

**PERMIT BOOK**

STATE OF MISSOURI



**DEPARTMENT OF NATURAL RESOURCES**

MISSOURI AIR CONSERVATION COMMISSION

**PERMIT TO CONSTRUCT**

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **122014-004** Project Number: 2014-07-066  
Installation Number: 175-0001

Parent Company: Associated Electric Cooperative, Inc.

Parent Company Address: P.O. Box 754, Springfield, MO 65801

Installation Name: Associated Electric Cooperative, Inc. Thomas Hill Energy Center

Installation Address: 5693 Highway F, Clifton Hill, MO 65244

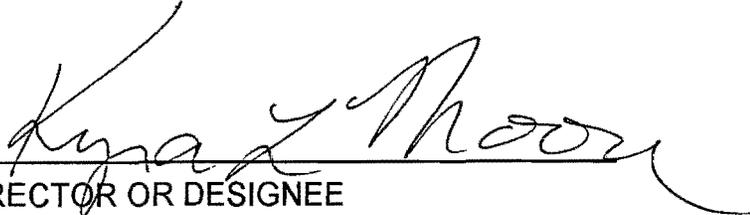
Location Information: Randolph County, S55N, T19, R15W

Application for Authority to Construct was made for:  
The installation of an M45-PC™ system to provide Refined Coal to Unit 3 Boiler. This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*.

- 
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

**DEC 16 2014**

EFFECTIVE DATE

  
DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

## STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. The permittee shall notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information shall be made available within 30 days of actual startup. Also, you shall notify the Department of Natural Resources' Northeast Regional Office within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060(12)(A)10. "Conditions required by permitting authority."*

Associated Electric Cooperative, Inc. Thomas Hill Energy Center  
Randolph County, S55N, T19, R15W

1. Control Device Requirement - Filters
  - A. Associated Electric Cooperative, Inc. Thomas Hill Energy Center (AECI) shall control emissions from EP13 M45-PC™ Additive A2 Silo using a filter as specified in the permit application.
  - B. The filter shall be operated and maintained in accordance with the manufacturer's specifications. The filter shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. The gauge or meter shall be located such that Department of Natural Resources' employees may easily observe it.
  - C. Replacement filters shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
  - D. AECI shall monitor and record the operating pressure drop across the filter at least once every 24 hours during operation. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
  - E. AECI shall maintain a copy of the filter manufacturer's performance warranty on site.
  - F. AECI shall maintain an operating and maintenance log for the filter which shall include the following:
    - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
    - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

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### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

2. Paved Haul Road, HR21
  - A. AECI shall maintain and/or repair the portions of HR21 Paved Haul Road. Maintenance of the surface shall be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
  - B. AECI shall periodically water, wash, and/or otherwise clean HR21 Paved Haul Road as necessary to achieve control of fugitive emissions.
3. Particulate Emission Limitations
  - A. AECI shall emit less than 25.0 tons of PM in any consecutive 12-month period from the emission source identified in Table 2 as associated with the use of M45-PC™ Additives A1, A2, and B.
  - B. AECI shall emit less than 15.0 tons of PM<sub>10</sub> in any consecutive 12-month period from the emission source identified in Table 2 as associated with the use of M45-PC™ Additives A1, A2, and B.
  - C. AECI shall emit less than 10.0 tons of PM<sub>2.5</sub> in any consecutive 12-month period from the emission source identified in Table 2 as associated with the use of M45-PC™ Additives A1, A2, and B.
  - D. Attachment A or an equivalent form, such as an electronic form, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 3.A, 3.B, and 3.C.
4. Superseding Condition

The conditions of this permit supersede all special conditions found in the NSR Permit 042013-002 previously issued by the Air Pollution Control Program.
5. Record Keeping and Reporting Requirements
  - A. AECI shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials associated with the M45-PC™ system.
  - B. AECI shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

record required by this permit shows an exceedance of a limitation imposed by this permit.

