

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1185-AOP-R13 AFIN: 24-00071

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Black Hills Energy Arkansas, Inc.—Drake Compressor Station  
2204 Westview Road  
Ozark, Arkansas 72949

3. PERMIT WRITER:

Alexander Sudibjo

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
5/24/2021	Minor Mod	New compressor engines (SN-97 and SN-98)

6. REVIEWER'S NOTES:

This minor modification removes two existing Solar Turbines (SN-11 and SN-12) and replaces them with two 1500 HP spark ignition (SI) reciprocating engines (SN-97 and SN-98). The removal is planned for March 31, 2022 and the facility is planning to operate the Solar Turbines until that date. The facility is also replacing a Sivals Glycol Dehydrator (SN-92) with a Bird Glycol Dehydrator. The replacement has a reboiler with the same capacity (0.5 MMBtu/hr). This also includes a minor modification to incorporate applicable requirements for NSPS OOOOa into the permit and add fugitive emissions that were formerly insignificant activities as a permitted source (SN-99).

Lastly, this modification includes corrections to SN-95 and SN-96 CO and NO<sub>x</sub> emissions and adds total HAPs emissions for all sources. The facility's permitted annual emissions are increasing by 1.2 tpy PM/PM<sub>10</sub>, 1.3 tpy VOC, 0.24 tpy acetaldehyde, 0.21 tpy acrolein, 0.04 tpy 1,3-butadiene, 0.08 tpy formaldehyde, and 16.49 tpy total HAPs. The facility's permitted annual emissions are decreasing by 0.2 tpy CO.

7. COMPLIANCE STATUS:

As of May 24, 2021, there are no compliance issues with the facility. ECHO (<https://echo.epa.gov/detailed-facility-report?fid=110040990283>) shows no inspection recorded.

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? Y

- *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. The modification did not result in an emission increase that is above the significant emission increase threshold.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-15, SN-18, SN-19, SN-87, SN-88, SN-89, and SN-90	HAP	NESHAP ZZZZ
SN-18	NO <sub>x</sub> , CO	NSPS JJJJ
SN-95, SN-96, SN-97, and SN-98	NO <sub>x</sub> , CO	NSPS JJJJ

10. UNCONSTRUCTED SOURCES:

Unconstructed Source	Permit Approval Date	Extension Requested Date	Extension Approval Date	If Greater than 18 Months without Approval, List Reason for Continued Inclusion in Permit
N/A				

11. 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?  
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		

12. COMPLIANCE ASSURANCE MONITORING (CAM) – TITLE V PERMITS ONLY:

List sources potentially subject to CAM because they use a control device to achieve compliance and have pre-control emissions of at least 100 percent of the major source level. List the pollutant of concern and a brief summary of the CAM plan (temperature monitoring, CEMs, opacity monitoring, etc.) and frequency requirements of § 64.

Source	Pollutant Controlled	Cite Exemption or CAM Plan Monitoring and Frequency
N/A		

13. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

14. 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 DEQ Air Permit Screening Modeling Instructions.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated. Based on Division of Environmental Quality 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 Division of Environmental Quality has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value ( $\text{mg}/\text{m}^3$ ), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV ( $\text{mg}/\text{m}^3$ )	PAER (lb/hr) = $0.11 \times \text{TLV}$	Proposed lb/hr	Pass?
Acrolein	0.229	0.02519	0.45	N

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 Division of Environmental Quality to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ( $\mu\text{g}/\text{m}^3$ ) = 1/100 of Threshold Limit Value	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Pass?
Acrolein	2.29	1.39	Y

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: The facility does not have H<sub>2</sub>S emissions.

15. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
11 and 12	AP-42	PM/PM <sub>10</sub> : 6.6E-3 lb/MMBtu SO <sub>2</sub> : 1.5 E-3 lb/MMBtu Acetaldehyde: 4.0E-5 lb/MMBtu Acrolein: 6.4E-6 lb/MMBtu 1,3-butadiene: 4.3E-7 lb/MMBtu Formaldehyde: 5.1E-3 lb/MMBtu POM: 3.5E-6 lb/MMBtu	None	N/A	

