

STATEMENT OF BASIS

For the issuance of Air Permit # 2123-AOP-R7 AFIN: 29-00506

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

American Electric Power Service Corporation (John W. Turk Jr. Power Plant)
3711 Highway 355 South
Fulton, Arkansas 71838

3. PERMIT WRITER:

Joseph Hurt

4. NAICS DESCRIPTION AND CODE:

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

5. 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
1/31/2017	Modification	Case-by-case MACT limits have been removed. VOC emissions have been increased to the existing BACT limits for SN-01 and SN-02.

6. REVIEWER'S NOTES:

As part of this modification, the facility requested to clarify permit language concerning Lead, VOC, Mercury, HAP, and air contaminant emissions for SN-01 and SN-02. The remaining case-by-case MACT limits were also removed. The permitted emission increases include 0.5 tpy of PM₁₀, 74.11 tpy of VOC, 36.6 tpy of CO. The permitted emission decreases include 341.05 tpy of PM. The increase in VOC emissions is based on the relaxation of the case-by-case MACT limit due to MATS. The new VOC limit is based on the existing BACT limit for SN-01 and SN-02. There were no physical changes

or change in the method of operation at the facility. Therefore, this modification is not a PSD major modification.

7. COMPLIANCE STATUS:

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

The inspector conducted an inspection on July 28, 2016. There were no areas of concerns noted at the time of the inspection.

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.

There were no physical changes or change in the method of operation at the facility.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
01	all	PSD
	HAPs	40 CFR Part 63, Subpart UUUUU
	PM, SO ₂ , NO _x	40 CFR Part 60, Subpart Da
02	all	PSD
	HAPs	40 CFR Part 63, Subpart DDDDD
	NO _x	40 CFR 60, Subpart Db
03	all	PSD
	PM, fuel specifications	40 CFR 60, Subpart IIII
	N/A	40 CFR 63, Subpart ZZZZ
04 & 05	PM, NO _x , fuel specifications	40 CFR 60, Subpart IIII
EP-01 through EP-10, EP-12 TP-11, TP-16 and TP-20	opacity	40 CFR 60, Subpart Y

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. 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/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?
Acetaldehyde	44.05	4.954	0.25	Y
Acrolein	0.229	0.025	0.14	N
Antimony	0.5	0.055	0.15	N
Arsenic	0.01	0.001	0.52	N
Benzene	1.597	0.176	1.22	N
Benzyl Chloride	5.177	0.569	0.27	N
Beryllium	0.002	0.00022	0.02	N
1,3-Butadiene	4.425	0.487	0.04	Y
Cadmium	0.01	0.001	0.03	N
Carbon Disulfide	31.141	3.426	0.05	Y
Chloroform	48.826	5.371	0.03	Y
Chromium	0.5	0.055	0.19	N
Chromium VI	0.05	0.006	0.06	N

Pollutant	TLV (mg/m ³)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Cobalt	0.2	0.002	0.04	N
Cyanide	5.19	0.571	0.94	N
Dichlorobenzene	60.127	6.614	0.01	Y
Dimethyl Sulfate	0.516	0.057	0.02	Y
Dioxins & Furans	0.001	0.0001	0.01	N
Formaldehyde	18.421	2.026	0.17	N
Hexane	1762.372	193.861	1.54	Y
Hydrogen Chloride	2.983	0.328	12.00	N
Hydrogen Fluoride	0.409	0.045	1.20	N
Lead	0.05	0.006	0.1603	N
Manganese	0.2	0.022	1.12	N
Mercury	0.025	0.003	7.34E-03	N
Methyl Hydrazine	0.019	0.002	0.07	N
Nickel	0.1	0.011	0.12	N
Phenol	19.245	2.117	0.01	Y
Phosphorous	0.1	0.011	2.40	N
POM	0.2	0.022	0.05	N
Propionaldehyde	47.526	5.228	0.15	Y
Selenium	0.2	0.022	0.25	N
Sulfuric Acid	0.2	0.022	25.20	N
Toluene	188.405	20.725	0.88	Y
2,2,4- Trimethylpentane	1401	154	0.21	Y
Xylene	434.192	47.761	0.22	Y
Ammonia	17.413	1.91	37.50	N

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.

