

# PERMIT BOOK



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

## DEPARTMENT OF NATURAL RESOURCES

[www.dnr.mo.gov](http://www.dnr.mo.gov)

**NOV 26 2012**

Mr. Michael L. Menne  
Vice President Environmental Services  
Ameren Corporation  
1901 Chouteau Ave.  
St. Louis, MO 63103

RE: New Source Review Temporary Permit Request - Project Number: 2012-10-066  
Installation ID Number: 071-0003  
Temporary Permit Number ~~112012-011~~  
Expiration Date: May 26, 2013

Dear Mr. Menne:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to test three different technologies on Boiler Unit 3: a coal additive, ADA-ES's proprietary liquid mercury oxidation additive (DEN); injection of powdered activated carbon (PAC) into the flue gas; and an alternative liquid flue gas conditioning (LFGC) agent, ADA's proprietary ATI-2001, at the Ameren Missouri Labadie Energy Center, located in Labadie, Missouri. The Air Pollution Control Program is hereby granting your requests to conduct these temporary testing operations at this location in accordance with Missouri State Rule 10 CSR 10-6.060(3).

According to your application, Ameren Missouri Labadie Energy Center (Ameren – Labadie) is planning to conduct a testing program to evaluate the effectiveness of three different technologies. The three technologies will be tested individually and in combination(s) to determine which technology or combination of technologies best reduce mercury emissions and enhance ESP effectiveness in order for Ameren – Labadie to achieve compliance with the standards of 40 CFR Part 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants From Coal and Oil-Fired Electric Utility Steam Generating Units*.

The coal additive, DEN, will be applied to the coal using a portable skid containing a pump, flexible tubing, and rotameters dedicated to each coal feeder for Boiler Unit 3. The flow to each feeder is controlled by manually adjusting needle valves on the rotameters. Totes containing DEN will be placed in a secondary containment area near the skid. DEN will not be tested individually. DEN will be tested in conjunction with LFGC. DEN will also be tested in conjunction with both LFGC and PAC.

The flue gas additive, PAC, will be injected into the flue gas using a portable activated carbon injection system and process equipment supplied by ADA. The process equipment includes all necessary hoses, flow splitters, sorbent injection lances, blowers, and auxiliary equipment. PAC will be stored in a storage silo with a maximum capacity of 17,000 pounds. The silo is equipped with a weigh scale and a PLC system to control system operation and adjust injection rates. An initial injection rate of 4 lb/MMacf of flue gas flow will be employed for three days of parametric testing. Depending on the results of the parametric testing, this injection rate may be lowered during subsequent tests. PAC will be tested individually, in conjunction with LFGC, and in conjunction with both LFGC and DEN.

DEN and PAC are both being tested for mercury emissions reduction capability. Two mercury CEMS operated by ADA will provide real-time mercury measurements. The first mercury CEMS will be located upstream of the PAC injection point and the second will be located at the Boiler Unit 3 stack. Installation, start-up, quality checks, and conditioning of the CEMS probes will occur over an approximately five day period. A modified EPA Method 30B STM test with three paired sorbent trap runs will be run in conjunction with each CEMS installation to verify proper instrument operation.

The LFGC agent, ATI-2001, will be delivered to the installation by tanker trucks. The LFGC equipment will include a chemical injection skid provided by ADA, a receiving tank, a set of injection lances, liquid and air distribution equipment, piping, and low-pressure blowers. The concentrated ATI-2001 chemical will be blended with water to create a low concentration aqueous solution at the chemical injection skid. The solution will be delivered to a grid of fluid spray high performance atomizers by a high-pressure pump. The atomizers are located on a set of removable chemical injection lances that will be arranged in the ESP inlet ductwork to give equal distribution of the solution throughout the flue gas stream. The high performance atomizers will produce an ultrafine spray of droplets to provide quick evaporation, good distribution, and optimum chemical utilization. LFGC will be testing individually, in conjunction with DEN, in conjunction with PAC, and in conjunction with both DEN and PAC.

LFGC is being tested to potentially replace the use of the installation's current SO<sub>3</sub> flue gas conditioning system; therefore, the current SO<sub>3</sub> injection system will not be operated during LFGC testing. This permit temporarily relieves the installation of the requirement to operate the SO<sub>3</sub> flue gas conditioning system on Boiler Unit 3 only for testing purposes.

Mercury and particulate matter (PM) emissions from Boiler Unit 3 are expected to be reduced by the testing operations; however, the handling of PAC may result in increased PM emissions. Boiler Unit 3 ESP will be in operation during all testing. MSDS provided by the installation for DEN, PAC, and the LFGC agent indicate the materials do not contain any hazardous air pollutants (HAPs).

Increased PM emissions from the handling of PAC were calculated to be 0.002 pounds per hour based upon operation of a Torit cartridge-filter bin vent on the PAC storage silo. The installation expects to use 200,000 pounds of PAC during the testing. Emissions from the silo should only occur during loading operations, estimated at 10 hours total for overall increased PM emissions of 0.02 pounds per year. There may also be an increase in haul road usage during the timeframe of the testing resulting in a slight increase in fugitive PM emissions.

In summary, emissions of mercury and PM are expected to be reduced by the addition of DEN, PAC, and LFGC agents to Boiler Unit 3. Particulate emissions associated with the handling of PAC are expected to be around 0.002 pounds per hour and particulate emissions from the increased haul road usage are expected to be minimal. Since all pollutants are expected to have emissions below de minimis levels and additional testing is being conducted to measure the effects of the DEN, PAC, and LFGC on emission levels, permission to temporarily use DEN, PAC, and LFGC is granted up to the expiration date stated above. In order to continue using DEN, PAC, and LFGC past the expiration date, Ameren - Labadie will need to seek permission from the Air Pollution Control Program.

Any emissions exceeding the emission limits within the installation's Title V Operating Permit, OP2011-020A will need to be noted in an Excess Emissions Report. Ameren - Labadie should indicate the testing as the source of the excess emissions on the report.

No later than 90 days following the expiration of this permit, Ameren - Labadie shall submit a testing project report to the Air Pollution Control Program. At a minimum, the report shall include:

1. Identification of the emission unit (Boiler Unit 3) and control device (ESP) evaluated for this project
2. Locations of the injection and sampling sites
3. Injection rates and concentrations, unit load for each trial
4. The date, time, and duration of each trial
5. Emission rates of total particulates, mercury, and SO<sub>2</sub> during the trials and project
6. Higher heating value, sulfur, mercury, and ash content of the coal used in the trials
7. The six minute average opacity data collected during each trial and for a 24-hour period before and after each trial
8. Conclusions reached concerning the emissions reduction effectiveness of the testing project
9. Comparison of the ATI-2001 testing results from Temporary Permit Number 122009-009 to the testing results of this project.

You are still obligated to meet all applicable air pollution control rules, Department of Natural Resources' rules, or any other applicable federal, state, or local agency regulations. Specifically, you should avoid violating:

- ◆ 10 CSR 10-6.045 *Open Burning Requirements*
- ◆ 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 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes*
- ◆ 10 CSR 10-6.405 *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*
- ◆ 40 CFR Part 64 *Compliance Assurance Monitoring*

Mr. Michael L. Menne  
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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 Alana Rugen at the 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

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c: St. Louis Regional Office  
PAMS File: 2012-10-066