STATEMENT OF BASIS

For the issuance of Draft Air Permit # 1936-AOP-R4 AFIN: 30-00229

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

   KGen Hot Spring LLC
   696 Black Branch Road
   Malvern, Arkansas 72104

3. PERMIT WRITER:

   Patty Campbell, PE

4. PROCESS DESCRIPTION AND NAICS CODE:

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

5. SUBMITTALS:

   6/4/2009

6. REVIEWER'S NOTES:

   KGen Hot Spring LLC is a 620 megawatt (MW) gas turbine/steam turbine combined-cycle electric power plant (NAICS 221112) located at 696 Black Branch Road, Malvern, Hot Spring County, Arkansas 72104. This permitting action is necessary to:

   1. Correct the facility name to be KGen Hot Spring LLC and delete reference to KGen Power Corporation;
   2. Remove permitted but unconstructed emission sources: Unit 3, SN-03; Unit 4, SN-04; Boiler 2, SN-06; Cooling Tower 2, SN-19 through SN-30; and Emergency Generator 2, SN-33. Specific Conditions (SC) #17, #22 and #48 were removed;
   3. Remove prior SC #29, "Reserved", a place saver;
   4. Reduce permitted electric generating capacity from 1,240 MW to 620 MW;
   5. Correct misplaced references (typos) in new SC #28 and #29. SC #5a and SC #5b were mistakenly referenced instead of SC #9a and SC #9b;
   6. Correct a math error in the Summary of Emissions for the Emergency Generator, SN-32;
   7. Clarify monthly recordkeeping requirement in SC #46, #53 and #60;
   8. Revise "Startup and Shutdown Provisions" for all CEM systems for SN-01 and SN-02, new SC #36e;
   9. Remove Plantwide Condition #7 SSM Plan for NESHAPs, since no NESHAPS are applicable; and
   10. Add Four (4) Inlet Chiller Cooling Towers to the Insignificant Activities, A-13.

The total permitted annual emission rate limit reductions associated with this administrative amendment include: –261.9 tpy PM, –244.6 tpy PM_{10}, –107.2 tpy SO_2, –163.9 tpy VOC, –963.3 tpy CO, –266.4 tpy NO_X, –0.03 tpy lead, –0.02 tpy 1,3-butadiene, –0.64 tpy acetaldehyde, –0.10 tpy acrolein, –0.21 tpy benzene, –0.50 tpy ethylbenzene, –4.19 tpy formaldehyde, –0.67 tpy hexane, –0.46 tpy propylene oxide, –2.05 tpy toluene, –1.00 tpy xylene, –0.04 tpy POM, –0.03 tpy arsenic, –0.03 tpy cadmium, –0.03 tpy chromium, –0.03 tpy mercury, and –295.2 tpy ammonia.

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 active or pending air enforcement issues 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? N
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?

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
01 & 02	SO_2, VOC, CO, NO_X, and PM/PM10	NSPS Subpart GG (NO_X and SO_2 only) PSD (all pollutants listed)
01 & 02	PM/PM10, SO_2, NO_x	NSPS Subpart Da
05	Records only	NSPS Subpart Da

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. MODELING:

Criteria Pollutants

Air Quality Analysis Prior Permit #1936-AOP-R2. Emissions were reduced in Permit #1936-AOP-R4.

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 PM_{10}, NO_2, SO_2, and CO. SCREEN3 dispersion modeling was used in the case of each pollutant. For NO_x (annually averaged) and PM_{10} (24-hour and annually averaged) ISCST3 modeling

procedures were used because the SCREEN3 results exceeded or nearly exceeded PSD modeling significant impacts. The dispersion modeling shows that these pollutants do not exceeded significant impact levels; therefore, multi-source refined modeling is not necessary to satisfy PSD requirements. The following table summarizes the results of dispersion modeling.

Pollutant		PSD Modeling Significant Impact	Impact from HS Energy
PM10	annual	1	0.525
	24-hour	5	4.64
NO_2	annual	1	0.746
SO_2	annual	1	0.826
	24-hour	5	4.26
	3-hour	25	9.59
CO	8-hour	500	91.0
	1-hour	2000	130

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/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH). This analysis shows that most non-criteria pollutants passed the first level of modeling (except acetaldehyde, ammonia, and formaldehyde). PAER from Permit #1936-AOP-R2.

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Ammonia	17.3	1.903	134.6	No
1,3-Butadiene	4.4	0.484	0.02	Yes
Acetaldehyde	45	4.95	0.16	Yes
Acrolein	0.23	0.025	0.04	No
Benzene	1.60	0.17	0.07	Yes
Ethyl benzene	434	47.74	0.14	Yes
Formaldehyde	1.5	0.165	1.05	No

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Hexane	176	19.36	0.17	Yes
Propylene Oxide	4.75	0.522	0.12	Yes
Toluene	75.36	8.28	0.53	Yes
Xylene	434	47.74	0.26	Yes
POM*	52.4	5.76	0.02	Yes
Arsenic	0.01	0.0011	2.60E-05	Yes
Cadmium	0.01	0.0011	1.29E-03	Yes
Chromium	0.01	0.0011	1.65E-03	Yes
Mercury	0.01	0.0011	3.05E-04	Yes
Lead	1.5	0.165	0.01	Yes

- Naphthalene used as representative POM

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 ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
Ammonia	173	1.79*	Yes
Acrolein	2.3	0.01*	Yes
Formaldehyde	15	0.03*	Yes

* Modeling from Permit #1936-AOP-R2. Emissions reduced in Permit #1936-AOP-R4.