Pollutant	PAIL ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Acrolein	2.3	5.38E-04	Y
Antimony	5	7.43E-04	Y
Arsenic ¹ .	0.1	0.001	Y
Benzene	15.971	13.92155	Y
Benzyl Chloride	16	1.3E-03	Y
Beryllium	0.02	3.9E-05	Y
Cadmium	0.02	9.02E-05	Y
Chromium	5	8.58E-04	Y
Chromium VI	0.5	2.49E-04	Y
Cobalt	0.2	1.26E-04	Y
Cyanide	51.9	4.64E-03	Y
Dioxins & Furans	0.01	5E-05	Y
Formaldehyde	15	6.48E-04	Y
Hydrogen Chloride ² .	29.8	0.06823	Y
Hydrogen Fluoride	24.6	0.0267	Y
Lead ² .	0.5	0.00091	Y
Manganese	2.0	5.5E-03	Y
Mercury	0.1	1.97E-04	Y
Methyl hydrazine	0.19	3.16E-04	Y
Nickel	1.0	5.25E-04	Y
Phosphorous	1.0	1.19E-02	Y
POM	0.02	8.0E-05	Y

Pollutant	PAIL ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Sulfuric Acid ¹	2.0	1.19E-01	Y
Selenium	2.0	1.19E-03	Y
Ammonia ¹	174	0.18575	Y

1. The permitted emission HAP increases with this Title V Minor Modification were a result of the addition of an emergency engine. The Department does not model the intermittent emissions from emergency engines at this time. Therefore, the results are from previous permitting decisions, see Air Permit 2123-AOP-R0 and Air Permit 2123-AOP-R1.
2. Short-term emission increases occurred for Hydrogen Chloride and Lead for Air Permit 2123-AOP-R7, and was modeled. All other modeling results are from previous permitting decisions.

Other Modeling:

Odor:

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

12. CALCULATIONS:

SN	Emission Factor Source	Pollutant	Emission Factor	Control Equipment	Control Equipment Efficiency	Comments
01	BACT	PM/PM ₁₀ (filterable)	0.012 lb/MMBtu	Baghouse	99.9	
		PM/PM ₁₀ (total)	0.025 lb/MMBtu	Baghouse	99.9	
		SO ₂	0.065 lb/MMBTU	Dry Flue Gas Desulfurization	80-90+	
		VOC	0.0036 lb/MMBtu	Proper Design/Operation		
		CO	0.15 lb/MMBtu	Proper Design/Operation		
		NO _x	0.067 lb/MMBTU/0.05 lb/MMBTU annual	SCR	70-90	

SN	Emission Factor Source	Pollutant	Emission Factor	Control Equipment	Control Equipment Efficiency	Comments
01	BACT	Pb	2.6E-05 lb/MMBtu	Baghouse	99.9	
		H ₂ SO ₄ Mist	0.0042 lb/MMBtu	DFGD with Baghouse		
02	BACT	PM (total)	0.0076 lb/MMBTU	Natural Gas Combustion		
		SO ₂	0.0006 lb/MMBtu	Natural Gas Combustion		
		VOC	0.0055 lb/MMBtu	Proper Design/Operation		
		CO	0.30 lb/MMBTU	Proper Design/Operation		
		NO _x	0.11 lb/MMBtu	Low NO _x Burner and Flue Gas Recirculation		
		Pb	N/A	Natural Gas combustion		
03 and 04	BACT	NO _x + NMHC	6.4 g/kWh	Proper Design/Operation Low Sulfur Diesel 100 hrs/yr		
		SO ₂	0.007 g/kWh			
		PM	0.2 g/kWh			
		CO	3.5 g/kWh			
EP-01 – EP-10, TP-16, TP-20	AP-42	PM/PM ₁₀	various	Water and Surfactant Spray		
EP-12	Design	PM/PM ₁₀	0.01 gr/dscf	filter		
TP-22 TP-23	design	PM/PM ₁₀	9.4E-05 lb/ton	none		
EP-15 - EP-18 EP-21 - EP-25	Design	PM/PM ₁₀	0.01 gr/dscf	filter		
F-01 – F-03, F-05, F-06	EPA Guidance	PM/PM ₁₀	3.9 lb/day/acre	None	N/A	
F-04	AP-42	PM/PM ₁₀	lb/day/acre 1.0 PM 0.5 PM ₁₀	Water Spray	75%	Maximum of 26 acres

SN	Emission Factor Source	Pollutant	Emission Factor	Control Equipment	Control Equipment Efficiency	Comments
CT-01	BACT	Drift rate	0.0005%	Drift Eliminators	N/A	
RD-01	AP-42	PM/PM ₁₀	1.07 lb/VMT	Watering and chemical suppression	90	
TK-01	TANKS	VOC	Varies	N/A	N/A	Based on 25,000 gallons of gasoline per year.
05	Manufacturer's specs	NO _x	4.0 g/kW-hr	Oxidation Catalyst	Not specified	Annual emissions are based on 100 hours per year
		CO	3.5 g/kW-hr			
		VOC	0.19 g/kW-hr			
		PM/PM ₁₀	0.2 g/kW-hr			
	ULSD	SO ₂	0.007 g/kW-hr			
	AP-42 Chapter 3.3, Table 3.3-2	HAPs	Varies			

