UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
901 N. 5th STREET
KANSAS CITY, KANSAS 66101

AIR PERMITTING AND
COMPLIANCE BRANCH

December 5, 2005

Jim Kavanaugh, Director
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102

Dear Mr. Kavanaugh:

We appreciate the opportunity to review and comment on the proposed PSD permit for the Kansas City Power and Light (KCPL) Iatan Power Plant project. Attached are a number of comments focused on improving the enforceability of the permit and the completeness of the permitting record. None of our comments are showstoppers but we hope you will consider as the department makes its final permit decision.

We commend the department and staff for incorporating the key elements of KCPL's accelerated environmental control plan for Iatan Unit 1 as well as KCPL's commitment to many of the "beyond PSD" suggestions made by EPA to use innovative continuous emission monitors for measurement of particulate matter and mercury, to conduct ambient measurements for mercury, and to permanently retire any excess netting credits for SO_2 and NO_x.

If you have any questions about our comments or if we can be of assistance as you make your final permit decision, please don't hesitate to contact Jon Knodel at 913-551-7622 or knodel.jon@epa.gov.

Sincerely,

/ S /

JoAnn Heiman
Chief
Air Permitting and Compliance Branch

Attachments

cc: Kyra Moore, MDNR
Kendall Hale, MDNR

EPA Region 7 Comments on
Draft Prevention of Significant Deterioration (PSD) of Air Quality Permit for
Kansas City Power and Light, Iatan Power Plant Project

NSPS Applicability

1) The review summary, in the third bullet, notes that once modifications are completed on Unit 1, it will no longer be subject to NSPS Subpart D but Subpart Da instead. This is likely not the case. Typically, a modification to the affected unit must be accompanied by an increase in the hourly emissions following the change. As long as the appropriate SO_2, NO_x, and PM emission control enhancements are in place by the time KCPL completes the modifications, we would expect short term emissions to decrease below the current baseline. As a result, this would not be a modification under the NSPS. While MDNR may apply NSPS-like Subpart Da conditions to the existing Iatan Unit 1 as part of its permitting action, this would not change KCPL's compliance reporting obligations under NSPS Subpart D (e.g. 3-hour averaging period). To avoid any confusion later on, it would be helpful for MDNR to clarify either that the existing remains grandfathered under NSPS Subpart D or that the changes to the unit trigger the appropriate modification or reconstruction provisions and therefore trigger Subpart Da applicability.

2) It appears that KCPL has accepted an hourly limit on operation of the auxiliary boiler to maintain the unit below the 10% annual capacity threshold in NSPS Subpart Db. As a result, the boiler will enjoy certain exemptions from NO_x emissions limits and monitoring. We recommend that the permit also include "consequence" language to make clear that if the limit is not met the company must demonstrate, within a reasonable period of time, compliance under NSPS Subpart Db and install and certify the appropriate monitoring equipment.

3) The Review Summary lists a number of federal technology standards that apply to the boilers and other ancillary equipment. Two additional standards are likely to apply; one for the oil storage tank mentioned in Condition 7 and one for the auxiliary boiler mentioned in Condition 6. Specifically, NSPS Subpart Kb will apply to the 500,000 gallon oil storage tank and MACT Subpart DDDDD will apply to the oil-fired auxiliary boiler (as a "limited use liquid fuel subcategory" boiler, as permitted). If the departments' review indicates otherwise, it would be appropriate to clarify as part of the permitting record.

PM_{10}

1) A recent PSD permit issued by the State of Utah to Intermountain Power Services Corporation establishes filterable PM and PM_{10} BACT emission limits for a new unit at 0.013 and 0.012 #/mmBtu, 3-hr average, respectively. The unit and associated pollution controls are nearly identical to those at the proposed Iatan plant and seem to indicate that lower filterable PM and PM_{10} emissions are achievable. For more details, see http://www.airquality.utah.gov/PERMITS/DOCS/AN0327010-04.pdf.

