

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1903-AOP-R12 AFIN: 47-00448

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Associated Electric Cooperative, Inc.—Dell Power Plant
301 E. Hwy 18
Dell, Arkansas 72426

3. PERMIT WRITER:

Elliott Marshall

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Electric Bulk Power Transmission and Control
NAICS Code: 221121

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
2/22/2021	Modification	Increase Sulfur limit from 15 ppmv to 20 ppmv.

6. REVIEWER’S NOTES:

This application was submitted as a modification to:

1. Increase allowable fuel oil sulfur content at SN-01 and SN-02 from 0.0015 percent by weight (15 ppmw) to 0.002 percent by weight (20 ppmv) to account for sulfur from the addition of fuel additives designed to preserve the longevity of fuel oil.
2. Remove the reference to an SO₂ Best Available Control Technology (BACT) limit from the table in Specific Condition 3 of the permit. AECI Dell has never triggered PSD review for SO₂ because the total facility emissions have never been above the

PSD significance level for SO₂. Therefore, an SO₂ BACT limit or determination has never been applicable to emission units at AECI Dell.

3. Remove references to 40 CFR 63, Subpart YYYY (previous Specific Condition #17). AECI Dell is an area source of HAPs upon the issuance of Permit No.1903-AOP-R11 and is not subject to this subpart. NESHAP YYYY conditions were erroneously not removed in the previous permit revision.
4. Remove references to 40 CFR 63, Subpart DDDDD (previous Specific Conditions #32 & #54). AECI Dell is an area source of HAPs upon the issuance of Permit No.1903-AOP-R11 and is not subject to this subpart. NESHAP DDDDD conditions were erroneously not removed in the previous permit revision. Area source boiler MACT, 40 CFR 63, Subpart JJJJJ, is not applicable because the facility only burns natural gas at the potentially affected sources (SN-03, SN-32 and SN-33).

Permitted emission rates are increasing by 0.8 tpy SO₂.

The adjusted permit limit of 0.002 percent by weight or less will allow the facility to combust the fuel oil they already have as opposed to purchasing new and shipping the old off site.

Biocide was an additive the facility used after fuel oil was already in the tank to preserve the fuel oil until needed. All fuel oil purchased by the facility met the sulfur requirements in previous SC 6 and SC 7 (0.0015 wt%). It was only over time that the sulfur from the Biocide additive built up to the point that lab analyses indicated a sulfur content above 0.0015 wt. %. AECI has not combusted any of the fuel oil since the sulfur content was determined to be above 0.0015 wt. %, so to date, there have been no violations of any permit conditions related to this matter.

AECI has discontinued use of that particular Biocide due to the issues discussed here with increasing the sulfur content of the fuel oil. The new Biocide does not contain/contribute to the sulfur content of the fuel.

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 February 4, 2021. The inspection revealed no areas of concern. There are no active or pending enforcement actions.

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.
 No physical changes and SO₂ limits are below PSD significance thresholds.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
03, 32, 33	-	NSPS Dc
01 and 02 including duct burners	SO ₂ NO _x	NSPS KKKK
All Sources except SN-35 and SN-36	PM/PM ₁₀ VOC CO NO _x	PSD
34 and 37	HAPS	NESHAP 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 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		

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 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	0.0253	0.0251	Yes
Ammonia	17.4	1.92	51.5	No
Arsenic	0.01	0.001	0.0466	No
Beryllium	0.00005	5.50E-06	0.0013	No
Cadmium	0.002	0.0002	0.0211	No

Pollutant	TLV (mg/m ³)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Chromium	0.5	0.055	0.0210	Yes
Cobalt	0.02	0.002	0.0001	Yes
Formaldehyde	1.5	0.165	1.2446	No
Manganese	0.2	0.022	3.3372	No
Mercury	0.01	0.001	0.0053	No
Nickel	0.1	0.011	0.0209	No
POM	0.2	0.022	0.1704	No
Selenium	0.2	0.022	0.1056	No
Lead	0.05	0.0055	0.3	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.

No modeling was performed with this permit revision.

Pollutant	PAIL (µg/m ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
Ammonia	174	5.72	Yes
Arsenic	0.1	0.00271	Yes
Beryllium	0.005	8.0E-05	Yes
Cadmium	0.02	0.00993	Yes
Formaldehyde	15	0.2276	Yes
Manganese	2.0	0.1937	Yes
Mercury	0.1	0.00789	Yes
Nickel	1.0	0.00637	Yes
POM	2.0	0.0103	Yes

Pollutant	PAIL ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Selenium	2.0	0.00613	Yes
Lead	0.5	0.14776	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*)		
	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

15. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
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SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01 and 02	AP-42 and General Electric (GE) Equipment Specs Fuel Analysis	For HAPs: AP-42 Tables 3.1-2a and 3.1-3 SO ₂ : 20 ppmv for fuel oil	Dry Low NO _x , Water Injection, and Selective Catalytic Reduction	Approx 85%	Controlled emission factors provided for the GE Turbines. Factors assume that SCR is included.
03	AP-42	Table 1.4-1, 1.4-2, 1.4-3, and 1.4-4	Low NO _x Burner	N/A	Uncontrolled emission factors
04-15	AP-42 and AWMA Abstract No. 216, Session No. AM-1b, Orlando, 2001	0.0005% Drift Rate and 8000ppm Total Dissolved Solids	N/A	N/A	Uncontrolled emission factors
16-22 and 24-27	AP-42 and AWMA Abstract No. 216, Session No. AM-1b, Orlando, 2001	0.0005% Drift Rate and 1500ppm Total Dissolved Solids	N/A	N/A	Uncontrolled emission factors
34	AP-42	Table 3.3-1 and 3.3-2	N/A	N/A	Uncontrolled emission factors
32 33	Manufacturer's Specs for CO, NO _x AP-42 all others	1.35 lb NO _x /hr 0.46 lb CO/hr AP-42 1.4	N/A	N/A	Uncontrolled emission factors
35, 36	Tanks	40.9 lb VOC/hr	N/A	N/A	Uncontrolled emission factors
37	AP-42	Table 3.3-1 and 3.3-2	N/A	N/A	Uncontrolled emission factors

16. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
01 and 02	PM ¹	5 and 202	Initial and then	In order to

SN	Pollutants	Test Method	Test Interval	Justification
	PM ₁₀ ¹	201A and 202 or 5 and 202	every 5 years for fuel oil combustion only	confirm BACT and lb/MMBtu limits
	VOC ¹	25A	Initial and then every 5 years for each fuel type	
03	NO _x	7E	Initial	In order to confirm BACT and lb/MMBtu

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)
01 and 02	Fuel Sulfur Content	ASTM D1072-80, D3031-81, or D3246-81	Daily	If exceeded
	Fuel Nitrogen Content	Fuel Monitoring Protocol for Stationary Gas Turbines subject to 40 CFR 60, Subpart KKKK	Daily	
	Fuel Flow Rate	In-line Fuel Flow Meter (CEM)	Continuous	
	CO	CEM	Continuous	
	NO _x	CEM	Continuous	
	SO ₂	CEM	Continuous	
04-15	TDS	Not to exceed 8,000 ppm	Monthly	Y
16-22 and 24-27	TDS	Not to exceed 1,500 ppm	Weekly	Y

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)
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SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01 and 02	Fuel Fired	Natural Gas	N/A	Y
	Natural Gas Usage	39,500 million SCF	Annual	Y
	Fuel Nitrogen and Sulfur Contents	N/A	Daily	Y
	No 2. Fuel Oil Usage	1,850 hours per year	Daily	Y
	Readiness Testing	N/A	As Occurs	Y
	Fuel Sulfur Content	0.2%	Monthly	Y
03	Fuel Fired	Natural Gas	N/A	Y
04-15	Total Dissolved Solids	8,000 ppm	Monthly	Y
16-22 and 24-27	Total Dissolved Solids	1,500 ppm	Weekly	Y
34	Fuel Sulfur Content	0.5%	Monthly	Y
	Hours per year of operation	100 hours/yr	Monthly	Y
32 and 33	Fuel burned	N/A	Monthly	Y
35 and 36	No. 2 Fuel Oil Throughput	257,380,000 gal/yr	Monthly	Y
37	Hours per year of operation	100 hours/yr	Monthly	Y

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01 and 02 (natural gas)	5%	Dept. Limit	Initial reading, then natural gas usage only
01 and 02 (fuel oil)	10%	BACT Limit	Daily Method 9 Observations during fuel oil combustion
03	5%	Dept. Limit	Natural gas usage only
04-15, 16-22 and 24-27	20%	Dept. Limit	Total Dissolved Solids Limit (SC#34 and 35)
32 and 33	5%	Dept. Limit	Natural gas as fuel
34 and 37	20%	Dept. Limit	Daily Method 9 Observations when operating more than 3 consecutive hours

20. DELETED CONDITIONS:

Former SC	Justification for removal
#17, 32, 54	These conditions pertained to MACT DDDDD and MACT YYYY. The facility is classified as an area source of HAPs, upon the issuance of Permit No.1903-AOP-R11, and these conditions are not applicable.

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 ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Diesel Tank 500 gal	A-3			0.0001				
Diesel Tank 400 gal	A-3			0.0001				

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 #
1903-AOP-R11

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Associated Electric Cooperative, Inc. -
 Dell Power Plant
 Permit Number: 1903-AOP-R12
 AFIN: 43-00448

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	981.8
Permit Type	Modification	Permit Fee \$	1000

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)	0.8
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 condensable 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		331.7	331.7	0	0	331.7
PM ₁₀		254.5	254.5	0		
PM _{2.5}		0	0	0		
SO ₂		35.7	36.5	0.8	0.8	36.5
VOC		69.7	69.7	0	0	69.7
CO		508.9	508.9	0		
NO _x		326.2	326.2	0	0	326.2
Lead	<input type="checkbox"/>	0.51	0.51	0		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Acrolein	<input type="checkbox"/>	0.14	0.14	0		
Arsenic	<input type="checkbox"/>	0.11	0.11	0		
Beryllium	<input type="checkbox"/>	0.07	0.07	0		
Cadmium	<input type="checkbox"/>	0.07	0.07	0		
Chromium	<input type="checkbox"/>	0.11	0.11	0		
Cobalt	<input type="checkbox"/>	0.05	0.05	0		
Formaldehyde	<input type="checkbox"/>	1.74	1.74	0		
Manganese	<input type="checkbox"/>	3.15	3.15	0		
Mercury	<input type="checkbox"/>	0.07	0.07	0		
Nickel	<input type="checkbox"/>	0.07	0.07	0		
POM	<input type="checkbox"/>	0.25	0.25	0		
Selenium	<input type="checkbox"/>	0.15	0.15	0		
Ammonia	<input checked="" type="checkbox"/>	217.7	217.7	0	0	217.7