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
01	VOC PM/PM ₁₀ HF HCl H ₂ SO ₄ Ammonia Lead (Pb)	various	annual	BACT/NSPS/MACT Verify Emission Rates
01	Other Non-Criteria	TBD	Once	Verify Emission Rates/MACT
02	PM CO	various	Once	NSPS/MACT
	NO _x	7E	Initial and once every five years.	Verify emission rates

SN	Pollutants	Test Method	Test Interval	Justification
EP-01 through EP-10, and EP-12	Opacity	Method 9	Initial	NSPS

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	Opacity CO NO _x SO ₂ CO ₂ Mercury	COMS CEMS	Continuous	Y
01	Bag Leaks	Bag Leak Detector	Continuous	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	Mercury Emissions	1.7 lb/TBtu per 12-month period	Monthly	Y
01	Bag Leak Detector Readings	None specified	Monthly	Y
01	BTU input	6000 MMBtu/hr 24-hour average	Continuous	Y
01	SO ₂ emissions	0.065 lb/MMBtu (30-day rolling average)	Monthly	Y
		480.0 lb/hr (24-hr rolling average)	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01	NO _x emissions	0.067 lb/MMBtu (24-hr rolling average normal operations)	Monthly	Y
		420.0 lb/hr (24-hr rolling average)	Monthly	Y
01	NO _x emissions	0.05 lb/MMBtu (12-month rolling average)	Monthly	Y
01	CO	0.15 lb/MMBtu (30-day rolling average)	Monthly	Y
02	Fuel Used	272.1 MMscf/12 month	Monthly	Y
03	Hours of operation	500 per year	Monthly	Y
04	Hours of operation	100 per year	Monthly	Y
F-04	Maximum area of the inactive coal piles	26 acres	Semi-annually	Y
F-06	Maximum area of the solid waste disposal area	50 acres	Semi-annually	Y
CT-01	Total Dissolved Solids (TDS)	750 ppm	Weekly	Y
TK-01	Gasoline throughput	25,000 gallons per 12-month	Monthly	Y
05	Hours of operation	100 hours per calendar year	Monthly	Y
Welsh Unit 2	SO ₂ emissions	2,165 lb/hr (24-hr rolling average)	Semi-annually	Y

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01	10	Good Operations	COM
02	10	Good Operations	COM

SN	Opacity	Justification for limit	Compliance Mechanism
03	20% in acceleration mode 15% in Lugging mode 50% during peaks (as measured according to 40 CFR 86, Subpart I)	Good Operations	Method 9
04 & 05	20	Dept. Guidance	One time visible observation
SN-EP-01 through EP-10, EP-12, TP-16, and TP-19 through TP-20	20	NSPS	Method 9
SN-TP-22	20	Dept. Guidance	Daily Observations
EP-15 through EP-25	10	Dept. Guidance	Weekly observations
SN-F-01 through F-06	10	Dept. Guidance	Weekly observations

17. DELETED CONDITIONS:

Former SC	Justification for removal
56 & 57	The case-by-case Mercury compliance mechanism is no longer applicable. The facility will comply with the necessary MATS compliance mechanisms.
229	These case-by-case MACT limits are no longer applicable. The facility will comply with the necessary Boiler MACT compliance mechanisms.

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Diesel or Propane Space Heaters (20 Total)	A-1	0.002	1.1E-05	0.0036	0.025	0.09	0.0036	0.0036
10,000 gallon Diesel Storage Tanks (3 Total)	A-3			0.005			0.005	0.005
700 gallon Diesel Storage Tank	A-3			0.0001			0.0001	0.0001
572 gallon Diesel Storage Tank	A-3			0.0002			0.0002	0.0002

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Boiler Feed Pump Lube Oil Reservoir (2,906 gal)	A-3			0.0008			0.0008	0.0008
550 gallon Diesel Storage Tank	A-3			0.0001			0.0001	0.0001
10,000 gallon Construction fuel storage tank (diesel)	A-3			0.0128			0.0128	0.0128
10,000 gallon Sulfuric Acid Tanks (2 total)	A-4							
4,800 gallon Sulfuric Acid Tank	A-4							
10,000 gallon Sodium Hypochlorite Tank	A-4							
5,000 gallon Sodium Hypochlorite Tank	A-4							
1,500 gallon Sodium Bromide Tank	A-4							
11,100 gallon Coagulant Tank	A-4							
1,500 gallon Corrosion Inhibitor/Phosphoric Acid Tank	A-4							
30,000 gallon Anhydrous Ammonia Tank	A-4							
Emissions from laboratory equipment & vents	A-5	No VOCs are used in the plant's laboratory.						
Water washing activities of empty 55 gallon drums	A-6							
5 gallon Gasoline Containers (15 total)	A-8							