Recent test data for the Craig Units 1 and 2 plant in Colorado also indicate that filterable PM and PM_{10} emissions can be expected to be much lower than the BACT limits proposed for Iatan. The Craig units recently replaced the ESPs with baghouses and became subject to more stringent SO_2 and NO_x limits as a result of a Consent Decree with the Sierra Club. Craig is required to scrub 100% of their flue gas with upgraded wet FGDs. While the power plant does not burn PRB coal, the low sulfur western coal from northwestern Colorado is likely to have similar ash properties to the PRB subbituminous coal burned by KCPL. The Craig Consent Decree limits filterable PM to 0.03 lb/MMBtu. Even with such a high "limit", Craig Units 1 and 2 achieved much lower rates during the stack test at 0.0057 and 0.005 #/mmBtu, respectively; approximately 80% below the required standard. These test results are summarized in Attachment A. These data demonstrate that a filterable rate of 0.012 #/mmBtu can be achieved for PM and PM_{10} at a plant operating a wet FGD. Even though Iatan will install a continuous particulate matter CEMS for compliance, and there may be some uncertainty about the variability of PM emissions over the entire range of operations, it appears that a BACT limit of 0.012 #/mmBtu provides more than adequate margin of compliance.

Lastly, we have compiled a summary of particulate test data obtained from KCPL's Hawthorn plant. Hawthorn is similar in design to the proposed Iatan plant except that a wet scrubber is proposed for Iatan. While the Hawthorn test data serve only as a proxy for PM_{10}, because Reference Method 5 was used in lieu of RM201 or RM201A to measure filterable PM, there is sufficient data to make estimates of the PM_{10} filterable fraction as well. The Hawthorn data, over the four year period it was collected, shows PM_{10} filterable emissions in the range of 0.002 – 0.004 #PM10 (filterable)/mmBtu. While it is possible that the wet scrubber at Iatan may contribute slightly more filterable PM_{10} since the primary particulate capture equipment is in front of the scrubber, the higher particulate loading is likely to be in the range of the Craig data rather than the substantially higher limit proposed in the permit. We encourage the department to evaluate these data to determine if a lower PM_{10} filterable limit is appropriate.

2) Condition 13.G establishes a mass balance for estimating PM_{10} emissions on a semi-continuous basis using continuous data produced by the PM-CEMS and emission factors for PM_{10} and its component parts determined during a <u>one time stack test</u> required pursuant to Condition 12.A. Until KCPL develops some operational experience with the boilers and associated controls, it is possible that a one time stack test for condensibles and coarse particulate may not be representative for all periods of boiler operation. The department should consider additional testing, using the periodic stack test schedule outlined in Condition 12.H., to have KCPL collect additional PM_{10} stack data and its component parts to better understand what kind of variability, if any, exists.

Averaging Times

1) Condition 1.B. establishes a limitation of 4000 tons coal per hour for the entire Iatan Generating Station. It would be helpful to clarify if this is an instantaneous "hourly" limit never to be exceeded, or a value that is averaged over some longer period of time.

2) Conditions 2.A. and 3.A establish limits on fuel sulfur content and heat input design rates. It would be helpful to clarify if these are "peak" design limits never to be exceeded or are values averaged over some longer period of time. When evaluating applicability under NSPS, EPA typically looks at the sustained 24-hour steady state heat input rate. If these are not intended to be enforceable permit limits, the permit should also clarify.

3) The permit contains a number of emission and operational restrictions specified on an annual average basis, including the mercury limits in Conditions 2.E.11) and 3.E.11), the hour limits on the auxiliary boiler in Conditions 6.C. and 14.B., the oil throughput limit in Condition 7.B. and the hour limits on the fire pumps in Condition 14.C. To assure that these limits are met at all times, we recommend that they be redefined as 12 month limits, rolled monthly. This helps to make sure that records are updated frequently, minimizes the impact any seasonal fluctuations might have on an annual limit and eliminates the possibility of surprise late in the compliance year that a limit can not be met.

