

## STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1987-AOP-R4 AFIN: 30-00337

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Hot Spring Power Company, LLC  
410 Henderson Road  
Malvern, Arkansas 72104

3. PERMIT WRITER:

Kimberly O'Guinn

4. PROCESS DESCRIPTION AND NAICS CODE:

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

5. SUBMITTALS:

8/5/2010

6. REVIEWER'S NOTES:

Hot Spring Power Company, LLC (HSPC) in Malvern, Hot Spring County, Arkansas is a cogeneration facility consists of two natural gas-fired combustion turbines with heat recovery steam generator (each equipped with fired duct burner) coupled with a single steam turbine and associated equipment. Cooling towers are also permitted.

This permitting action is to renew the facility's existing permit. During this permit modification period the permit was revised to incorporate Startup Shutdown conditions for the Combustion Turbine Units (SN-03 & SN-02)

Total permitted HAP emissions will increase by 2.5 tons per year.

7. COMPLIANCE STATUS:

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

An inspection for this facility was conducted on June 17, 2010 and showed the facility to be in compliance. CAO LIS 10-207 effective on 1/25/2011 addressed violation of the PM limit in Specific Condition #1.

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  $\geq 100$  tpy and on the list of 28 or single pollutant  $\geq 250$  tpy and not on list?*

If yes, explain why this permit modification is not PSD? No change in emissions.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-01 through SN-02	VOC, CO, NO <sub>x</sub> , and PM <sub>10</sub>	NSPS Subpart GG (NO <sub>x</sub> and SO <sub>2</sub> only)  PSD (all pollutants listed)  NSPS Db (NO <sub>x</sub> only)

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants

Examination of the source type, location, plot plan, land use, emission parameters, and other available information indicate that modeling is not warranted at this time for SO<sub>2</sub>.

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ( $\mu\text{g}/\text{m}^3$ )	Averaging Time	Highest Concentration ( $\mu\text{g}/\text{m}^3$ )	% of NAAQS
PM <sub>10</sub>	80.4	150	24-Hour	3.17	2.11%

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ( $\mu\text{g}/\text{m}^3$ )	Averaging Time	Highest Concentration ( $\mu\text{g}/\text{m}^3$ )	% of NAAQS
SO <sub>2</sub>	9.6	80	Annual	0.03	0.04%
		1300	3-Hour	1.93	0.15%
		365	24-Hour	0.56	0.15%
CO	180.6	10,000	8-Hour	20.567	0.21%
		40,000	1-Hour	61.26	0.15%
NO <sub>x</sub>	86.6	100	Annual	0.23	0.23%

## 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 ( $\text{mg}/\text{m}^3$ ), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV ( $\text{mg}/\text{m}^3$ )	PAER (lb/hr) = $0.11 \times \text{TLV}$	Proposed lb/hr	Pass?
Ammonia	17.4	1.91	91.60	No
Ammonia Sulfate	0.5	0.055	4.4	No
Acetaldehyde	45	4.95	1.00	Yes
Acrolein	0.23	0.025	0.20	No
Benzene	1.59	0.175	1.00	No
Beryllium	0.00005	0.000006	0.000012	No
Cadmium	0.002	0.00022	0.2	No
Chromium	0.01	0.0011	0.00068	Yes
Formaldehyde	1.5	0.165	1.00	No
Hexane	176	19.38	0.60	Yes
PAH	52	5.72	0.20	Yes

Pollutant	TLV (mg/m <sup>3</sup> )	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Propylene Oxide	4.8	0.52	0.20	Yes
Toluene	188.41	20.73	0.20	Yes
Nickel	1.5	0.165	0.001	Yes

ND Some pollutants were not detectable during stack testing though the permittee chose to leave them in the permit limited to 0.1 lb/hr

## 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?
Ammonia	174.1	8.46	Y
Ammonia Sulfate	5.0	0.41	Y
Acrolein	2.29	0.02	Y
Benzene	15.9	0.0924	Y
Beryllium	0.0005	0.00	Y
Cadmium	0.02	0.02	Y
Formaldehyde	15	0.0924	Y

Other Modeling:

Odor:

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

N/A

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

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H <sub>2</sub> S	20 parts per million (5-minute average*)	N/A	N/A
	80 parts per billion (8-hour average) residential area	N/A	N/A
	100 parts per billion (8-hour average) nonresidential area	N/A	N/A

\*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 (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
01-02	Vendor data for criteria	emission factors can be found in the permit BACT determinations	SCR, and low-NO <sub>x</sub> 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
	10 ppm for ammonia slip				
	Acetaldehyde and benzene emission rates are based on testing				
	HAPs				

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
04-15	AP-42	see application	drift eliminator		0.0005 % drift 1500 ppmw TDS

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 <sub>10</sub>	5+201/ 202	5 yr	Confirmation of BACT limit(s)
	VOC	25A	5 yr	Confirmation of BACT limit(s)
1 of SN-01 through 02	NH <sub>3</sub>	206	5 yr	verify compliance
1 of SN-01 through 02	HAPs	18	initial	verify compliance if/when duct burners are started

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 <sub>x</sub>	CEMS	Continuously	Y
	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. 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

17. DELETED CONDITIONS:

Former SC	Justification for removal
32	The required start-up and testing and notification were completed
34,35,36	The Acid Rain monitoring plans have been submitted and required CEMS certification testing is completed

18. GROUP A INSIGNIFICANT ACTIVITIES

Source Name	Group A Category	Emissions (tpy)						
		PM/PM <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs	
							Single	Total
320 gallon Diesel Tank	A-3			0.0007				
Emergency diesel fire-water pump	A-12	0.1	0.1	0.2	0.4	2.0		1.83E-03
One Process Heater (natural gas & rated less than 10 MMBtu/hr)	A-1	0.33	0.03	0.24	3.61	4.29		8.11E-02
Miscellaneous Oil Storage	A-13			0.00001				
Sodium Hydroxide Storage	A-4							

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
1987-AOP-R3

20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

\_\_\_\_\_  
 Karen Cerney, P.E.



## APPENDIX A – EMISSION CHANGES AND FEE CALCULATION