6. Performance Testing
  - A. AECI shall conduct particulate performance testing on Unit 3 Boiler within 60 days of permit issuance to determine the average hourly emission rates of PM, PM<sub>10</sub>, and PM<sub>2.5</sub> both with and without M45-PC additives.
  - B. Performance testing shall be conducted using EPA Test Methods 17 and 201A or other test methods upon approval by the Air Pollution Control Program.
  - C. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Air Pollution Control Program 30 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. Notice of testing may be less than 30 days if approved by the Air Pollution Control Program. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
  - D. Performance testing shall consist of a minimum of three runs without M45-PC additives and three runs with M45-PC additives.
  - E. During performance testing, AECI shall operate Unit 3 Boiler at 90% or greater of the maximum heat input of 7,000 MMBtu/hr.
  - F. During performance testing with M45-PC additives, the additive usage rates shall be within 10% of the requested rates as indicated in the confidential project file 2014-08-056.
  - G. During each run AECI shall note the following:
    - 1) Ash content of the coal combusted, % Ash
    - 2) Heat content of the coal combusted, MMBtu/ton
    - 3) Coal combustion rate, tph
    - 4) Additive A1 usage rate, tph
    - 5) Additive A2 usage rate, tph
    - 6) Additive B usage rate, lb/hr

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- H. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run. As part of the test report, AECI shall determine the increase in hourly emissions as the difference between the average hourly emissions with M45-PC additives and the average hourly emissions without M45-PC additives. If the increase exceeds 3.79 lb/hr PM, 2.60 lb/hr PM<sub>10</sub>, or 1.59 lb/hr PM<sub>2.5</sub>, AECI shall:
- 1) Immediately cease using M45-PC additives.
  - 2) Contact the Air Pollution Control Program's Permits Section to discuss the permitting actions necessary to allow the future operation of the M45-PC system.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (5) REVIEW

Project Number: 2014-07-066  
Installation ID Number: 175-0001  
Permit Number:

AECI Thomas Hill Energy Center  
5693 Highway F  
Clifton Hill, MO 65244

Complete: August 28, 2014

Parent Company:  
Associated Electric Cooperative, Inc.  
P.O. Box 754  
Springfield, MO 65801

Randolph County, S55N, T19, R15W

REVIEW SUMMARY

- AECI has applied for authority to install an M45-PC™ system to provide Refined Coal to Unit 3 Boiler at their Thomas Hill Energy Center in Clifton Hill, MO.
- HAP emissions are not expected from the proposed equipment.
- None of the currently promulgated NSPS (40 CFR Part 60), NESHAPs (40 CFR Part 61), or MACT (40 CFR Part 63) regulations apply to the M45-PC™ additives or equipment. Additive B will be used to aid the facility in achieving compliance with the mercury standard in 40 CFR Part 63, Subpart UUUUU.
- A filter is being used to control particulate emissions from EP13 M45-PC™ Additive A2 Silo. The installation's existing ESP will control particulate emissions that pass through the boiler.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of PM, PM<sub>10</sub>, and PM<sub>2.5</sub> are limited to de minimis levels.
- This installation is located in Randolph County, an attainment area for all criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2, Item #26 – *Fossil-fuel-fired steam electric plants of more than 250 MMBtu/hr heat*. The installation's major source level is 100 tons per year and fugitive emissions are counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are below or limited to de minimis levels.

- Emissions testing are required for the equipment.
- AECI shall include the M45-PC™ system equipment in their Part 70 Operating Permit renewal application due no later than six months prior to December 6, 2015.
- Approval of this permit is recommended with special conditions.

## INSTALLATION DESCRIPTION

AECI's Thomas Hill Energy Center is a power plant which converts the energy from coal and other fuels to electrical energy. The installation has coal unloading, conveying, stockpiles, and crushing equipment to supply the coal burning boilers. The main sources of emissions are boilers that primarily combust coal and secondarily combust fuel oil. The boilers produce steam that powers electrical generating equipment. Equipment for fly-ash loading, hauling, and disposing are also on site. The installation is an existing major NSR source.