4) Condition 6.A. sets a sulfur content limit on the fuel oil combusted in the auxiliary boiler. However, the condition is silent over what period of time the 0.05% sulfur by weight standard is to be met. It would be helpful to clarify if this is a "peak" design limits never to be exceeded or is a value averaged over some longer period of time. Since many programs like acid rain and NSPS use a "batch" concept for evaluating sulfur content in fuel oil, this may be the most appropriate measure. If this is the case, it would be helpful to add language at the end of this condition to say "… as determined in Condition 7.B." With respect to Conditions 7.B. and 14.F. you may also want to expand the options for determining the sulfur content and gross heating value of the fuel oil by saying "… the requirements in 40 CFR Part 75, Appendix D, may also be used to satisfy this requirement."

Startup & Shutdown Periods

1) The long term, 30-day rolling emission limitations for NO_x, SO_2, PM_{10}, and CO in Conditions 2.E. and 3.E. should clearly state whether periods of emissions occurring during startup and shutdown are included in the compliance calculation. EPA typically assumes that such periods are included in the averaging period for longer term standards unless explicitly excluded. If startup and shutdown are excluded from these limits, then the department should establish a secondary BACT limits that apply just during startup or shutdown. If the department determines that such limits are technically infeasible, then it may be appropriate to establish work practice procedures to minimize periods of uncontrolled emissions consistent with good engineering practice.

Enforceability of Boiler Design Specifications

1) KCPL requests an increase in the design heat input rate for existing Iatan Unit 1 from 6,600 to 7,800 mmBtu/hr. While conducting an emissions analysis for this unit, it was interesting to note that the actual measured heat input was over 6,600 mmBtu/hr threshold 82% of the operating time and periodically above the new 7,800 mmBtu/hr design rate 21.9% of the operating time in 2003. These data may be an artifact of over-measurement by the Part 75 acid rain flow monitors, as a result of cyclonic flow, stack wall effects, and fuel (F)-factors, but it raises questions about whether the new design rates KCPL now seeks can be achieved on an ongoing basis. If these design rates are intended to be enforceable limits, then the department should clarify how compliance is to be measured. If the existing acid rain monitors are to be used, then the department should evaluate if the design heat input limit is adequate in light of the number of times the new design limit was exceeded in 2003. This is important because the heat inputs reported by KCPL are federally certified for the acid rain program and could be used as credible evidence when determining if the limits are met. If the acid rain monitors will not be used to verify the design rate, then enforceable alternate procedures such as fuel sampling and analysis and fuel usage records should be established to demonstrate the limits are met. Lastly, if these design rates are meant to be for informational purposes only, then the permit should clearly identify this is the case. A summary of our 2003 heat input analysis for Iatan Unit 1 is attached in Appendix C.

Alternate Fuels

1) Condition 2.A. notes that "no other fuels shall be used without receiving prior written authorization…" To preserve the ability to evaluate any future emission changes and associated collateral impacts, we recommend that the department also add that "… such authorization may include a BACT and modeling analysis, as deemed appropriate by the Air Quality Control Program, independent of any emission decreases associated with the use of such alternate fuels."

Monitoring

1) In general, Condition 13 requires KCPL to install, certify, operate, calibrate, test and maintain continuous emission monitoring systems (CEMS) for a number of pollutants. However, this condition is not explicit about measuring emissions "in terms of the standard" and may leave some uncertainty about whether the CEMS must be used to verify compliance for all emission limitations and averaging periods, including those stated in terms of lbs/mmBtu and lbs/hr. We recommend inclusion of language that assures that KCPL will also install, certify, operate, calibrate, test and maintain the necessary auxiliary monitoring equipment, including but not limited to diluent monitors for heat rate weighted standards, flow monitors for mass rate weighted standards and

moisture monitors, if necessary. We also recommend that the permit require installation of a data acquisition and handling system (DAHS) to calculate emissions "in terms of the standard" for all CEMS-measured emissions limits and associated averaging times.

