

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1987-AOP-R7 AFIN: 30-00337

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Arkansas Electric Cooperative Corporation - Magnet Cove Generating Station
410 Henderson Road
Malvern, Arkansas 72104

3. PERMIT WRITER:

Andrea Sandage

4. NAICS DESCRIPTION AND CODE:

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

5. ALL SUBMITTALS:

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
4/24/2017	Renewal	Combined HAPs into Total HAPs Propylene Oxide was added into Total HAPs and Propylene removed

6. REVIEWER'S NOTES:

Arkansas Electric Cooperative Corporation – Magnet Cove Generating Station (AECC) is located in Malvern, Hot Spring County, Arkansas. This permitting action renewed the existing Title V operation air permit. The following changes were requested with the Title V renewal application:

1. Combine individual HAPs into one category titled "Total HAPs."
2. Remove requirements to submit Semi-Annual Monitoring Reports. The requirements of Reg.26.701(C)(3)(a) requires the submittal of any required monitoring at least every six

months. The Quarterly Excess Emissions and Monitoring Downtime report and the Annual Compliance Certification report do not contain all the necessary information that is needed for the Semi-annual Monitoring report. The permit will remain as written.

3. Clarify the duct firing limit of 5,000 hours of operation is an aggregate total between both SN-01 and SN-02.
4. Propylene Oxide was added into Total HAPs and Propylene removed from permit because it is a VOC and not an air contaminant.

The total permitted annual emissions increased by 0.31 tpy Total HAPs and decreased by 0.54 tpy Propylene.

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 neither active nor pending enforcement actions at this time.

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 is not PSD.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-01 and SN-02	NO _x	NSPS Subpart GG – <i>Standards of Performance for Stationary Gas Turbines</i>
	NO _x and SO ₂	NSPS Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units and 40 CFR Part 75 – <i>Acid Deposition Control</i>
	VOC, CO, NO _x and PM ₁₀	PSD
SN-16 and SN-17	HAP	NESHAP Subpart ZZZZ – <i>National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating</i>

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
		<i>Internal Combustion Engines</i>
SN-18	PM, VOC, CO, NO _x	NSPS Subpart III – <i>Standards of Performance for Stationary Compression Ignition Internal Combustion Engines</i>

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

a) Reserved.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated under the NCAP strategy which includes any single NCAP HAP with facility wide emissions equal to or greater than 10 tpy or a TLV less than 1 mg/m³. Emergency engine emissions are included in the evaluation and the Plantwide PTE (TPY) but are not modeled per ADEQ guidance. The facility emits HAPs related to incomplete combustion.

Pollutant	TLV (mg/m ³)	Plantwide PTE 4.4 x HAP lb/hr - TPY	Total \geq 10 tpy and TLV < 1 mg/m ³
Acetaldehyde	45.04	4.4174	No
Acrolein	0.23	0.1134	Yes PAER
Ammonia	17.4	402.248	Yes PAER
Dichlorobenzene	150.3067	0.0005	No
Benzene	1.60	4.4796	No
1,3-Butadiene	4.42	0.0014	No
Ethylbenzene	4.09	0.0838	No
Formaldehyde	1.5	4.3554	No
Naphthalene	52.40	0.0080	No

Pollutant	TLV (mg/m ³)	Plantwide PTE 4.4 x HAP lb/hr - TPY	Total ≥ 10 tpy and TLV < 1 mg/m ³
Hexane	176.2372	1.9887	No
PAH - Total	0.20	0.0231	Yes PAER
Propylene Oxide	4.751	0.2288	No
Toluene	75.40	0.3641	No
Xylenes	434.19	0.9009	No
Arsenic	0.01	0.0004	Yes PAER
Beryllium	0.00005	0.000026	Yes PAER
Cadmium	0.002	0.00238	Yes PAER
Chromium	0.01	0.00301	Yes PAER
Cobalt	0.1	0.000181	Yes PAER
Lead	0.05	0.00108	Yes PAER
Manganese	0.2	0.00082	Yes PAER
Mercury	0.01	0.00056	Yes PAER
Nickel	1.5	0.00453	No
Selenium	0.2	0.000052	Yes PAER

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?
Ammonia	17.4	1.91	91.42	No
Acrolein	0.23	0.0253	0.0252	Yes
Beryllium	0.00005	0.0000055	0.00000588	No
Cadmium	0.002	0.00022	0.00054	No
PAH	0.20	0.022	0.00071	Yes

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. Since there are no increases in hourly emissions since the previous renewal, modeling for this renewal was not performed.

