

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

PERMIT BOOK

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MAR 17 2014

Mr. Steve Courtney
Environmental Affairs, HQ
Kansas City Power & Light Company - Iatan Generating System
P.O. Box 418679
Kansas City, MO 64141

RE: New Source Review Temporary Permit Request - Project Number: 2013-12-037
Installation ID Number: 165-0007
Temporary Permit Number: **032014-004**
Expiration Date: March 1, 2016

Dear Mr. Courtney:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to install a pilot process water concentrator system at Kansas City Power & Light Company - Iatan Generating System (KCP&L), located near Weston, Missouri. The Air Pollution Control Program is hereby granting your request to conduct this temporary operation at this location in accordance with Missouri State Rule 10 CSR 10-6.060(3).

KCP&L intends to install a process water concentrator system that will be used to test the potential reductions in the volume of process water flows. The process water concentrator system is rated to process 35 gallons of process water per minute and consists of a 30.0 MMBtu per hour propane fired burner/evaporation chamber, entrainment separator and a liquid/solid separating process.

A slip stream of process water will be flashed through the propane heated chamber. From the propane fired burner/evaporation chamber the solids and steam is sent to an entrainment separator. The steam from the entrainment separator will exit a water vapor vent. The solids and remaining water in the system is then transferred to a liquid/solids separating process. The solids exit the separating system as a wet cake and are transferred to haul trucks which transfer the material to KCP&L's existing landfill. The remaining water is recirculated back to propane fired burner/evaporation chamber. According to KCP&L's application the estimated wet cake density is 60 pounds per cubic foot and the process water concentrator system will generate approximately 37 cubic yards of wet cake material per day. Based on these assumptions the new process water concentrator system will generate 1.25 tons of wet cake per hour.

The criteria pollutants of concern for the process water concentrator system is particulate matter (PM), particulate matter less than ten micron in aerodynamic diameter (PM₁₀) and particulate matter less than 2.5 micron in aerodynamic diameter (PM_{2.5}) as well as the combustion emissions from the fired burner/evaporation chamber. PM, PM₁₀ and PM_{2.5} emissions are expected from the water vapor vent and added haul road activity.

The potential emissions from the propane fired burner/evaporation chamber were calculated using the Environmental Protection Agency document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition (AP-42), Section 1.5, *Liquefied Petroleum Gas Combustion* (July 2008). The haul road PM, PM₁₀ and PM_{2.5} potential emissions were calculated using AP-42, Section 13.2.1, *Paved Roads* (January 2011). The average silt loading value of 7.4 g/m² for municipal solid waste landfill was determined to be the most representative silt loading value for KCP&L. The potential emissions from the water vapor vent were estimated using a vendor stack test. KCP&L sent sample process water to the vendor to test the process water concentrator system using EPA Method 5 testing method for total particulate. The stack test was run at lower process rate of 7.3 gallons per minute. The emission rate from the stack test was scaled up based on the MHDR of the system, 35 gallon per minute, to estimate the potential emissions of the water vapor stack. The total particulate emission rate was considered to be the PM₁₀ and PM_{2.5} emission rate. The table below summarizes the potential emissions of this pilot plant.

Table 1: Emissions Impact Pilot Process Water Concentrator System

Criteria Air Pollutant	Potential Emissions (lb/hr)	Projected Emissions (tpy)
PM	1.46	6.37
PM ₁₀ ¹	1.45	6.36
PM _{2.5} ¹	1.42	6.22
SO _x	0.49	2.15
NO _x	4.26	18.67
VOC	0.33	1.44
CO	2.46	10.77
CO _{2e}	4,191	18,343
CO _{2(mass)}	4,099	17,952
HAPs	0.06	0.24

¹PM₁₀ and PM_{2.5} include condensable particulate matter emissions

Permission to conduct the trial burns is granted with the following conditions:

If a construction permit is sought by KCP&L, the permittee shall submit a project report to the Air Pollution Control Program with the construction permit application. The report shall include:

- a. A table of emission factors developed from the stack testing conducted during the trial. The developed emission factor table shall include sample calculations and a full stack testing report.
- b. The emission factors shall be reported in pounds of pollutant per gallon of water processed and lb/MMBtu of fuel burned.
- c. An emission factor summary including discussion of the methods used to develop the emission factors.
- d. Conclusions reached concerning the long-term feasibility of the process water concentrator system.

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Although stack testing is not required for this temporary activity, KCP&L should be aware that stack test results would be helpful if KCP&L should decide to pursue further permitting under 10 CSR 10-6.060, *Construction Permits Required*. KCP&L shall seek approval of the test methods being implemented from the Air Pollution Control Program's Stack Testing Unit 30 days prior to performing the stack test.

The potential emissions of this temporary activity is below the de minimis level for all criteria pollutants and also is below the 100 ton per year threshold for all criteria pollutant for temporary/pilot plant operations therefore this temporary permit will be issued. This permit expires two years from the date of issuance.

This temporary permit does not give KCP&L the authority to exclude any emissions associated with this temporary activity from any applicable emission limit. Additionally, KCP&L is still obligated to meet all other applicable air pollution control rules, Department of Natural Resources' rules, or any other applicable federal, state, or local agency regulations. Specifically, you shall not violate:

- 10 CSR 10-6.165, *Restriction of Emission of Odors*
- 10 CSR 10-6.170, *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220, *Restriction of Emission of Visible Air Contaminants*
- 10 CSR 10-6.260, *Restriction of Emission of Sulfur Compounds*
- 10 CSR 10-6.400, *Restriction of Emission of Particulate Matter From Industrial Processes*

A copy of this letter should be kept with the unit and be made available to Department of Natural Resources' personnel upon verbal request. If you have any questions regarding this determination, please do not hesitate to contact Gerad Fox at the departments' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 751-4817. Thank you for your time and attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM



Kyra L. Moore
Director

KLM:gfk

c: Kansas City Regional Office
PAMS File: 2013-12-037

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