2) Condition 9 sets out performance and monitoring guidelines for baghouses and other particulate control devices. While these procedures are a good starting point, we encourage the department to also consider the impacts of CAM (compliance assurance monitoring) on "large pollutant specific emission units" – units with post-control potential to emit equal to or greater than 100 tons per year -- and establish CAM-appropriate monitoring that can effectively be rolled into the Title V permit. The continuous PM-CEMS proposed for the Unit 1 and 2 boilers in Condition 13 are adequate indicators of baghouse performance for these units. But, it is unlikely that the "once a day pressure drop measurement" for other particulate control equipment, alone or in conjunction with the other elements of this condition, provide meaningful feedback on control performance for other material handling processes. Since many of these processes, based on the uncontrolled emission factors used in the application, will be large PSEU's, they will ultimately need to satisfy the CAM requirements. Under CAM, large PSEU's must collect four or more data values equally spaced over each hour, unless the permitting authority approves a reduced frequency. Therefore, the "once a day" monitoring approach in Condition 9 may not be acceptable for large emission units unless used in conjunction with other appropriate parameter monitoring for which data are recorded at least four times each hour; e.g., baghouse pressure differential, air flow, temperature. For more information on recommended CAM options for baghouses see < http://www.epa.gov/ttn/emc/cam/draftcamappb.pdf >.

Recordkeeping

1) Conditions 9.A., 9.B., 9.D. and 10.B.1) a) rely on the concept of "manufacturers specifications" to assure that certain equipment or procedures are properly operated and maintained. But, there is no corresponding requirement that these specifications be provided to MDNR or otherwise maintained by KCPL. As a minimum, we recommend that the permit require KCPL to maintain these plans on-site so that they are available for on-site inspection or by other formal agency request.

General Clarity

1) Condition 14.G.2 requires KCPL to continuously record and maintain records of kilowatts produced by the turbine(s) associated with the pulverized coal boilers and auxiliary boiler. Because energy output can be reported many different ways, for example as "net" or "gross" output, the permit should clarify which measure it intends. Since the mercury limits in the permit are adjusted on "gross" output basis, this may be the appropriate measure to specify.

Air Quality Analysis

1) Condition 11 requires KCPL to secure portions of the site with a fence or other adequate physical barrier. It appears that modeling receptors were excluded to the KCPL property line, so any fencing or physical barrier should be more expansive than just around the landfill, coal storage area and boiler. In other words, any barrier should, as a minimum, correspond to the areas that were excluded from the modeling as non-ambient air.

2) Condition 17.A. requires KCPL to conduct post-construction monitoring for PM_{10} and mercury. In addition to the pollutant measurement equipment, we recommend co-location and operation of a meteorological station to help inform any modeling or other air quality analysis that may later be performed on the data.

3) The basis for PM_{10} monitoring requirement in Condition 17.E. is that it will be used to validate if the PM_{10} increment standard is being met in the project area. While we agree that PM_{10} post-construction monitoring will be valuable for showing that the national ambient air quality standards will be met, these data alone are insufficient to document increment compliance. Nevertheless, we encourage the department to retain this monitoring requirement.

4) The VISCREEN analyses used to determine plume visual impact on sensitive areas should include oxides of nitrogen, primary nitrogen dioxide, soot, and primary sulfate, as well as primary particulate matter. The intent of the impact analyses is to show the impact from the project, not just the effect of the pollutant that triggered the review. Another sensitive area that should have been included is the nearby ski area located east of the facility.

Mercury

1) We continue to work with the Corps of Engineers and KCPL to seek opportunities for a "mercury neutral" strategy that will allow both Units 1 and 2 to operate within the footprint of Unit 1 alone. If we are able to reach consensus, we hope that MDNR will be agreeable, upon KCPL's request, to include emissions limitations which would codify a "mercury neutral" strategy in the permit.

[End of Comments]

Appendix A.

AIR POLLUTION CONTROL DIVISION

Field Inspection Report

DATE: 1/13/04

On January13, 2004, stack testing was performed at the Tri State Generation Craig station. The testing was performed on Unit 1 at the plant to determine the particulate emissions from the unit. The testing was required as part of the consent decree for the source in order to prove that the emissions of particulate matter had been reduced by the installation of new controls. Particulate testing was required within 100 days after flue gas was passed through the new baghouse. After completing the installation of the new controls, the unit was restarted on October 27, 2003, and therefore the testing was performed within the required timeframe. The results of the testing are summarized in the table below.