The Thomas Hill Energy Center currently operates under Title V permit OP2010-126A which expires December 6, 2015. The installation is required to include all M45-PC™ system equipment in their Title V permit renewal application due by no later than six months prior to the expiration date.

The following New Source Review permits have been issued to AECI's Thomas Hill Energy Center by the Air Pollution Control Program:

**Table 1: Permit History**

Permit Number	Description
0287-001	PSD for 610 MW Unit 3
0380-011	Increased coal production, coal preparation plant
0181-002	Increased coal production
0380-011B	Amendment to receive washed coal at existing truck dump
0380-011C	Amendment to 0380-011B
0380-011D	Amendment to include PM <sub>10</sub>
0380-011E	Amendment to correct emission factors and control efficiencies
0493-017	Switch to PRB coal
0493-017A	Remove radial stacker
0493-017B	Equipment change
0596-041	SO <sub>3</sub> injection to Unit 3 ESP
0596-041A	Remove SO <sub>2</sub> limit
112002-006	Temporary permit for diesel fired generator
122009-002	Cycleclean fuel additive
122010-011	PSD to increase CO limit
012013-001	Fly ash handling system
012013-006	Temporary permit for refined coal
042013-002	Unit 3 refined coal
012013-001A	Flyash changes

## PROJECT DESCRIPTION

In anticipation of the compliance date for 40 CFR Part 63, Subpart UUUUU, AECI has requested to install an M45-PC™ system to supply refined coal to Unit 3 Boiler. The M45-PC™ system consists of three additives: A1, A2, and B.

M45-PC™ Additives A1 and A2 are solid additives containing urea and brucite magnesium hydroxide. These additives will be added in a water-based slurry to the coal at the conveyor to Unit 3 Boiler. The additives will be stored in silos. Each silo will be equipped with piping to pneumatically fill the silo from a delivery truck. When trucks are not being loaded, the fill line will be connected to a dehumidifier located in the skirt area. The silo dehumidifier blows air through a desiccant to remove water from ambient air. The discharge from the dehumidifier will be blown into the head space of the silo. The dehumidified air keeps the additives dry and free flowing by slightly pressurizing the silo to prevent humid ambient air from entering the silo and condensing. The dehumidifier will be disconnected from the fill line and replaced with a hose from the truck's pneumatic conveyor system during deliveries.

Each silo is equipped with a vent filter with a maximum grain outlet concentration of 0.001 gr/dscf. Special Condition 1 requires the operation and maintenance of the vent filters. Each vent filter is equipped with a fan which operates at a maximum rate of 1,200 acfm.

An enclosed (hardpiped) flexible screw conveyor will be attached at the bottom of each silo to transport the additives from their respective silos to a feed hopper, EP14. Enclosed conveyors, EP15, will transport the additives to mix tanks, where the solids will be mixed with water to form an additive slurry. The mix tank system is designed such that the solids are added below the liquid level, preventing the generation of air emissions. The resulting slurry will be applied to coal on an existing conveyor belt which delivers the coal to Unit 3 Boiler.

M45-PC™ Additive B is a proprietary aqueous, inorganic, halide salt solution. The additive is stored in totes and pumped onto the coal prior to the coal being sent to Unit 3 Boiler. As an aqueous solution, no particulate emissions are expected from the use of this additive. The SDS for this additive indicates no VOC or HAP.

Maximum usage of M45-PC™ is related to the tonnage of coal combusted and is considered confidential (see confidential file 2014-08-056).

No physical modifications of Unit 3 Boiler will occur due to this project. The M45-PC™ System additives will pass through Unit 3 Boiler. The high temperature of the boiler will affect the additives as follows:

- ◆ Additive A1 is expected to react with O<sub>2</sub> in the flue gas to create CO<sub>2</sub>, N<sub>2</sub>, and H<sub>2</sub>O. CO<sub>2</sub> is a regulated pollutant; however, no minor source permitting requirements currently exist.

- ◆ Additive A2 will convert to MgO and H<sub>2</sub>O. MgO is a particulate which may become entrained in the fly ash; therefore, particulate stack emissions for Additive A2 were included in project emission calculations.
- ◆ Additive B is expected to react with mercury and other trace metals in the stack to form particulates which may become entrained in the fly ash; therefore, particulate stack emissions for Additive B were included in project emission calculations.

