

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1987-AOP-R3 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:

Ann Sudmeyer

4. PROCESS DESCRIPTION AND NAICS CODE:

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

5. SUBMITTALS:

6/24/2008

6. REVIEWER'S NOTES:

Suez Energy Generation owns and operates Hot Spring Power Company, LLC (HSPC) in Malvern, Hot Spring County, Arkansas. The 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 necessary to:

1. Incorporate requirements from the Clean Air Interstate Rule and
2. Add the Acid Rain Permit as an appendix.

The permitted emission rate limits will remain unchanged for this modification.

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 August 23-25, 2006 and showed them to be out of compliance for: exceeding the CO BACT limit of 12 ppmvd at 15% O₂ on a 24-hr average at SN-01; exceeding the NO_x BACT limit of 3.5 ppmvd at 15% O₂ at SN-01 and SN-02; exceeding the NO_x NSPS limit of 0.2 lb/MMBtu at SN-02; failing the acetaldehyde stack test; failing to provide upset conditions for exceeding emission limits outside of the 4 hour startup period; failing to conduct TDS testing on cooling towers; and failing to maintain records on TDS testing on cooling towers. The enforcement section is writing a CAO for the violations. Based on the data attached to the inspection report, it appears that the facility was not out of compliance for the CO ppmvd limit (24-hr rolling average) for the 9th, 10th, and 11th hours of 9-1-05 at SN-01; the NO_x ppmvd limit (24-hr rolling average) for the 14th hour of 11-10-05 at SN-01; and the NO_x ppmvd limit (24-hr rolling average) for the 12th hour of 5-21-06 at SN-02 since the source was still in start-up for the 24-hr rolling average. It also appears that SN-01 was not out of compliance at the 10th hour of 8-5-05 for the NO_x ppmvd limit (24-hr rolling average) since the value indicated was the 1-hr average and not the 24-hr rolling average. An inspection conducted on August 20, 2008 showed the facility to be out of compliance for failing two different stack tests for acetaldehyde (Specific Condition #26).

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? No change in emissions.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-01 thru SN-02	VOC, CO, NO _x , and PM ₁₀	NSPS Subpart GG (NO _x and SO ₂ only) PSD (all pollutants listed) NSPS Db (NO _x only)

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants

As part of the PSD permitting procedure a new source must perform an air quality analysis to assess impact to local NAAQS and to evaluate the increment consumption. The first step in this review is to evaluate the impact of pollutants that will increase by PSD significant levels. In this case, the pollutants evaluated are PM₁₀, NO₂, and CO. SCREEN3 dispersion modeling was used for various turbine load scenarios to determine worse-case operating rates for the pollutants screened. The pollutants were then modeled at these worse case conditions using ISCST3 modeling procedures. The dispersion modeling shows that these pollutants do not exceed PSD significant impact levels; therefore, multi-source refined modeling is not necessary to satisfy PSD requirements. The following table summarizes the highest-high results of dispersion modeling:

Pollutant		PSD Modeling Significant Impact	Impact from HS Power Project
PM ₁₀	annual	1	0.275
	24-hour	5	2.88
NO ₂	annual	1	0.359
CO	8-hour	500	23.8
	1-hour	2000	190.5

Ozone formation near the facility could result from the emissions of NO_x and VOCs. Scheffe Screening Tables are often used in this case as an initial step to estimating levels of ozone formation. In this case, the rural based ozone impact predicted by Scheffe tables is a negligible level because of the relatively low emission rates involved. It can therefore be assumed that the facility will have no noticeable impact on ozone formation.