	Run 1	**Run 2**	**Run 3**	**Average**
Unit Load (MW)	455	455	455	455
Coal Flow (lbs/hr)	336000	335000	335000	335000
Scrubber Slurry Flow (gpm)	33.3	40.0	32.9	35.4
Stack Flow (dscfm)	1170000	1139000	1161000	1157000
Stack Oxygen (%)	6.2	6.3	6.4	6.3
Particulate Emissions (gr/dscf)	0.0032	0.0026	0.0028	0.0028
Particulate Emissions (lbs/mmbtu)	0.0064	0.0051	0.0056	0.0057
Particulate Emissions (lbs/hr)	32.2	24.9	27.6	28.2
Particulate Emissions (tons/yr)	141	109	121	124

The sensor for the slurry flow to scrubber module D had failed. A reading of 10.0 gpm was set in the system in order to keep it running. This value is added to the actual slurry flow in Modules A and C (Module B was not in service) in order to obtain the value in the above table. The slurry flow was controlled according to the pH in the module, which was set at 5.4.

Data from the baghouse had not yet been connected to the plant's data system as of the date of the test, and averages for each run could not be calculated. Readings taken during the testing indicated the pressure drop across the baghouse was 6.4" H_2O. The temperature at the inlet to the baghouse was 274.7^0F and the outlet temperature was 271.1^0F.

Additional operational data has been attached.

The results of the testing show this unit to have met the required particulate emission limit of 0.03 lbs/mmbtu.

Appendix A. (continued)
AIR POLLUTION CONTROL DIVISION
Field Inspection Report

DATE: 7/13/04

On July 13, 2004, a stack test was performed on Unit 2 at the Tri-State Generation and Transmission Association, Inc., Craig Station. The source tested is a Babcock and Wilcox coal fired boiler. The boiler was tested to quantify particulate matter emissions to satisfy paragraph 8 of the Consent Decree entered on March 19, 2001. Three 180-minute test runs were performed to determine the concentrations and mass emission rates of Particulate Matter (PM).

The results of the testing are summarized in the table below.

	Run 1	**Run 2**	**Run 3**	**Average**
Stack Temperature (F)	117	117	118	117
Coal Flow (lb/hr)	324,800	331,600	330,200	328,866
Oxygen (%vd)	7.4	7.4	7.2	7.3
Carbon Dioxide (%vd)	13.6	13.4	13.6	13.5
Moisture (%vw)	14.6	13.8	13.8	14.0
Stack Flow (dscfm)	1,075,735	1,076,001	1,092,683	1,081,473
Particulate (gr/dscf)	0.001	0.003	0.004	0.003
Particulate (lb/hr)	12.61	23.95	36.07	24.21
Particulate (lb/MMBtu)	0.003	0.005	0.007	0.005
Isokinetic Ratio (%)	102.9	101.6	101.3	101.9

The results of the testing show this source to be in compliance with the emission limit of 0.03 lb/MMBtu set by Section V, Paragraph 8 of the Consent Decree. The source is in compliance.

Appendix B.

Review of test reports for KCPL's Hawthorn Unit 5; PM emission measurements.

The PSD permit for the unit sets forth a PM10 emission limit of 0.018 lb/MMBTU; the specified PM emission test methods are Methods 201A [filterable PM10] and 202 [condensible PM] of 40 CFR Part 51, Appendix M.

The tests were conducted using Method 5 of 40 CFR Part 60 [rather than Method 201A] and Method 202.

The operating loads, in terms of MW, during the tests were near the unit-generator's MW capacity.

The condensibles collected in the back half [Method 202] were added to the TSP [Method 5] to report the particulate emissions; all particulate collected assumed as PM10.

The PM control is a pulse-jet FF.

"TSP" as used below and in the reports means the Method 5 measurement.