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	Manufacturer's Specifications with safety factors	VOC: 1.1 g/hp-hr CO: 2.23 g/hp-hr NO <sub>x</sub> : 1.49 g/hp-hr			
15 and 87	AP-42	PM/PM <sub>10</sub> : 9.9871E-3 lb/MMBtu SO <sub>2</sub> : 1.5E-3 lb/MMBtu Acetaldehyde: 8.36E-3 lb/MMBtu Acrolein: 5.14E-3 lb/MMBtu 1,3-butadiene: 2.67E-4 lb/MMBtu Formaldehyde: 5.28E-2 lb/MMBtu POM: 1.61508E-4 lb/MMBtu	Oxidation Catalyst	93%	Control efficiency not used in emission calculations.  Annual emissions based on 7,500 hr/yr each.
	Manufacturer's Specifications with safety factors	VOC: 1.0 g/hp-hr CO: 2.5 g/hp-hr NO <sub>x</sub> : 2.0 g/hp-hr			
18	AP-42	PM/PM <sub>10</sub> : 1.941E-2 lb/MMBtu SO <sub>2</sub> : 5.88E-4 lb/MMBtu Acetaldehyde: 2.79E-3 lb/MMBtu Acrolein: 2.63E-3 lb/MMBtu 1,3-butadiene: 6.63E-4 lb/MMBtu Formaldehyde: 2.05E-2 lb/MMBtu	None	N/A	Annual emissions based on 100 hr/yr.
	Manufacturer's Specifications with safety factors	VOC: 1.6 g/hp-hr CO: 95.32 g/hp-hr NO <sub>x</sub> : 2.52 g/hp-hr			
19 and 89	AP-42	PM/PM <sub>10</sub> : 9.9871E-3 lb/MMBtu SO <sub>2</sub> : 5.88E-4 lb/MMBtu Acetaldehyde: 8.36E-3 lb/MMBtu Acrolein: 5.14E-3 lb/MMBtu 1,3-butadiene: 2.67E-4 lb/MMBtu Formaldehyde: 5.28E-2 lb/MMBtu POM: 1.61508E-4 lb/MMBtu	Oxidation Catalyst	93%	Control efficiency not used in emission calculations.
	Manufacturer's Specifications with safety factors	VOC: 1.3 g/hp-hr CO: 3.5 g/hp-hr NO <sub>x</sub> : 1.95 g/hp-hr			
88	AP-42	PM/PM <sub>10</sub> : 9.9871E-3 lb/MMBtu SO <sub>2</sub> : 5.88E-4 lb/MMBtu Acetaldehyde: 8.36E-3 lb/MMBtu Acrolein: 5.14E-3 lb/MMBtu	Oxidation Catalyst	93%	Control efficiency not used in emission calculations.

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		1,3-butadiene: 2.67E-4 lb/MMBtu Formaldehyde: 5.28E-2 lb/MMBtu POM: 1.61508E-4 lb/MMBtu			
	Manufacturer's Specifications with safety factors	VOC: 1.2 g/hp-hr CO: 3.18 g/hp-hr NO <sub>x</sub> : 1.8 g/hp-hr			
90	AP-42	PM/PM <sub>10</sub> : 1.941E-2 lb/MMBtu SO <sub>2</sub> : 5.88E-4 lb/MMBtu Acetaldehyde: 2.79E-3 lb/MMBtu Acrolein: 2.63E-3 lb/MMBtu 1,3-butadiene: 6.63E-4 lb/MMBtu Formaldehyde: 2.05E-2 lb/MMBtu POM: 2.381E-4 lb/MMBtu	None	N/A	
	Manufacturer's Specifications with safety factors	VOC: 2.75 g/hp-hr CO: 49.5 g/hp-hr NO <sub>x</sub> : 12.1 g/hp-hr			
91 and 92	AP-42	PM/PM <sub>10</sub> : 7.6 lb/MMCF SO <sub>2</sub> : 0.6 lb/MMCF VOC: 5.5 lb/MMCF CO: 84 lb/MMCF NO <sub>x</sub> : 100 lb/MMCF Formaldehyde: 7.5E-2 lb/MMCF POM: 6.982E-4 lb/MMCF	None	N/A	SN-92: 0.5 MMBtu/hr
	GlyCalc 4.0	SN-92 VOC: 0.2 lb/hr SN-92 VOC: 0.7 tpy	None	N/A	
95 and 96	NSPS JJJJ	NO <sub>x</sub> : 1.0 g/hp-hr CO: 1.5 g/hp-hr VOC: 0.7 g/hp-hr Formaldehyde: 0.05 g/hp-hr	NSCR Catalyst		1900 HP
	AP-42, 3.2	PM/PM <sub>10</sub> : 0.01941 lb/MMBtu SO <sub>2</sub> : 5.88E-04 lb/MMBtu Acetaldehyde: 2.79E-3 lb/MMBtu Acrolein: 2.63E-3 lb/MMBtu 1,3-Butadiene: 6.63E-4 lb/MMBtu			
97 and 98	NSPS JJJJ	NO <sub>x</sub> : 1.0 g/hp-hr CO: 2.0 g/hp-hr VOC: 0.7 g/hp-hr Formaldehyde: 0.05 g/hp-hr	NSCR Catalyst		1500 HP 10.81 MMBtu/hr Natural Gas 4SRB

