

## STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1842-AOP-R4 AFIN: 60-01380

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Arkansas Electric Co-op Corp. - Oswald Generating Station  
17400 Highway 365 South  
Wrightsville, Arkansas 72183

3. PERMIT WRITER:

Melisha Griffin

4. PROCESS DESCRIPTION AND NAICS CODE:

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

5. SUBMITTALS:

6/20/2008

6. REVIEWER'S NOTES:

This permit modification is being issued to incorporate the facility's Clean Air Interstate Rule (CAIR) permit application. There are no permitted emission changes associated with this permitting action.

7. COMPLIANCE STATUS:

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

There are no current enforcement actions against the facility.

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? Y  
*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 not PSD? There are no emissions changes in this modification.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-01 thru SN-07 Turbine w/duct burner	PM <sub>10</sub> VOC CO NO <sub>x</sub>	BACT
SN-01 thru SN-07 Turbine w/duct burner	NO <sub>x</sub>	NSPS Db
SN-01 thru SN-07 Turbine w/duct burner	SO <sub>2</sub> NO <sub>x</sub>	NSPS GG

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants

Maximum Predicted Concentrations in Comparison with Modeling Significance Levels (MSL) and Monitoring De Minimis Concentrations:

Pollutant	Averaging Period	Concentration (μg/m <sup>3</sup> )	Modeling Significance Level (μg/m <sup>3</sup> )
PM <sub>10</sub>	24-hour	4.88	5
	Annual	0.28	1
CO	1-hour	342.31	2000
	8-hour	140.16	500
SO <sub>2</sub>	3-hour	1.41	25
	24-hour	0.77	5
	Annual	0.057	1

NO <sub>x</sub>	Annual	0.73	1
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The maximum impacts of NO<sub>x</sub>, PM<sub>10</sub> and SO<sub>2</sub> occurred under the worst-case load scenario (60 percent turbine load), and maximum impacts of CO occurred during the startup scenario. All off-site ambient impacts associated with operations of the proposed facility are below the respective MSL, and the facility is thus compliant with all corresponding National Ambient Air Quality Standards (NAAQS) and Class II PSD increment analysis.

Non-Criteria Pollutants:

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).

The Presumptively Acceptable Impact Level (PAIL) is the maximum ambient 24-hour average concentration, for Hazardous Air Pollutants (HAPs) only, less than or equal to 1/100th of the Threshold Limit Value (TLV) or an acceptable concentration that has been established by the Department for each substance emitted. The ambient concentration resulting from the proposed emission rate of a substance is determined by using atmospheric dispersion models to obtain the maximum ambient, ground level concentration expressed as a 24-hour average.

An analysis was conducted to determine if emission rates of non-criteria pollutants associated with the KN Power plant would trigger dispersion modeling requirements for any specific non-criteria pollutants. The analysis was conducted according to the Non-Criteria Pollutant Control Strategy. Contaminants with emission rates less than the Presumptively Acceptable Emission Rate (PAER) are exempt from dispersion modeling. Emission rates and PAERs for non-criteria pollutants associated with the facility are presented in the following table. As the table shows, all except formaldehyde emission rates are below the respective PAER, precluding the need for dispersion modeling for any non-criteria pollutant emissions associated with the project.

HAP	Emission Rate (lb/hr)	TLV (mg/m <sup>3</sup> )	PAER* (lb/hr)	Modeling Required**
Formaldehyde	2.23	1.5	0.165	YES
Acrolein	0.0032	0.23	0.025	NO
PAH***	0.0108	52	5.72	NO

\* PAER is the TLV of the HAP times 0.11

\*\*If the proposed lb/hr is less than the PAER then no further modeling is required.

\*\*\* PAH is modeled as naphthalene

This analysis shows that all non-criteria pollutants passed the first level of modeling except formaldehyde. It is modeled with ISCST3 dispersion methods to show compliance with the Presumptively Acceptable Impact Level (PAIL). PAIL is the maximum ambient 24-hour average concentration, for Hazardous Air Pollutants (HAPs), less than or equal to 1/100th of the Threshold Limit Value (TLV) or an acceptable concentration that has been established by the Department for each substance emitted. The ambient concentration resulting from the proposed emission rate of a substance is determined by using atmospheric dispersion models to obtain the maximum ambient, ground level concentration expressed as a 24-hour average.

HAP	Emission Rate (lb/hr)	TLV (mg/m <sup>3</sup> )	PAIL (µg/m <sup>3</sup> )	ISCST3 Result	Pass
formaldehyde	2.23	1.5	15	1.016	YES

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?
formaldehyde	15	0.032	Y

Other Modeling: N/A

Odor:

Odor modeling for sources emitting styrene.

Pollutant	Threshold value 1-hour average	Modeled Concentration (µg/m <sup>3</sup> )	Pass?
Styrene	1361 µg/m <sup>3</sup>		

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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/N

If exempt, explain: \_\_\_\_\_

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	Emission Factor and units	Control Equipment Type and Efficiency	Comments
01-06	Vendor Data	PM 0.0052 lb/MMBTU VOC 0.0005 lb/MMBtu CO 66 ppmvd@15% O <sub>2</sub> NO <sub>x</sub> 25 ppmvd@15% O <sub>2</sub>	None	Uses steam injection to limit NO <sub>x</sub> emissions, HAPS also vendor data w/ test confirmation

SN	Emission Factor Source	Emission Factor and units	Control Equipment Type and Efficiency	Comments
07	Vendor Data	PM 0.0061 lb/MMBtu VOC 0.0006 lb/MMBtu CO 50 ppmvd@15% O <sub>2</sub> NO <sub>x</sub> 9 ppmvd@15% O <sub>2</sub>	None	Facility uses Dry Low NO <sub>x</sub> HAPS also vendor data w/ test confirmation
08	AP-42	PM10 0.0007 lb/hp-hr SO <sub>2</sub> 4E-4 lb/hp-hr VOC 6E-4 lb/hp-hr CO 5.5E-3 lb/hp-hr NO <sub>x</sub> 0.024 lb/hp-hr	None	
09-18	EPA Report	31.3% dispersion factor 4000 lb PM/1E6 lb water	None	

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
01-07	PM <sub>10</sub> VOC	5 25A	5 yrs	To confirm BACT limits

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 of Monitoring	Frequency	Report
01-07	SO <sub>2</sub>	CEMS	na	na
	CO	CEMS	Continuously	na
	NO <sub>x</sub>	CEMS	Continuously	na
	Sulfur content of fuel	na*	na	na



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Tank (70 gallons)								
Emergency Fire Pump	A-11							

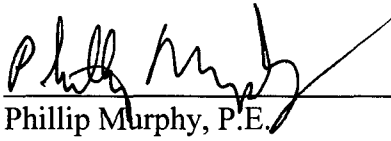
19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

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20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

  
Phillip Murphy, P.E.



**APPENDIX A – EMISSION CHANGES AND FEE CALCULATION**