"PM10" as used below and in the reports means the total particulate amount measured by Methods 5 and 202. [e.g., PM10 = TSP + CPM]

TEST DATA

Run	TSP lb/h	**TSP lb/MMBTU**	PM10 lb/h	PM10 lb/MMBTU	CPM lb/MMBTU	(CPM /0.589 *) **TPM10** lb/MMBTU	(TPM10 x 0.411) **FPM10** lb/MMBTU
* Factor derived from the AWMA article; data for a unit in Utah of OF/DB/PC design, w/FF, burning 0.47 % content coal [maybe PRB coal]							
Date: 11/7/01:							
1	66.02	0.0112	97.66	0.0166			
2	73.14	0.0126	99.45	0.0171			
3	67.33	0.0116	99.92	0.0172			
Avg	68.83	**0.0118**	99.01	**0.0170**	0.0052	0.00883	0.00363
Date: 8/15/02:							
1	52.60	0.0096	69.22	0.0127			
2	56.25	0.0106	70.76	0.0133			
3	63.39	0.0123	72.88	0.0141			
Avg	57.41	0.0108	70.95	0.0134	0.0026	0.00441	0.00181
Date: 4/15/03:							
1	48.92	0.0080	69.64	0.0114			
2	44.92	0.0073	67.77	0.0110			
3	48.54	0.0080	70.96	0.0117			
Avg	47.46	0.0078	69.46	0.0114	0.0036	0.00611	0.00251
Dates: 5/24-25/04:							
1	64.21	0.0109	101.61	0.0173			
2	60.13	0.0104	97.32	0.0168			
3	55.34	0.00976	89.78	0.0158			
Avg	59.89	0.0104	96.24	0.0166	0.0062	**0.01053**	**0.00433**
					0.0062	0.0069 @ 90% CPM	0.00069

Appendix C.
Iatan 1 heat input analysis using data reported to the Clean Air Markets Division (2003)

2003 Iatan 1 Acid Rain Data

Load (MW)	
average	596.2657534
max	708
% hours @ load > 726 MW (100%)	#N/A
% hours @ load > 653.4 MW (90%)	0.812
% hours @ load > 580.8 MW (80%)	0.828
Heat Input, mmBtu	
average	6509.26839
max	8706.9
% hours > 8706.9 mmBtu/hr (100% of max HI)	0%
% hours > 8271.555 mmBtu/hr (95% of max HI)	2%
% hours > 8184.486 mmBtu/hr (94% of max HI)	3%
% hours > 8097.417 mmBtu/hr (93% of max HI)	6%
% hours > 8010.348 mmBtu/hr (92% of max HI)	10%
% hours > 7923.279 mmBtu/hr (91% of max HI)	14%
% hours > 7836.21 mmBtu/hr (90% of max HI)	22%
% hours > 7749.141 mmBtu/hr (89% of max HI)	32%
% hours > 7662.072 mmBtu/hr (88% of max HI)	43%
% hours > 7575.003 mmBtu/hr (87% of max HI)	50%
% hours > 7487.934 mmBtu/hr (86% of max HI)	57%
% hours > 7400.865 mmBtu/hr (85% of max HI)	63%
% hours > 6965.52 mmBtu/hr (80% of max HI)	81%
% hours > 6530.175 mmBtu/hr (75% of max HI)	82%
% hours > 6094.83 mmBtu/hr (70% of max HI)	83%
% hours > 5659.485 mmBtu/hr (65% of max HI)	84%
% hours > 5224.14 mmBtu/hr (60% of max HI)	85%
% hours > 4788.795 mmBtu/hr (55% of max HI)	85%
% hours > 4353.45 mmBtu/hr (50% of max HI)	86%
% hours > 3918.105 mmBtu/hr (45% of max HI)	86%
% hours > 3482.76 mmBtu/hr (40% of max HI)	86%
% hours > 3047.415 mmBtu/hr (35% of max HI)	86%
% hours > 2612.07 mmBtu/hr (30% of max HI)	86%
% hours > 2176.725 mmBtu/hr (25% of max HI)	87%
% hours > 1741.38 mmBtu/hr (20% of max HI)	87%
% hours > 1306.035 mmBtu/hr (15% of max HI)	87%
% hours > 870.69 mmBtu/hr (10% of max HI)	87%
% hours > 435.345 mmBtu/hr (5% of max HI)	87%
% hours > 87.069 mmBtu/hr (1% of max HI)	88%
90th percentile	8002.3
95th percentile	8136.1
% hours at heat input > 6600 mmBtu	0.82
% hours at heat input > 7800 mmBtu	0.261
Hours of operation	7653.5
Design Capacity, MW	726
Design Capacity, heat input	6600
"New" Design Capacity, heat input	7800