
22	AP-42 Table 3.2-3; 4SRB	0.019 lb/MMBtu PM/PM ₁₀ 0.00059 lb/MMBtu SO ₂ 6.63E-04 lb 1,3-Butadiene/MMBtu 2.79E-03 lb Acetaldehyde/MMBtu 2.63E-03 lb Acrolein/MMBtu 1.58E-03 lb Benzene/MMBtu 1.41E-04 lb POM/PAH /MMBtu			4SRB Emit (EAH)
	Manufacturer's Specification	1.0 g/hp-hr VOC			
	Compliance Emissions Testing	1.0 g/hp-hr NO _x 1.5 g/hp-hr CO	NSCR	85% 62%	
23	AP-42 Table 3.2-3; 4SRB	0.019 lb/MMBtu PM/PM ₁₀ 0.00059 lb/MMBtu SO ₂ 2.67E-04 lb 1,3-Butadiene/MMBtu 8.36E-03 lb Acetaldehyde/MMBtu			4SRB Emit (EAH)

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor without Control (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		5.14E-03 lb Acrolein/MMBtu 4.40E-04 lb Benzene/MMBtu 4.43E-05 lb Ethylene Dibromide/MMBtu 2.69E-05 lb POM/PAH /MMBtu			
	Manufacturer's Specification	13.0 g/hp-hr NO _x 1.0 g/hp-hr VOC	NSCR	85% -	
	Compliance Emissions Testing	1.5 g/hp-hr CO	NSCR	56%	
24	GRI-GYLCalc 4.0		BTEX	95%	6.4 MMscfd
25	AP-42 Table 3.2-2	7.71E-05 lb PM ₁₀ /MMBtu 0.000588 lb SO ₂ /MMBtu	DC48 Catalyst	VOC – 45% CO – 93%	4SLB Emit
	Manufacturer's Specification	0.16 gr VOC/bhp-hr 1.00 gr CO/bhp-hr 0.50 gr NO _x /bhp-hr 0.23 gr Formaldehyde/bhp-hr			

14. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
04, 18, 22, 25	VOC (do <u>not</u> include Formaldehyde)	EPA Methods 25A & 18	Every 5 years	NSPS – 40 CFR Part 60, Subpart JJJJ
04, 18, 22, 25	NO _x and CO	EPA Methods 7E and 10	Initial plus every 3 years or every 8760 hrs, whichever comes first	Subpart JJJJ, §60.4243(b)(2)(ii)]
Facility	Sulfur content in Natural gas	EPA Method	Every 5 years	Natural gas testing of the fuel on one pipeline may be representative for all compressor engines located along that pipeline.

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)
N/A				

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)
Facility	Natural gas	0.2 grains of sulfur per 100 scf	180 days and every 5 yrs	Y
01, 02, 04, 18, 22, 25	Catalytic Converter Exhaust Temperature	750°F – 1200°F	Once per shift and daily average	N
01, 02, 04, 15-18, 25	Notification, documentation (tests) of meeting emissions & maintenance logs	Maintain Good Operating Practices Maintain records (SC #10)	Monthly	No
07 - 08	Throughput	74,095 Barrels (3,111,990 gals)	Monthly	No
09	Detected Leaks		Initial and semiannual	Y
10, 19	Flare usage	270 MMscf/yr combined	Per event	N
23	Hours of Operation	100 hours/yr	Monthly	N

17. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01, 02, 04, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25	5%	Department guidance	Natural Gas Combustion only.

18. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

19. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Amine Regen Heater #1 (2.6 MMBtu/hr)	A-1	0.08	0.01	0.06	0.94	1.12	0.0	0.02
Mol Sieve Heater #1 (0.35 MMBtu/hr)	A-1	0.01	0.001	0.01	0.13	0.15	0.0	0.003
Amine Regen Heater #2 (3.25 MMBtu/hr)	A-1	0.11	0.01	0.15	1.17	1.40	0.0	0.03
Mol Sieve Heater #2 (0.44 MMBtu/hr)	A-1	0.01	0.001	0.01	0.16	0.06	0.0	0.004
Mol Sieve Heater #3 (0.35 MMBtu/hr)	A-1	0.01	0.001	0.01	0.13	0.15	0.003	0.003
Glycol Regen Heater #1 (0.5 MMBtu/hr)	A-1	0.02	0.001	0.01	0.17	0.21	0.005	0.005
Condensate Stabilization Heater (2.5 MMBtu/hr)	A-1	0.08	0.01	0.06	0.9	1.07	0.02	0.02
Line Heater (0.35 MMBtu/hr)	A-1	0.01	0.01	0.01	0.13	0.15	0.01	0.01
Glycol Regenerator Heater (0.85 MMBtu/hr)	A-1	0.03	0.01	0.02	0.31	0.37	0.01	0.01

A-1 Total	A-1	0.36	0.054	0.34	4.1	4.68	0.048	0.105
Wastewater Tank #1 (14,000 gal)	A-13	0.0	0.0	3.22 E-06	0.0	0.0	0.0	7.51E-08
Wastewater Tank #2 (14,000 gal)	A-13	0.0	0.0	3.22 E-06	0.0	0.0	0.0	7.51E-08
NGL Tank #1 (30,000 gal) *	A-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NGL Tank #2 (30,000 gal) *	A-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NGL Tank #3 (30,000 gal) *	A-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NGL Tank #4 (30,000 gal) *	A-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NGL Tank #5 (30,000 gal) *	A-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NGL Tank #6 (30,000 gal) *	A-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gun Barrel Tank (17,500 gal)	A-13	0	0	1.24	0	0	1.7E-03	1.7E-03
A-13 Total	A-13	0.0	0.0	1.24	0.0	0.0	1.7E-03	1.7E-03
DGA (Amine) Tank (2,100 gal)	A-3	0.0	0.0	0.01	0.0	0.0	0.0	0.01

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 #
2253-AR-10

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Minor Source

Revised 03-11-16

Bonanza Creek Energy Resources -
 Dorcheat Gas Processing Plant
 Permit #: 2253-AR-11
 AFIN: 14-00730

			Old Permit	New Permit
\$/ton factor	23.93	Permit Predominant Air Contaminant	92.4	93.1
Minimum Fee \$	400	Net Predominant Air Contaminant Increase	0.7	
Minimum Initial Fee \$	500			
Check if Administrative Amendment	<input type="checkbox"/>	Permit Fee \$	400	
		Annual Chargeable Emissions (tpy)	93.1	

Pollutant (tpy)	Old Permit	New Permit	Change
PM	3	3.1	0.1
PM ₁₀	3	3.1	0.1
PM _{2.5}	0	0	0
SO ₂	0.9	1	0.1
VOC	56.6	56.9	0.3
CO	77.4	78.8	1.4
NO _x	92.4	93.1	0.7
Single HAP	6.88	7.28	0.4
Total HAP	10.34	11.1	0.76