

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1165-AOP-R12 AFIN: 24-00012

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Arkansas Electric Cooperative Corporation - Thomas B. Fitzhugh Generating Station
6006 Lock and Dam Road
Ozark, Arkansas 72949

3. PERMIT WRITER:

Jesse Smith

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Fossil Fuel Electric Power Generation
NAICS Code: 221112

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
4/3/2024	Minor Mod	Two combustion turbines Two boilers Stand-by diesel generator Two cooling towers

6. REVIEWER'S NOTES:

Arkansas Electric Cooperative Corporation (AECC) operates a Westinghouse 501D5A combustion turbine at the existing Thomas B. Fitzhugh Generating Station located at 6006 Lock and Dam Road in Ozark, Arkansas 72949. The facility has submitted a modification to add two simple cycle combustion turbines with SCR and oxidation catalysts, two boilers, a stand-by diesel generator, two cooling towers, and additional storage tanks to the insignificant activity list. Permitted emissions increased as follows:

11.5 tpy PM, 11.3 tpy PM₁₀, 1.4 tpy SO₂, 22.4 tpy VOC, 74.5 tpy CO, 39.8 tpy NO_x, 0.42 tpy Single HAP, 1.39 tpy Total HAPs, and 18.6 tpy Ammonia.

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 5, 2023. There were no areas of concern noted at this time and no significant violations noted on EPA's ECHO database.

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? 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.

Emission increases for this project are below significance levels.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-06	PM/PM ₁₀ SO ₂ CO NO _x	PSD NSPS Subpart Db NSPS Subpart GG
SN-08	NO _x , CO, HAPs	NSPS Subpart IIII NESHAP Subpart ZZZZ
SN-10	HAPs	NESHAP CCCCCC
SN-11	NO _x , CO, HAPs	NSPS Subpart IIII NESHAP Subpart ZZZZ
SN-12	NO _x	NSPS Subpart GG
SN-13	NO _x	NSPS Subpart GG
SN-16	NO _x , CO, HAPs	NSPS Subpart IIII NESHAP Subpart ZZZZ

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 Rule 18 requirement.)

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
06	NO _x	Acid Rain Program requirement that applies to this source and pollutant – 40 C.F.R. § 64.2(b)(1)(iii)

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.

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

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = $0.11 \times \text{TLV}$	Proposed lb/hr	Pass?
Acrolein	0.2	0.022	0.01591	Yes
PAH	0.2	0.022	0.06297	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 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?
Sum of all PAH Pollutants (0.591 lb/hr)	2.0	0.06583	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

15. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
04 & 05	TANKS 4.0.9d	727.46 lb VOC/yr 782.0 lb VOC/yr			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipm ent	Control Equipment Efficiency	Comments
06	Manufacturer's data (criteria) & AP-42 (HAPs)	<u>lb/hr</u> PM/PM ₁₀ : 54.4 VOC: 11.20 CO: 305.8 NO _x : 273.60 SO ₂ : 514.00			
07, 17, & 18	Mass balance	1,070,100 gal/hr 1,000 ppm 0.005% drift			PM ₁₀ = Capacity x Total Dissolved Solids x Drift Loss x Density of Water
08	Manufacturer's data (PM/PM ₁₀ , VOC, CO and NO _x) and mass balance (SO ₂)	<u>g/kW-hr</u> PM/PM ₁₀ : 0.055 VOC: 0.15 CO: 0.67 NO _x : 5.43 <u>lb/hr</u> SO ₂ : 0.0046 21.6 gal/hr 7.08 lb/gal 15 ppm			SO ₂ = Fuel Oil (FO) flow x FO density x FO sulfur% x (2 lb SO ₂ /1 lb S)
10	TANKS 4.0.9d	202.86 lb VOC/yr			
11	Manufacturer's data (PM/PM ₁₀ , VOC, CO and NO _x) and mass balance (SO ₂)	<u>g/hp-hr</u> PM/PM ₁₀ : 0.12 VOC: 0.10 CO: 0.80 NO _x : 2.75 <u>lb/hr</u> SO ₂ : 0.002 9.3 gal/hr 7.08 lb/gal 15 ppm			SO ₂ = Fuel Oil (FO) flow x FO density x FO sulfur% x (2 lb SO ₂ /1 lb S)
12 & 13	<u>Natural Gas</u> 40 CFR 75 Appendix D Manufacturer's data AP-42 Table 3.1-2a	<u>Lb/MMBtu</u> SO ₂ : 0.0006 H ₂ SO ₄ : 0.00006 NO _x : 0.0158 CO: 0.04 VOC: 0.0137 Ammonia: 0.0136 PM: 0.0066 PM ₁₀ : 0.0066			90 Startup/shutdown events a year.

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipm ent	Control Equipment Efficiency	Comments
		PM _{2.5} : 0.0066			
	<u>Fuel Oil</u> AP-42 Table 3.1-2a Manufacturer's data	<u>Lb/MMBtu</u> SO ₂ : 0.00152 H ₂ SO ₄ : 0.000152 PM: 0.0115 PM ₁₀ : 0.0115 PM _{2.5} : 0.0115 NO _x : 0.0323 CO: 0.0302 VOC: 0.0208 Ammonia: 0.0143			10 Startup/shutdown events a year.
14 & 15	<u>Natural Gas</u> AP-42 Table 1.4-1 and Table 1.4-2	<u>Lb/MMscf</u> SO ₂ : 0.6 NO _x : 100.0 CO: 84.0 PM: 7.6 PM ₁₀ : 7.6 PM _{2.5} : 7.6 VOC: 5.5			
	<u>Fuel Oil</u> AP-42 Tables 1.3-1, 1.3-2, 1.3-3, 1.3-6, 1.3- 8, and 1.3-12	<u>Lb/1,000 gal</u> SO ₂ : 7.1 NO _x : 20.0 CO: 5.0 PM: 3.3 PM ₁₀ : 3.3 PM _{2.5} : 3.3 VOC: 0.2			
16	NSPS Subpart III Tier 2 standards and AP-42 Table 3.4-1	<u>g/kW-hr</u> PM: 0.2 PM ₁₀ : 0.2 PM _{2.5} : 0.2 VOC: 1.37 CO: 3.5 NO _x : 6.4 <u>Lb/hp-hr</u> SO ₂ : 4.04E-04			