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	AP-42, 3.2	PM/PM <sub>10</sub> : 0.01941 lb/MMBtu SO <sub>2</sub> : 5.88E-04 lb/MMBtu Acetaldehyde: 2.79E-3 lb/MMBtu Acrolein: 2.63E-3 lb/MMBtu 1,3-Butadiene: 6.63E-4 lb/MMBtu			
99	EPA Protocol for Equipment Leak Emissions Estimates, EPA-453/R-95-017	1% VOC in gas service 100% VOC in water/oil service 0.1% HAPs in gas service 10% HAPs in water/oil service	-	-	

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
SN-15, SN-19, SN-87 through SN-98 (one of each model engine)	CO	10	Every 60 months	Demonstrate compliance with the CO limits.
SN-15, SN-19, SN-87 through SN-98 (one of each model engine)	NO <sub>x</sub>	7E	Every 60 months	Demonstrate compliance with the NO <sub>x</sub> limits.
SN-18	NO <sub>x</sub> , CO	As specified.	One-time	Subpart JJJ

17. 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				

## 18. 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)
SN-15 and SN-87	Hours of Operation	15,000 hours per 12-months	Monthly	Y
SN-18	Hours of Operation	100 hours per 12-months; also must comply with 63, Subpart ZZZZ hour limits and document how many hours are for emergency operation and how many hours for non-emergency operation	Monthly	Y
Engines	Fuel Used	Pipeline Quality Natural Gas Only	Continuously	N
SN-15, SN-19, SN-87, SN-88, and SN-89	Remote Engine Evaluation	See Definition of Remote Stationary RICE in 63, Subpart ZZZZ	Annually	N
Engines	Oil Analysis Records [§63.6625(j)]	See §63.6625(j)	Same frequency as specified for changing the oil	N
Engines	Records described in §63.6655(a)(1) through (a)(5), (b)(1) through (b)(3) and (c)	N/A	As Needed	Maybe
Engines	Records of Maintenance Conducted	Per Maintenance Plan and Table 2d of 40 CFR Part 63, Subpart ZZZZ	As Needed	Y, when did not meet limitation
SN-95 and SN-96	Hours of operation; Hours of operation since rod packing replacement	N/A	Continuously	



19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
15, 18, 19, and 87 through 98	5%	Department Guidance	Natural Gas Fuel Only

20. DELETED CONDITIONS:

Former SC	Justification for removal
1-3	SN-11 and SN-12 are being removed from the permit.

21. 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 <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs		
							Single	Total	
Four 550 Gallon Lube Oil Storage Tanks	A-3			0.000066				0.000066	0.000066
Non-Point Source Fugitive Emissions	A-13			0.11					
Blowdowns	A-13			0.18					
Parts Washer	A-13			0.64					
A-13 Totals				0.93					

22. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
1185-AOP-R12



## APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

## Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Black Hills Energy Arkansas, Inc. - Drake  
 Compressor Station  
 Permit Number: 1185-AOP-R13  
 AFIN: 24-00071

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	344.5
Permit Type	Minor Mod	Permit Fee \$	500

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)	2.5
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		6.9	8.1	1.2		
PM <sub>10</sub>		6.9	8.1	1.2	1.2	8.1
PM <sub>2.5</sub>		0	0	0		
SO <sub>2</sub>		1.7	1.7	0	0	1.7
VOC		129.8	131.1	1.3	1.3	131.1
CO		325.5	325.3	-0.2		
NO <sub>x</sub>		203.6	203.6	0	0	203.6
Acetaldehyde	<input type="checkbox"/>	2.08	2.32	0.24		