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
Turbine Lube Oil Storage Tank (16,800 gal)	A-13			0.007			0.007	0.007
Turbine Lube Oil Reservoir and Storage Tank (11,624 gal)	A-13			0.03			0.003	0.003

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
2123-AOP-R6

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: American Electric Power Service Corporation (John W. Turk Jr. Power Plant)
 Permit Number: 2123-AOP-R7
 AFIN: 29-00506

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	4501.46
Permit Type	Modification	Permit Fee \$	1114.6594

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)	46.58
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		809.55	468.5	-341.05		
PM ₁₀		743.5	744	0.5	-65.55	744
PM _{2.5}		0	0	0		
SO ₂		2102.8	2102.8	0	0	2102.8
VOC		22.6	96.71	74.11	74.11	96.71
CO		3950.1	3986.7	36.6		
NO _x		1334.5	1334.5	0	0	1334.5
Acetaldehyde*	<input type="checkbox"/>	0.97	0.03	-0.94		
Acrolein*	<input type="checkbox"/>	0.51	0.03	-0.48		
Antimony**	<input type="checkbox"/>	0.66	0	-0.66		
Arsenic**	<input type="checkbox"/>	2.25	0	-2.25		
Benzene*	<input type="checkbox"/>	2.2	0.05	-2.15		
Benzyl Chloride*	<input type="checkbox"/>	1.15	0	-1.15		
Beryllium**	<input type="checkbox"/>	0.05	0	-0.05		
1,3-Butadiene*	<input type="checkbox"/>	0.04	0.04	0		
Cadmium**	<input type="checkbox"/>	0.09	0	-0.09		
Carbon Disulfide**	<input type="checkbox"/>	0.22	0	-0.22		
Chloroform*	<input type="checkbox"/>	0.1	0	-0.1		
Chromium**	<input type="checkbox"/>	0.77	0	-0.77		
Chromium VI**	<input type="checkbox"/>	0.23	0	-0.23		
Cobalt**	<input type="checkbox"/>	0.13	0	-0.13		
Cyanide**	<input type="checkbox"/>	4.11	0	-4.11		
Dichlorobenzene*	<input type="checkbox"/>	0.01	0	-0.01		
Dimethyl Sulfate*	<input type="checkbox"/>	0.08	0	-0.08		
Dioxins & Furans	<input type="checkbox"/>	0.01	0	-0.01		
Formaldehyde*	<input type="checkbox"/>	0.45	0.03	-0.42		
Hexane*	<input type="checkbox"/>	0.42	0.01	-0.41		
Hydrogen Chloride	<input checked="" type="checkbox"/>	15.77	52.56	36.79	36.79	52.56
Hydrogen Fluoride	<input checked="" type="checkbox"/>	5.26	5.26	0	0	5.26
Lead**	<input type="checkbox"/>	0.43	0.6801	0.2501		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Manganese**	<input type="checkbox"/>	4.81	0	-4.81		
Mercury	<input type="checkbox"/>	0.044735	3.17E-02	-0.013035		
Methylhydrazine*	<input type="checkbox"/>	0.28	0	-0.28		
Nickel**	<input type="checkbox"/>	0.47	0	-0.47		
Phenol*	<input type="checkbox"/>	0.03	0	-0.03		
Phosphorous**	<input type="checkbox"/>	10.51	0	-10.51		
POM*	<input type="checkbox"/>	0.08	0.03	-0.05		
Propionaldehyde*	<input type="checkbox"/>	0.63	0	-0.63		
Selenium**	<input type="checkbox"/>	1.06	0	-1.06		
Sulfuric Acid	<input type="checkbox"/>	110.4	110.38	-0.02		
Toluene*	<input type="checkbox"/>	0.05	0.05	0		
2,2,4-Trimethylpentane	<input type="checkbox"/>	0.01	0.01	0		
Xylene*	<input type="checkbox"/>	0.04	0.04	0		
Ammonia	<input checked="" type="checkbox"/>	164.4	164.4	0	0	164.4
Total Other HAPs	<input type="checkbox"/>	0	35.15	35.15		
Total Other Chargeable HAPs	<input checked="" type="checkbox"/>	0	0.55	0.55	0.55	0.55
Total Other Air Contaminants	<input checked="" type="checkbox"/>	0	0.68	0.68	0.68	0.68