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
06	NO _x	Method 20	Initial	40 C.F.R. §60.46b(f)
	NO _x	Method 20	Initial	40 C.F.R. §60.335 40 C.F.R. §60.8
	SO ₂	ASTM D 1072-80, D 3031-81, D 4084-82, or D 3246-81	180 days after start-up	40 C.F.R. §60.335 40 C.F.R. §60.8
			Every 5 years	Department Guidance

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)
06, 12, 13	CO, NO _x , SO ₂	CEM/fuel content	Continuous	Y
08	High Pressure Limit	Backpressure Monitor	Continuous	N

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)
04 & 05	Fuel oil	35.1 Million gal per year	Monthly	Y
06	fuel oil and natural gas burned	9.626 billion cubic feet of natural gas and 35.14 million gallons of fuel oil per year	Monthly	Y
06	duration and CO emissions for startup/shutdown	Startup 4 hr; 6,000 lb CO Shutdown	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	events	1 hr; 305.8 lb CO		
07	TDS	1,000 ppm	Monthly	Y
17, 18	TDS	1,200 ppm	Monthly	Y
08	Hours of operation	2,500 hours/year	Monthly	Y
16	Hours of operation	1,000 hours/year	Monthly	Y
10	Gasoline Throughput	10,000 gal/month	Monthly	Y
11	Hours of operation	500 hours/year (emergency and non-emergency)	Monthly	Y
12 & 13	fuel oil and natural gas burned	2.5517 billion cubic feet of natural gas and 2.761 million gallons of fuel oil per year	Monthly	Y
14 & 15	Hour of operation	2,000 hours/year each	Monthly	Y

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
06, 12, 13, 14, 15	20% when burning fuel oil	Dept. Guidance	Daily Observation
08, 16	20%	Reg.19.503 and 40 C.F.R. § 52 Subpart E	Annual
11	20%	Reg.19.503 and 40 C.F.R. § 52 Subpart E	Annual

20. DELETED CONDITIONS:

Former SC	Justification for removal
	N/A

21. GROUP A INSIGNIFICANT ACTIVITIES:

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

Source Name	Group A	Emissions (tpy)
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	Category	PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Main Building Heater (5.25 MMBtu/hr, NG)	A-1	0.21	0.01	0.11	0.17	2.64	0.11	0.11
Shop Heater	A-1	0.0006	0.000	0.0008	0.0030	0.0071	0.0008	0.0008
Warehouse Heater #1	A-1	0.0003	0.000	0.0004	0.0016	0.0038	0.0004	0.0004
Warehouse Heater #2	A-1	0.0003	0.000	0.0004	0.0015	0.0035	0.0004	0.0004
Intake Heater	A-1	0.0006	0.000	0.0008	0.0030	0.0071	0.0008	0.0008
Firehouse Heater	A-1	0.0003	0.000	0.0004	0.0016	0.0038	0.0004	0.0004
<i>Totals for A-1 Group</i>		<i>0.2121</i>	<i>0.01</i>	<i>0.1128</i>	<i>0.1807</i>	<i>2.6653</i>	<i>0.1128</i>	<i>0.1128</i>
Diesel fuel tank for EDG (250 gallon) – Back up tank	A-3			0.0002			0.0002	0.0002
Diesel fuel tank for EFPE (300 gallon)	A-3			0.0002			0.0002	0.0002
Diesel fuel tank for EDG (525 gallon)	A-3			0.0008			0.0008	0.0008
Diesel fuel tank (2,000 gallon) – Back up tank	A-3			0.0002			0.0002	0.0002
Diesel fuel tank for standby gen (1,000 gallon) – Back up tank	A-3			0.0005			0.0005	0.0005
<i>Totals for A-3 Group</i>				<i>0.0019</i>			<i>0.0019</i>	<i>0.0019</i>
Diesel Tank for LM60000 No. 1 (1,270,000 gal)	A-13			0.078			0.078	0.078
Diesel Tank for LM60000 No. 2 (1,270,000 gal)	A-13			0.078			0.078	0.078
<i>Totals for A-13 Group</i>				<i>0.155</i>			<i>0.155</i>	<i>0.155</i>

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 #
1165-AOP-R11

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Arkansas Electric Cooperative Corporation - Thomas B.
Fitzhugh Generating Station
Permit #: 1165-AOP-R12
AFIN: 24-00012

\$/ton factor	28.14	Annual Chargeable Emissions (tpy)	1504.9
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)	93.7
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		91.1	102.6	11.5	11.5	102.6
PM ₁₀		91.1	102.4	11.3		
PM _{2.5}		0	0	0		
SO ₂		840	841.4	1.4	1.4	841.4
VOC		27.6	50	22.4	22.4	50
CO		500.4	574.9	74.5		
NO _x		452.5	492.3	39.8	39.8	492.3

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Single HAP	<input type="checkbox"/>	3.43	3.85	0.42		
Total HAPs	<input type="checkbox"/>	5.47	6.86	1.39		
Ammonia	<input checked="" type="checkbox"/>	0	18.6	18.6	18.6	18.6