Pollutant	PAIL (µg/m ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
Ammonia	174.1	8.46	Y
Beryllium	0.0005	0.0000008	Y
Cadmium	0.02	0.02	Y

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 N
 If exempt, explain: N/A (no H₂S emissions)

12. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01-02	Vendor data BACT	PM/PM ₁₀ 0.013 lb/MMBtu SO ₂ 0.28 ppmvd @ 15% O ₂ VOC 4.0 ppmvd @ 15% O ₂ CO 12 ppmvd @ 15% O ₂ NO _x 3.5 ppmvd @ 15% O ₂ Ammonia 10.00 ppmvd @ 15% O ₂ Ammonium Sulfate 0.06 ppmvd @ 15% O ₂	SCR, and low-NO _x oxidation catalyst	70% 22%	HAP testing showed some pollutants needed higher limit than AP-42 so they have been increased, others were non-detectable but have been left in the permit at 0.1 lb/hr
	HAPS Testing CATEF AP-42 Tables 1.4-3 and 1.4-4	Based on Testing CT/HRSG/DB: Acetaldehyde 0.5 lb/hr Benzene 0.5 lb/hr Xylene 0.10 lb/hr CATEF for Turbines: 1,3 Butadiene 1.27 E-04 lb/MMscf Acrolein 2.37 E-02 lb/MMscf Ethylbenzene 1.79E-02 Hexane 2.59E-01 Propylene Oxide 4.78E-02 Toluene 7.10E-02 Formaldehyde 9.17E-01 lb/MMscf POM/PAH 2.32 E-03 lb/MMscf Naphthalene 1.66E-03 lb/MMscf AP-42 for Duct Burner Dichlorobenzene 1.2E-02 lb/MMscf Hexane 1.8 Toluene 3.4E-03 Formaldehyde 7.5E-02 lb/MMscf POM/PAH 6.98E-04 lb/MMscf Naphthalene 6.10E-04 lb/MMscf Arsenic 2.00E-04 lb/MMscf Beryllium 1.20E-05 lb/MMscf Cadmium 1.10E-03 lb/MMscf Chromium 1.40E-03 lb/MMscf Cobalt 8.40E-05 lb/MMscf Lead 5.00E-04 lb/MMscf Manganese 3.80E-04 lb/MMscf Mercury 2.60E-04 lb/MMscf	oxidation catalyst	80%	Acetaldehyde, benzene, and xylene emission rates are based on testing

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		Nickel 2.10E-03 lb/MMscf Selenium 2.40E-05 lb/MMscf			
04-15	AP-42	see application	drift eliminator		0.0005 % drift 1500 ppmw TDS
16,17	AP-42 AP-42 Table 3.3-1 and 3.3-2	PM/PM ₁₀ 0.31 lb/MMBtu SO ₂ 0.29 lb/MMBtu VOC 0.35 lb/MMBtu CO 0.95 lb/MMBtu NO _x 4.41 lb/MMBtu 1,3 Butadiene 3.91E-05 lb/MMBtu Acrolein 9.25 E-05 lb/MMBtu Acetaldehyde 7.67 E-04 Benzene 9.33E-4 lb/MMBtu Formaldehyde 1.18E-03 lb/MMBtu PAH 1.68E-04 lb/MMBtu Toluene 4.09E-4 lb/MMBtu Xylene 2.85E-4 lb/MMBtu			1.86 MMBtu/hr and 2.73 MMBtu/hr for 16 and 17 respectively
18	Manufacturer data, AP-42 Table 3.4-3 and 3.4-4	PM/PM ₁₀ 0.02 g/kWh SO ₂ 0.02 g/kWh VOC 0.04 g/kWh CO 0.6 g/kWh NO _x 6.2 g/kWh Acetaldehyde 2.52 E-05 lb/MMBtu Acrolein 7.88 E-06 lb/MMBtu Benzene 7.76 E-04 lb/MMBtu Formaldehyde 7.89 E-05 lb/MMBtu PAH 2.12 E-04 lb/MMBtu Toluene 2.81 E-04 lb/MMBtu Xylene 1.93 E-04 lb/MMBtu			17.8 MMBtu/hr

