

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0972-AOP-R6 AFIN: 24-00068

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Black Hills Energy Arkansas, Inc. - Woolsey Compressor Station
2002 Cataberry Run Road
Ozark, Arkansas 72949

3. PERMIT WRITER:

Jeremy Antipolo

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Pipeline Transportation of Natural Gas
NAICS Code: 486210

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
1/26/2018	Renewal	None

6. REVIEWER'S NOTES:

Black Hills Energy Arkansas, Inc. – Woolsey Compressor Station operates a natural gas compressor station located near Ozark, Arkansas. This permitting issuance completes renewal requirements of Arkansas Regulation 26 and 40 C.F.R. Part 70.

With this renewal application, the insignificant activities list is updated, the permit shield is updated, and the individually permitted HAPs are removed consistent with the current ADEQ Non-criteria Pollutant Control Strategy (revised April 2015). The permit shield is updated by adding 40 C.F.R. Part 98 to the list of applicable regulations, while 40 C.F.R.

Part 60 Subpart OOOO, 40 C.F.R. Part 60 Subpart OOOOa and 40 C.F.R. Part 63 Subpart HH are added to the list of inapplicable regulations.

This permitting action results with emission increases of 1.0 tpy PM and 1.2 tpy PM₁₀. Associated emission decreases are 0.1 tpy VOC, 0.1 tpy CO and 0.2 tpy NO_x. Acrolein, Butadiene and Formaldehyde were removed as individually listed HAPs and replaced with Single and Total HAPs for each source.

7. COMPLIANCE STATUS:

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

This facility was last inspected on February 15, 2018 and was found to be in compliance.

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)
02, 03, 04	HAPs	NESHAP 40 C.F.R. § 63 Subpart 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.)

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	0.23	0.03	5.35E-02	No

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?
Acrolein	2.3	0.73	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 Y
 If exempt, explain: No H₂S emissions

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

*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
02	Equipment Manufacturer Specs AP-42 3.2 Table 3.2-1 Based on fuel sulfur Content of 0.5 gr/100 scf	<u>g/bhp-hr:</u> NO _x =15.00 CO=1.00 VOC=1.20 Formaldehyde*=0.05 <u>lb/MMBtu:</u> PM=0.04831 PM ₁₀ =0.04831 <u>lb/MMBtu:</u> SO ₂ =1.47 E-03	None	N/A	4SRB 600HP 4.52 MMBtu/hr 39.63 MMscf/yr

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
03	Equipment Manufacturer Specs AP-42 3.2 Table 3.2-2 Based on fuel sulfur Content of 0.5 gr/100 scf	<u>g/bhp-hr:</u> NO _x =2.0 CO=2.65 VOC=1.0 Formaldehyde*=0.05 <u>lb/MMBtu:</u> PM=0.0099871 PM ₁₀ =0.0099871 <u>lb/MMBtu:</u> SO ₂ =1.47 E-03	None	N/A	4SLB 615 HP 4.64 MMBtu/hr 40.62 MMscf/yr
04	Equipment Manufacturer Specs AP-42 3.2 Table 3.2-2 Based on fuel sulfur Content of 0.5 gr/100 scf	<u>g/bhp-hr:</u> NO _x =1.61 CO=1.50 VOC=0.25 Formaldehyde*=0.05 <u>lb/MMBtu:</u> PM=0.01941 PM ₁₀ =0.01941 <u>lb/MMBtu:</u> SO ₂ =1.47 E-03	None	N/A	4SRB 896 HP 7,540 Btu/hp-hr 6.76 MMBtu/hr 59.18 MMscf/yr
05	AP-42 1.4 Tables 1.4-1, 1.4-2 and 1.4-3	<u>Lb/MMscf</u> NO _x =100 CO=84 VOC=5.5 SO ₂ =0.6 PM=7.6 PM ₁₀ =4.0 E-5 <u>HAPs</u> See Table 1.4-3	None	N/A	2.0 MMBtu/hr 17.52 MMscf/yr
06	AP-42 1.4 Tables 1.4-1, 1.4-2 and 1.4-3	<u>Lb/MMscf</u> NO _x =100 CO=84 VOC=5.5 SO ₂ =0.6 PM=7.6 PM ₁₀ =4.0 E-5	None	N/A	0.5 MMBtu/hr 4.38 MMscf/yr