Table 2 contains a list of emission source affected by the use of M45-PC™ additives.

**Table 2: Emission sources associated with M45-PC™ additives**

Emission Source	Description	Project Status
HR21	M45-PC Paved Haul Road	New
EP13	M45-PC Additive A2 Silo	New
EP14	M45-PC Additive A2 Feed Hopper	New
EP15	M45-PC Additive A2 Conveyor	New
EP03	Unit 3 Boiler pass through	New
EP11A	Fly Ash Loading to Tanker Trucks	Modified
EP11C	Unit 3 Fly Ash Mixer Loadout	Modified
FE02	Fly Ash Hauling to Landfill	Modified
FE03	Fly Ash Unloading to Landfill	Modified
FE08	Disposal Area Flay Ash Placement with Bulldozer	Modified

## EMISSIONS/CONTROLS EVALUATION

The emissions from HR21 M45-PC™ Paved Haul Road were calculated using equations from the EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Sections 13.2.1 “Paved Roads” (January 2011). The length of the road is 11,600 feet. All of the M45-PC™ additives are received by truck and result in haul road emissions.

A particle size distribution of Additive A1 indicates particles sizes in excess of 841 μm in diameter; therefore, no PM, PM<sub>10</sub>, or PM<sub>2.5</sub> emissions are expected from the handling of this additive.

Emissions from EP13 M45-PC™ Additive A2 Silo were calculated based upon the maximum grain outlet concentration and the maximum air flow rate.

Emissions from the conveying of Additive A2 are based on two conveyor drop points (from the screw conveyor into the feed hopper, EP14, and from the feed hopper to the enclosed conveyor, EP15). As no emission factors are available for the handling of these additives, emissions were conservatively estimated using an emission factor from FIRE Process SCC 30501107 for cement handling. Both drop points were given 3.7 percent particulate control in potential to emit calculations for process enclosure as provided in AP-42 Table B.2-3 (September 1996).

M45-PC™ Additive B is an aqueous solution; therefore, no particulate emissions are expected from the handling of this additive.

Particulate emissions of MgO were determined based upon the MHDR of Additive A2, the molecular weight of Additive A2 (58.3197 lb/lb-mol), and the molecular weight of MgO (40.3044 lb/lb-mol).

Particulate emissions from Additive B were determined based upon the MHDR of Additive B and the weight percent of halide salt contained within H<sub>2</sub>O to form the aqueous solution (50% per SDS).

It is generally accepted that in boilers with pulverized firing systems, 70 - 80% of the ash in the coal being fired is entrained in the gas stream as fly ash; therefore, it was conservatively assumed that 80% of the particulates formed by Additives A2 and B would also be entrained in the gas stream as fly ash.

Particulate emissions from the fly ash in the gas stream are controlled by an ESP. The control efficiency of the ESP is unknown, AP-42 Section 1.1 indicates 99.2% control of PM is achievable while the installation believes the ESP achieves 99.8% control of PM. In order to ensure that project emissions do not exceed the PSD significance levels, the most conservative control efficiency, 99.2%, was used to calculate the composite emission factors in Attachment A which shall be used until stack testing provides more accurate values. The hourly emissions increase values in Special Condition 6.H do not take into account control efficiency and are instead based on the maximum hourly stack emission rates that can be associated with this project without an exceedance of the PSD significance levels. If stack testing indicates lower hourly emissions increase values, AECI may request an amendment to this permit to modify the composite additive emission factors. If stack testing indicates higher hourly emissions increase values, AECI should cease operating the M45-PC™ system. AECI may request to operate the system for a limited time to conduct additional testing such as control efficiency testing and/or particle size distribution testing.

