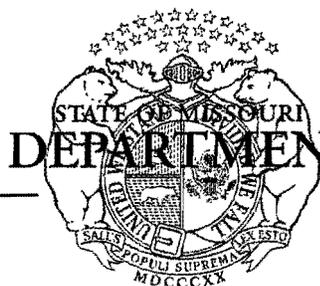


PERMIT BOOK



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

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

JAN 18 2013

Mr. Todd Tolbert
Supervisor, Air Quality
Associated Electric Cooperative, Inc.
P.O. Box 754
Springfield, MO 65801

RE: New Source Review Temporary Permit Request - Project Number: 2012-12-041
Installation ID Number: 175-0001
Temporary Permit Number: **012013-006**
Expiration Date: March 1, 2013

Dear Mr. Tolbert:

The Missouri Department of Natural Resources' Air Pollution Control Program has completed a review of your request to test the use of two coal additives, M-Sorb and S-Sorb, at Unit 3 of the Associated Electric Cooperative, Inc. Thomas Hill Energy Center, located near Clifton Hill, 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 permit application, Associated Electric Cooperative, Inc. Thomas Hill Energy Center (AECI) is planning to conduct a 15-day testing program for the addition of two materials to the coal combusted in Unit 3. M-Sorb is a halide salt solution consisting principally of a 50 percent solution of calcium bromide in water. S-Sorb is a proprietary mixture of calcium carbonate, calcium oxide, calcium sulfate, aluminum oxide, and iron oxide. 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_x) by the preferential scavenging that occurs for NO_x when the S-Sorb is added to coal.

Along with the expected reductions in NO_x and mercury, the presence of S-Sorb in the refined coal may impact particulate matter (PM) emissions since it increases the amount of non-combustibles. However the amount of S-Sorb additive, 0.4 percent of total coal feed, is small in relation to the typical ash content of the feedstock coal (4.5 to 5 percent). The existing ESP for Unit 3 is expected to collect and remove any additional PM loading. M-Sorb and S-Sorb use at

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other facilities has shown reduction in the resistivity of the ash which makes ESPs more efficient, offsetting the additional ash loading imposed by burning refined coal. There are no hazardous air pollutants (HAPs) contained in the additives.

For the testing program some additional particulate emissions can be expected from the handling and delivery haul roads of the S-Sorb additive. The M-Sorb additive comes in solution form and will not have any handling emissions associated with it, but will have delivery haul road emissions. The maximum amount of S-Sorb material handled will be about 740 tons. After the additives are applied to the coal, there will be two (totally enclosed) conveyor transfer points with a fabric filter dust collectors at each location. These are labeled as Transfer House 2 ("T2") and "Tripper Room" and are controlled by DC10 and DC11, respectively.

In summary, emissions of NO_x and mercury are expected to be reduced by the addition of the M-Sorb and S-Sorb additives. Particulate emissions associated with the handling of the S-Sorb additive are expected to be negligible, and AECI expects to maintain compliance with the limitations and monitoring requirements of Title V permit OP2010-126A without issue. A slight theoretical increase of PM emissions at the stack can be calculated from the S-Sorb additive, however AECI expects to comply with the CAM plan of the Title V permit without issue. Conservatively, assuming 100 percent of the S-Sorb as fly ash and a 99.8 percent ESP control efficiency, the resulting potential emissions from the 15-day trial would be less than 1.5 tons of PM, PM₁₀ and PM_{2.5} each. This does not take into account any decrease in fly ash resistivity.

Since all pollutants are expected to have potential emissions below de minimis levels and additional testing is being conducted to measure the effects of the coal additives on emission 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 AECI will need to seek permission from the Air Pollution Control Program.

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

1. Identification of the emission units (boilers) and control devices (ESPs) evaluated for this project
2. Locations of the additive introduction and sampling sites
3. Additive rates and concentrations, unit load for each trial
4. The date, time, and duration of each trial
5. Comparison of emission rates of SO_x, NO_x, and mercury during the trials and immediately pre or post project

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6. Higher heating value, sulfur, mercury, moisture, and ash content of the coal used in the trials and during the pre or post project testing period
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

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 10-6.220, *Restriction of Emission of Visible Air Contaminants*, 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*, and 10 CSR 10-6.405 *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used For Indirect Heating*.

A copy of this letter should be kept at the installation 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 David Little 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:dll

c: PAMS File: 2012-12-041
Northeast Regional Office