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.	emission factors can be found in the permit BACT determinations	SCR, and low-NO_x	N/A	From permit #1936-AOP-R2
05	Vendor data for criteria, and AP-42 for HAPs.	emission factors can be found in the permit BACT determinations	low-NO_x	N/A	From permit #1936-AOP-R2
07-18	AP-42	see application	drift elimination design	N/A	0.005 % drift 1280 ppmw TDS From permit #1936-AOP-R2
32	Vendor data for criteria	see application	NA	N/A	From permit #1936-AOP-R2

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
01 & 02	PM/PM_{10}	5 and 202 and/or 201A&202	5 yrs	Confirmation of BACT limit(s)
	VOC	25A	5 yrs	Confirmation of BACT limit(s)
	NO_X	7E	Initial	Confirmation of BACT limit(s)

SN	Pollutants	Test Method	Test Interval	Justification
01 & 02	NH_3	206	5 yrs	To assure accurately estimated emissions

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	natural gas only	NA	verify per inspection	Y
05	individual hours of boiler fire	2,000 hr/yr each	monthly	Y
07-18	TDS	1280 ppmw	monthly	Y
32	Operating hours	500 hrs per year	monthly	Y

16. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01, 02 & 05	5%	Dept. Standard while firing natural gas	Use of natural gas.
07-18	20%	Standard for cooling towers	TDS limit
32	20%	Standard for diesel	Use of diesel

17. DELETED CONDITIONS:

Former SC	Justification for removal
17, 22	Applicable only to unconstructed/deleted Units #3 & #4 (SN-03 & SN-04).
29	Reserved number, no need.
48	Applicable only to unconstructed/deleted Boiler #2 (SN-06).
PWC #7	SSM Plan not required.

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
No additional IAs in Permit #1936-AOP-R4.								

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

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

Permit #
1936-AOP-R3

list them at least

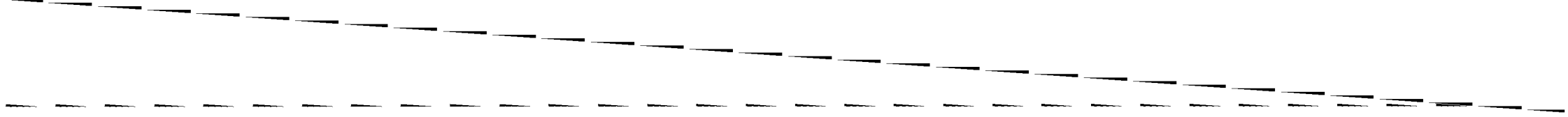
20. CONCURRENCE BY:

The following supervisor concurs with the permitting decision.

_____

Paula Parker, P.E.

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION



Fee Calculation for Major Source

Revised 06-17-09

Facility Name: KGen Hot Spring LLC
Permit Number: 1936-AOP-R4
AFIN: 30-00229

$/ton factor	22.07	Annual Chargeable Emissions (tpy)	1102.23
Permit Type	AA	Permit Fee $	0

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	-1094.63
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 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	☑	524.2	262.3	-261.9	-261.9	262.3
PM_{10}	☐	489.6	245	-244.6		
SO_2	☑	214.8	107.6	-107.2	-107.2	107.6
VOC	☑	328.2	164.3	-163.9	-163.9	164.3
CO	☐	1928	964.7	-963.3		
NO_X	☑	539.2	272.8	-266.4	-266.4	272.8
lead	☑	0.06	0.03	-0.03	-0.03	0.03
ammonia	☑	590.4	295.2	-295.2	-295.2	295.2
1,3-butadiene	☐	0.04	0.02	-0.02		

acetaldehyde		1.28	0.64	-0.64		
acrolein		0.52	0.1	-0.42		
benzene		0.42	0.21	-0.21		
ethylbenzene		1	0.5	-0.5		
formaldehyde		8.38	4.19	-4.19		
hexane		1.34	0.67	-0.67		
propylene oxide		0.92	0.46	-0.46		
toluene		4.1	2.05	-2.05		
xylene		2	1	-1		
POM		0.08	0.04	-0.04		
arsenic		0.06	0.03	-0.03		
cadmium		0.06	0.03	-0.03		
chromium		0.06	0.03	-0.03		
mercury		0.06	0.03	-0.03		
pc		0	0	0		
	7/29/2009		0	0		