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
1 of SN-01 through 02	PM/PM ₁₀	5+201/ 202	5 yr	Confirmation of BACT limit(s)
1 of SN-01 through 02	VOC	25A	5 yr	Confirmation of BACT limit(s)
1 of SN-01 through 02	NH ₃	206	5 yr	verify compliance

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 (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
01 & 02	NO _x	CEMS	Continuously	Y
01 & 02	CO	CEMS	Continuously	Y

15. 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)
01-02	sulfur content of fuel	0.015% by volume at 15% oxygen on a dry basis	Daily	Y
01-02	combined hours of duct burner fire	5,000 hr/yr total	Monthly	Y
01-02	Startup/Shutdown	N/A	Each Occurrence	N
04-15	TDS or conductivity	1,500 ppmw	Monthly or If conductivity weekly	Y
16,17	Operating hours	500 hours each, calendar annual	Monthly	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
18	Operating hours	500 hours, rolling 12-month	Monthly	N

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01-02	5%	Dept. Standard while firing natural gas	Use of natural gas
04-15	20%	Standard for cooling towers	TDS limit
16-17	20%	[Regulation 19 §19.503 and 40 CFR Part 52, Subpart E]	Use of fuel oil #2
18	20%	[Regulation 19 §19.503 and 40 CFR Part 52, Subpart E]	Use of fuel oil #2

17. DELETED CONDITIONS:

Former SC	Justification for removal
26	Testing completed on June 28, 2006.

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
320 gallon Diesel Tank	A-3			0.0003				
One Process Heater (natural gas & rated less than 10 MMBtu/hr)	A-1	0.31	0.03	0.24	3.61	4.29		8.09E-02
Miscellaneous Oil Storage	A-13			0.000004				
Sodium Hydroxide Storage	A-4							

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
EDGE (SN-17) Diesel Storage	A-3			0.0006				
Stand-by Engine (SN-18) Diesel Fuel Tank	A-3			0.0006				

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
1987-AOP-R6

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Arkansas Electric Cooperative
 Corporation - Magnet Cove Generating Station
 Permit Number: 1987-AOP-R7
 AFIN: 30-00337

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	945.4
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
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		240.4	240.4	0		
PM ₁₀		240.4	240.4	0	0	240.4
PM _{2.5}		0	0	0		
SO ₂		13.7	13.7	0	0	13.7
VOC		70.8	70.8	0	0	70.8
CO		616.5	616.5	0		
NO _x		302.9	302.9	0	0	302.9
1,3-Butadiene	<input type="checkbox"/>	0.03	0	-0.03		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Acetaldehyde	<input type="checkbox"/>	4.41	0	-4.41		
Acrolein	<input type="checkbox"/>	0.53	0	-0.53		
Benzene	<input type="checkbox"/>	4.43	0	-4.43		
Cadmium	<input type="checkbox"/>	0.5	0	-0.5		
Formaldehyde	<input type="checkbox"/>	3.83	0	-3.83		
Hexane	<input type="checkbox"/>	1.3	0	-1.3		
Lead	<input type="checkbox"/>	0.5	0	-0.5		
PAH	<input type="checkbox"/>	0.53	0	-0.53		
Propylene Oxide	<input type="checkbox"/>	0	0	0		
Toluene	<input type="checkbox"/>	0.53	0	-0.53		
Xylene	<input type="checkbox"/>	0.03	0	-0.03		
Ammonia	<input checked="" type="checkbox"/>	311.6	311.6	0	0	311.6
Ammonium Sulfate	<input checked="" type="checkbox"/>	6	6	0	0	6
Propylene	<input type="checkbox"/>	0.54	0	-0.54		
Total HAPs	<input type="checkbox"/>	0	16.93	16.93		