

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2253-AR-9 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:

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
7/3/2017	Deminimis Mod	Removed two engines, replaced two engines with smaller engines.

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 replace SN-01 and SN-02 engines with lower horsepower engines and to remove SN-03 and SN-05 from the permit as the units are being decommissioned. These replacement engines are existing engines moved from another site and are subject to 40 C.F.R. § 63 Subpart ZZZZ. Additional conditions for these engines have been added to satisfy the requirements of Subpart ZZZZ. Permitted

emission were decreased by 0.2 tpy PM/PM<sub>10</sub>, 0.2 tpy SO<sub>2</sub>, 9.4 tpy VOC, 3.8 tpy CO, 3.2 tpy NO<sub>x</sub>, 0.62 tpy Single HAP, and 2.34 tpy Total HAPs.

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 at that time.

8. PSD APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? 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, 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	NO <sub>x</sub> CO, VOC, HAP	NSPS JJJJ
SN-20	HAP	NESHAP HH
SN-20	VOC	NSPS OOOO
SN-01, 02	CO, HAP	NESHAP ZZZZ

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

a) Reserved.

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.

1<sup>st</sup> 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/m<sup>3</sup>), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m <sup>3</sup> )	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

2<sup>nd</sup> 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 <sup>3</sup> ) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m <sup>3</sup> )	Pass?
Acrolein	2.293	2.069	Pass

c) H<sub>2</sub>S 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 H<sub>2</sub>S Standards Y  
 If exempt, explain: No H<sub>2</sub>S emissions

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H <sub>2</sub> 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<sub>p</sub> = 5-minute average concentration

C<sub>m</sub> = 1-hour average concentration

t<sub>m</sub> = 60 minutes

t<sub>p</sub> = 5 minutes

12. CALCULATIONS:

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	
01, 02, 04, 18	AP-42 Table 3.2-2	7.71E-05 lb PM/PM10 /MMBtu 5.88E-04 lb SO <sub>2</sub> /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 1.11E-03 lb Hexane/MMBtu 2.69E-05 lb POM/PAH /MMBtu	N/A	N/A		All 4SLB
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 % 93 % 90 %	ELH 50 % 93 % 76 %	DC68 (01/02) Emit (ELH) (15/16)
		0.5 g NO <sub>x</sub> /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 % 90 %		DC65
		2.0 g NO <sub>x</sub> /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 % 93 % 90 %	EAH 50 % 93 % 76 %	DC68 (05) EAH (18)

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor without Control (lb/ton, lb/hr, etc.)					Control Equipment	Control Equipment Efficiency	Comments
		0.5 g NO <sub>x</sub> /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 1.4-2	0.068 lb NO <sub>x</sub> /MMBtu 0.37 lb CO/MMBtu 0.14 lb TOC/MMBtu 7.6 lb PM/PM <sub>10</sub> /MMscf 0.6 lb SO <sub>2</sub> /MMscf					Flare	98%	Flare Max Flaring 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 <sub>10</sub> /MMBtu 5.88E-04 lb SO <sub>2</sub> /MMBtu 6.63E-04 lb 1,3-Butadiene/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
		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			
	Manufacturer's Specification G3516RB	13.25 g NO <sub>x</sub> /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 <sub>x</sub> /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 <sub>10</sub> 0.00059 lb/MMBtu SO <sub>2</sub> 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 <sub>x</sub> 1.5 g/hp-hr CO	NSCR	85% 62%	
23	AP-42 Table 3.2-3; 4SRB	0.019 lb/MMBtu PM/PM <sub>10</sub> 0.00059 lb/MMBtu SO <sub>2</sub> 2.67E-04 lb 1,3-Butadiene/MMBtu 8.36E-03 lb Acetaldehyde/MMBtu 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			4SRB Emit (EAH)
	Manufacturer's Specification	13.0 g/hp-hr NO <sub>x</sub> 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

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
04, 17, 18, 22	VOC (do <u>not</u> include Formaldehyde)	EPA Methods 25A & 18	Every 5 years	NSPS – 40 CFR Part 60, Subpart JJJJ
04, 17, 18, 22	NO <sub>x</sub> 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.
01, 02	CO	EPA Method 10	Every Year	Subpart ZZZZ, §63.6640(c)

14. 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				

15. 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, 17, 18, 22	Catalytic Converter	750°F – 1200°F	Once per shift and daily average	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	Exhaust Temperature			
01, 02, 04, 15-18	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

16. OPACITY:

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

17. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/PM <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	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	A-1	0.01	0.001	0.01	0.13	0.15	0.0	0.003



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

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
2253-AR-8

## 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-9  
 AFIN: 14-00730

			Old Permit	New Permit
\$/ton factor	23.93	Permit Predominant Air Contaminant	79.7	76.5
Minimum Fee \$	400	Net Predominant Air Contaminant Increase	-3.2	
Minimum Initial Fee \$	500			
Check if Administrative Amendment	<input type="checkbox"/>	Permit Fee \$	400	
		Annual Chargeable Emissions (tpy)	76.5	

Pollutant (tpy)	Old Permit	New Permit	Change
PM	3.2	3	-0.2
PM <sub>10</sub>	3.2	3	-0.2
PM <sub>2.5</sub>	0	0	0
SO <sub>2</sub>	1.1	0.9	-0.2
VOC	66.7	57.3	-9.4
CO	95.1	91.3	-3.8
NO <sub>x</sub>	79.7	76.5	-3.2
Single HAP	9.94	9.32	-0.62
Total HAPs	14.9	12.56	-2.34