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		<u>HAPs</u> See Table 1.4-3			

14. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
02 - 04 (one of each model engine)	NO _x CO	7E 10	Every 5 years	Compressor stations are required to test one half of each type of engine every five years
03 - 04	NO _x CO	7E 10	Once within 180 days of installing controls	Compliance Verification
Plantwide	Total Sulfur (SO ₂)	Methods outlined in section 2.3.5 or 2.3.3.1.2 of 40 CFR Part 75, Appendix D	Within 180 days of permit issuance and every five years	Department Guidance
03 & 04	O ₂ Moisture Content Formaldehyde CO	Methods & Requirements Listed in Permit	Annual	NESHAP 40 CFR Part 63 Subpart ZZZZ

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)
03 & 04	Catalyst Temperature	Thermocouple	Continuous	N
03 & 04	Pressure Differential cross Catalyst Bed	Pressure transducer, differential pressure gauge, manometer as appropriate	Monthly	N

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)
02	Maintenance	N/A	Monthly	N
03 & 04	Pressure	Change of 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured	Monthly	Y
03 & 04	Catalyst Temperature	450 °F to 1350 °F	Continuous	Y
03 & 04	Annual Compliance Demonstration	Listed in Permit	Annual	Y
03 & 04	Maintenance/Notifications	N/A	Monthly	Y
Facility	Total Sulfur (SO ₂)	0.5 grains/100 scf of natural gas	Every 5 years	Y

17. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
Facility	5%	Department Guidance	Pipeline Quality Natural Gas Fuel Only

18. DELETED CONDITIONS:

Former SC	Justification for removal
Plantwide Conditions #10, #11 and #12	Compliance with Plantwide Condition #9 ensures compliance with Plantwide Conditions #10, #11 and #12 (The facility uses one test to show compliance with all four conditions). Plantwide Condition #9 requires the use of pipeline quality natural gas which contains <0.5 grains or less of total sulfur per 100 scf (<9 ppm total sulfur). Plantwide Condition #10 requires the same sulfur content limit to show compliance with SO ₂ limits. Plantwide Conditions #11 and #12 requires the use of natural gas with a sulfur content less than 154 ppm as fuel, which is well above 9ppm.

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
T-4 Lube Oil Tanks (250 gallon)	A-2			0.1				0.1
T-5 Lube Oil Tank (250 gallon)	A-2			0.1				0.1
Used Oil Drum #1	A-2			0.1				0.1
Used Oil Drum #2	A-2			0.1				0.1
T-6 Lube Oil Tank (550 gallon)	A-3			0.1				0.1
Equipment Leaks	A-13			0.6			0.0062	0.0118
Compressor Blowdowns	A-13			0.004			0.004	0.004
T-1 Condensed Water	A-13			0.01			<0.01	0.01
T-2 Condensed Water	A-13			0.01			<0.01	0.01
T-3 Produced Water	A-13			0.05			<0.05	0.05

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 #
0972-AOP-R5

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Black Hills Energy Arkansas, Inc. - Woolsey Compressor
 Permit Number: 0972-AOP-R5
 AFIN: 24-00068

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	131.8
Permit Type	Renewal No Changes	Permit Fee \$	0

Minor Modification Fee \$	500
Minimum Modification Fee \$	1000
Renewal with Minor Modification \$	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	<input type="checkbox"/>
If Hold Active Permit, Amt of Last Annual Air Permit Invoice \$	0
Total Permit Fee Chargeable Emissions (tpy)	0.7
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM:

Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride

Air Contaminants:

All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		1	2	1		
PM ₁₀		0.8	2	1.2	1	2
PM _{2.5}		0	0	0		
SO ₂		0.5	0.5	0	0	0.5
VOC		15.5	15.4	-0.1	-0.1	15.4
CO		35.7	35.6	-0.1		
NO _x		114.1	113.9	-0.2	-0.2	113.9
Acrolein	<input type="checkbox"/>	3.48E-01	0	-0.348		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Butadiene	<input type="checkbox"/>	4.96E-02	0	-0.0496		
Formaldehyde	<input type="checkbox"/>	1.04	0	-1.04		
Single HAP	<input type="checkbox"/>	0	1.02	1.02		
Total HAP	<input type="checkbox"/>	0	1.95	1.95		