As the particulates from Additives A2 and B will be mixed in with the fly ash, additional tonnage throughput is anticipated from the existing fly ash handling emission sources: EP11A, EP11C, FE02, FE03, and FE08. Emission factors for EP11C, FE02, FE03, and FE08 were obtained from Project 2013-10-073 (Permit 012013-001A). As no emission factors are available for the handling of fly ash, emissions from EP11A were conservatively estimated using an emission factor from FIRE Process SCC 30501107 for cement handling and given 99% control for the baghouse required by Permit 0493-017A.

The following table provides an emissions summary for this project. Existing potential emissions were not included for the installation as existing actual emissions are sufficient to indicate the installation is a major NSR source. Existing actual emissions were taken from the installation's 2013 EIQ. Potential emissions of the application represent the potential of the M45-PC™ system at the maximum usage rate, assuming continuous operation (8,760 hours per year) and 99.2% control of pass through emissions by the ESP.

**Table 3: Emissions Summary (tons per year)**

<b>Pollutant</b>	<b>Regulatory <i>De Minimis</i> Levels</b>	<b>Existing Actual Emissions (2013 EIQ)</b>	<b>Potential Emissions of the Application</b>	<b>Conditioned Potential Project Emissions</b>
PM	25.0	N/A	31.90	<25.0
PM <sub>10</sub>	15.0	1,146.35	27.16	<15.0
PM <sub>2.5</sub>	10.0	648.02	26.55	<10.0
SO <sub>x</sub>	40.0	17,440.48	N/D	N/A
NO <sub>x</sub>	40.0	15,836.73	N/D	N/A
VOC	40.0	192.88	N/D	N/A
CO	100.0	5,804.90	N/D	N/A
HAPs	25.0	204.74	N/D	N/A
HF (7664-39-3)	10.0	185.42	N/D	N/A
HCl (7647-01-0)	10.0	17.62	N/D	N/A
Mercury Compounds (20-13-3)	10.0	0.23	N/D	N/A

N/A = Not Applicable; N/D = Not Determined

### PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of PM, PM<sub>10</sub>, and PM<sub>2.5</sub> are limited to de minimis levels.

### APPLICABLE REQUIREMENTS

AECI shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved.

#### GENERAL REQUIREMENTS

- 10 CSR 10-6.065 *Operating Permits*
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 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*

## SPECIFIC REQUIREMENTS

- 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes*
  - EP14 and EP15 are in compliance with this regulation without the aid of a control device.
  - EP13 is exempt from this regulation per 10 CSR 10-6.400(1)(B)15 as Special Condition 1 is a federally enforceable condition requiring AECL to install, operate, and maintain a PM control device system that controls at least 90 percent of PM emissions.
- 10 CSR 10-6.070 *New Source Performance Regulations*
  - 40 CFR Part 60, Subpart D – *Standards of Performance for Fossil-Fuel-Fired Steam Generators* applies to Unit 3 Boiler. AECL is required to submit a revised CAM plan with supporting performance testing as part of their Part 70 operating permit renewal.
- 10 CSR 10-6.075 *Maximum Achievable Control Technology Regulations*
  - 40 CFR Part 63, Subpart UUUUU – *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units* applies to Unit 3 Boiler. Additive B will be used to aid the facility in achieving compliance with the mercury standard in this regulation.

## STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

---

Alana L. Hess, P.E.  
New Source Review Unit

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Date

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated August 4, 2014, designating AECL as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- EPA's Factor Information Retrieval System (FIRE)