Non-Criteria Pollutants:

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	91.6	N
ammonium sulfate	0.5	0.055	4.4	N
1,3-Butadiene	4.4	4.84	<0.01	Y
Acetaldehyde	45	4.95	1.0	Y
Acrolein	0.23	0.025	0.026	N
Benzene	1.59	0.175	1.0	N
Formaldehyde	1.5	0.165	0.98	N
Hexane	176	19.36	0.46	Y
Naphthalene***	52	5.72	<0.01	Y
PAH	52	5.72	0.01	Y
Propylene Oxide	48	5.28	0.05	Y
Toluene	188	20.68	0.076	Y
Xylene	434	47.74	0.2	Y

*** Naphthalene used as representative POM

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

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 (µg/m ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
ammonia	173	1.29 ^a	Y
ammonium sulfate	5	0.063 ^a	Y
formaldehyde	15	0.014 ^a	Y

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	0.0003 ^a	Y
benzene	15.9	0.08801 ^b	Y

a. ISCST3 result.

b. AERMOD result. Benzene was the only pollutant with an increase in hourly emission rate and did not pass the PAER for 1987-AOP-R2. All other pollutants listed were modeled under previous permit revisions.

Other Modeling:

Odor:

Odor modeling for sources emitting styrene.

Pollutant	Threshold value 1-hour average	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Styrene	1361 $\mu\text{g}/\text{m}^3$	N/A	N/A

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/A

If exempt, explain: _____

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H ₂ 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

$$C_p = C_m (t_m/t_p)^{0.2} \text{ where}$$

Permit #: 1987-AOP-R3

AFIN: 30-00337

Page 6 of 8

C_p = 5-minute average concentration

C_m = 1-hour average concentration

t_m = 60 minutes

t_p = 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, and AP-42 for HAPs. 10 ppm for ammonia slip. Acetaldehyde and benzene emission rates are based on testing	emission factors can be found in the permit BACT determinations	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
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 ₁₀	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 ₃	206	5 yr	verify compliance
1 of SN-01 through 02	HAPs	18	initial	verify compliance if/when duct burners are started

Permit #: 1987-AOP-R3

AFIN: 30-00337

Page 7 of 8

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
	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
04-15	TDS	1280 ppmw	monthly	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
	N/A

Permit #: 1987-AOP-R3

AFIN: 30-00337

Page 8 of 8

18. GROUP A INSIGNIFICANT ACTIVITIES

Source Name	Group A Category	Emissions (tpy)						
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs	
							Single	Total
None requested with this permit application. This table will be updated when the facility requests a new activity or when the permit is renewed.								

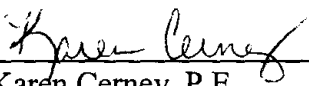
19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
1987-AOP-R2

20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.



Karen Cerney, P.E.

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Hot Spring Power Company, LLC
 Permit #: 1987-AOP-R3
 AFIN: 30-00337

\$/ton factor	22.07	Annual Chargeable Emission (tpy)	935.4
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 Permit	<input type="checkbox"/>		
If Hold Active Permit, Amt of Last Annual Air Permit Invoice \$	0		
Total Permit Fee Chargeable Emissions (tpy)	0		

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 condensible 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	<input checked="" type="checkbox"/>	239.8	239.8	0	0	239.8
PM ₁₀	<input type="checkbox"/>	239.8	239.8	0		
SO ₂	<input checked="" type="checkbox"/>	13.2	13.2	0	0	13.2
VOC	<input checked="" type="checkbox"/>	70.2	70.2	0	0	70.2
CO	<input type="checkbox"/>	615	615	0		
NO _x	<input checked="" type="checkbox"/>	294.6	294.6	0	0	294.6
1,3-Butadiene*	<input type="checkbox"/>	0.5	0.5	0		
Acetaldehyde*	<input type="checkbox"/>	4.4	4.4	0		
Acrolein*	<input type="checkbox"/>	0.5	0.5	0		
Benzene*	<input type="checkbox"/>	4.4	4.4	0		
Formaldehyde*	<input type="checkbox"/>	3.8	3.8	0		
Hexane*	<input type="checkbox"/>	1.3	1.3	0		
Naphthalene*	<input type="checkbox"/>	0.5	0.5	0		
PAH*	<input type="checkbox"/>	0.5	0.5	0		
Propylene Oxide*	<input type="checkbox"/>	0.5	0.5	0		
Toluene*	<input type="checkbox"/>	0.5	0.5	0		
Xylene*	<input type="checkbox"/>	1	1	0		
Ammonia**	<input checked="" type="checkbox"/>	311.6	311.6	0	0	311.6
Ammonium Sulfate**	<input checked="" type="checkbox"/>	6	6	0	0	6

