



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

## DEPARTMENT OF NATURAL RESOURCES

PERMIT BOOK

SEP 10 2013

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Mr. Michael L. Menne  
Vice President Environmental Services  
Ameren Missouri Labadie Energy Center  
P.O. Box 66149, MC 602  
St. Louis, MO 63166-6149

RE: New Source Review Temporary Permit Request- Project Number: 2013-08-029  
Installation ID: 071-0003  
Temporary Permit Number: **092013-006**  
Expiration Date: October 15, 2013

Dear Mr. Menne:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to conduct a two-week test of two coal additives, M-Sorb and S-Sorb, at the Ameren Missouri Labadie Energy Center, located in Labadie, 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).

According to your application, Ameren Missouri Labadie Energy Center (Labadie) is planning to conduct a testing program for adding two additives to the coal combusted in boilers Units 3 and 4. Two materials, designated as S-Sorb and M-Sorb, will be added to the feedstock coal. M-Sorb is a halide salt solution consisting principally of a 50% solution of calcium bromide in water. S-Sorb is a proprietary mixture of calcium carbonate, calcium oxide, calcium sulfate, aluminum oxide, and iron oxide. Neither additive contains any volatile organic compounds or hazardous air pollutants.

The M-Sorb additive is expected to reduce mercury emissions by promoting oxidation of elementary mercury in the flue gas to an oxidized form which is then adsorbed onto particulates in the flue gas and captured in the unit's electrostatic precipitator (ESP). The S-Sorb additive is expected to reduce nitrogen oxides (NO<sub>x</sub>) by the preferential scavenging that occurs for NO<sub>x</sub> when the S-Sorb is added to coal. Testing at the University of North Dakota's Energy & Environmental Research Center combustion test facility (EERC) is planned for later this year. That later test will quantify the reductions in mercury, NO<sub>x</sub>, and particulate matter (PM) emissions.

Mr. Michael L. Menne  
Page Two

The purpose of the current test is to assess the operational condition of the boilers while burning the refined coal. No additional monitoring or emissions testing will be done during this test. However, the existing monitoring mandated by Operating Permit OP2011-020B will ensure that emissions are kept within regulatory limits during the test.

The S-Sorb in the refined coal could impact PM emissions since it increases the amount of non-combustibles. However, earlier testing at a different energy center showed a decrease in PM emissions rather than an increase. Also, the existing ESPs for Unit 3 and Unit 4 are expected to collect and remove any additional PM loading.

In 2011, Ameren Missouri contracted with CERT to apply S-Sorb and M-Sorb to the coal supply at the Rush Island Energy Center (Rush Island). Ameren Missouri applied for and received a temporary permit (Permit Number 102011-013) to evaluate the S-Sorb and M-Sorb coal additives there. In conjunction with the temporary permit, Ameren Missouri evaluated the level of emissions reductions, as well as impacts on plant operations and emissions of other pollutants, by conducting testing at EERC using the coal burned at Rush Island. Based on that testing, NO<sub>x</sub> emissions were reduced by 21%, PM emissions by 5% and mercury emissions by 53% from baseline conditions. Since the coal used at Rush Island is similar to that used at Labadie and since Rush Island boilers 1 and 2 are similar to Labadie boilers 3 and 4, similar reductions in NO<sub>x</sub>, PM and mercury emissions are expected while testing refined coal at Labadie.

For this two-week testing program, some additional particulate emissions can be expected from the handling of the S-Sorb additive (Note that the M-Sorb additive comes in solution form and will not have any handling emissions associated with it.). There will be 2 silo vent emission points and 4 conveyor transfer points. The conveyor transfer points will be totally enclosed. The silo vents have a design outlet PM emission rate of 0.01 grains per dry standard cubic foot and a filter flow rate of 650 standard cubic feet per minute each. This equates to 0.11 pounds of PM per hour (equivalent to 0.48 ton per year). There will also be a very small increase in PM emissions from the haul roads, approximately 0.02 pounds per hour (0.09 ton per year.)

In summary, emissions of NO<sub>x</sub>, PM and mercury from the boilers are expected to be reduced by the addition of the M-Sorb and S-Sorb additives. Potential to emit for PM associated with the handling of the S-Sorb additive is 0.11 pounds per hour; actual increased PM emissions will be less. Since all pollutants are expected to have emissions below de minimis levels, permission to temporarily burn the coal refined with the M-Sorb and S-Sorb additives is granted up to the expiration date stated above. In order to continue burning the refined coal past the expiration date, the Ameren Missouri Labadie Energy Center will need to seek permission from the Air Pollution Control Program

Mr. Michael L. Menne  
Page Three

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*, and 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes*. Local city and county ordinances may also apply.

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 contact Cheryl Steffan at the Department's 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:csl

c: St. Louis Regional Office  
FAMS File: 2013-08-029