## APPENDIX A

### Abbreviations and Acronyms

<b>%</b> .....percent	<b>m/s</b> ..... meters per second
<b>°F</b> .....degrees Fahrenheit	<b>Mgal</b> ..... 1,000 gallons
<b>acfm</b> .....actual cubic feet per minute	<b>MW</b> ..... megawatt
<b>BACT</b> ..... Best Available Control Technology	<b>MHDR</b> ..... maximum hourly design rate
<b>BMPs</b> ..... Best Management Practices	<b>MMBtu</b> .... Million British thermal units
<b>Btu</b> ..... British thermal unit	<b>MMCF</b> ..... million cubic feet
<b>CAM</b> ..... Compliance Assurance Monitoring	<b>MSDS</b> ..... Material Safety Data Sheet
<b>CAS</b> ..... Chemical Abstracts Service	<b>NAAQS</b> ... National Ambient Air Quality Standards
<b>CEMS</b> ..... Continuous Emission Monitor System	<b>NESHAPs</b> National Emissions Standards for Hazardous Air Pollutants
<b>CFR</b> ..... Code of Federal Regulations	<b>NO<sub>x</sub></b> ..... nitrogen oxides
<b>CO</b> .....carbon monoxide	<b>NSPS</b> ..... New Source Performance Standards
<b>CO<sub>2</sub></b> .....carbon dioxide	<b>NSR</b> ..... New Source Review
<b>CO<sub>2e</sub></b> .....carbon dioxide equivalent	<b>PM</b> ..... particulate matter
<b>COMS</b> ..... Continuous Opacity Monitoring System	<b>PM<sub>2.5</sub></b> ..... particulate matter less than 2.5 microns in aerodynamic diameter
<b>CSR</b> ..... Code of State Regulations	<b>PM<sub>10</sub></b> ..... particulate matter less than 10 microns in aerodynamic diameter
<b>dscf</b> .....dry standard cubic feet	<b>ppm</b> ..... parts per million
<b>EQ</b> ..... Emission Inventory Questionnaire	<b>PSD</b> ..... Prevention of Significant Deterioration
<b>EP</b> ..... Emission Point	<b>PTE</b> ..... potential to emit
<b>EPA</b> ..... Environmental Protection Agency	<b>RACT</b> ..... Reasonable Available Control Technology
<b>EU</b> ..... Emission Unit	<b>RAL</b> ..... Risk Assessment Level
<b>fps</b> ..... feet per second	<b>SCC</b> ..... Source Classification Code
<b>ft</b> ..... feet	<b>scfm</b> ..... standard cubic feet per minute
<b>GACT</b> ..... Generally Available Control Technology	<b>SDS</b> ..... Safety Data Sheet
<b>GHG</b> ..... Greenhouse Gas	<b>SIC</b> ..... Standard Industrial Classification
<b>gpm</b> ..... gallons per minute	<b>SIP</b> ..... State Implementation Plan
<b>gr</b> ..... grains	<b>SMAL</b> ..... Screening Model Action Levels
<b>GWP</b> ..... Global Warming Potential	<b>SO<sub>x</sub></b> ..... sulfur oxides
<b>HAP</b> ..... Hazardous Air Pollutant	<b>SO<sub>2</sub></b> ..... sulfur dioxide
<b>hr</b> ..... hour	<b>tph</b> ..... tons per hour
<b>hp</b> ..... horsepower	<b>tpy</b> ..... tons per year
<b>lb</b> ..... pound	<b>VMT</b> ..... vehicle miles traveled
<b>lbs/hr</b> ..... pounds per hour	<b>VOC</b> ..... Volatile Organic Compound
<b>MACT</b> ..... Maximum Achievable Control Technology	
<b>µg/m<sup>3</sup></b> .....micrograms per cubic meter	

Mr. Tadd Henry  
Air Quality Supervisor  
Associated Electric Cooperative, Inc.  
5693 Highway F  
Clifton Hill, MO 65244

RE: New Source Review Permit - Project Number: 2014-07-066

Dear Mr. Henry:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application, and submittal of a Part 70 operating permit renewal application is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you were adversely affected by this permit decision, you may be entitled to pursue an appeal before the administrative hearing commission pursuant to Sections 621.250 and 643.075.6 of RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission, whose contact information is: Administrative Hearing Commission, Truman State Office Building, Room 640, 301 W. High Street, P.O. Box 1557, Jefferson City, Missouri 65102, phone: 573-751-2422, fax: 573-751-5018, website: [www.oa.mo.gov/ahc](http://www.oa.mo.gov/ahc).

Mr. Tadd Henry  
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If you have any questions regarding this permit, please do not hesitate to contact Alana Hess, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp  
New Source Review Unit Chief

SH:ahl

Enclosures

c: Northeast Regional Office  
PAMS File: 2014-07-066

Permit Number: