

STATE OF MISSOURI

PERMIT BOOK



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: 072011-012

Project Number: 2011-03-073
Installation Number: 031-0010

Parent Company: Southeast Missouri State University - Central Steam Boiler Plant

Parent Company Address: One University Plaza - MS 7775, Cape Girardeau, MO 63701

Installation Name: Southeast Missouri State University - Central Steam Boiler Plant

Installation Address: One University Plaza - MS 7775, Cape Girardeau, MO 63701

Location Information: Cape Girardeau County, LG 2199

Application for Authority to Construct was made for:
Installation of 4 dual-fired boilers with three of the boilers having a heat input rate of 30.6 MMBtu per hour and the remaining boiler having a heat input of 14.3 MMBtu per hour. This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

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

JUL 25 2011

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "Kyla L. Moore".
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. Permittee should 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 Departments' Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located 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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| Permit No. | |
| Project No. | 2011-03-073 |

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 paragraph (12)(A)10. "Conditions required by permitting authority."

Southeast Missouri State University - Central Steam Boiler Plant
Cape Girardeau County, LG 2199

1. Nitrogen Oxides (NO_x) Emission Limitation
 - A. Southeast Missouri State University - Central Steam Boiler Plant shall emit less than 40.0 tons of NO_x in any consecutive 12-month period from the following emission units:
 - 1) E22 - Boiler No. 1
 - 2) E23 - Boiler No. 2
 - 3) E24 - Boiler No. 3
 - 4) E25 - Boiler No. 4
 - B. Attachment A or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Condition 1.A.
2. No. 2 Fuel Oil Sulfur Content
 - A. The sulfur content of the fuel to be used in the boilers (EP22, EP23, EP24 and EP25) shall not exceed 0.0015% by weight. Southeast Missouri State University - Central Steam Boiler Plant shall obtain the sulfur content of the fuel oil for each fuel oil delivery from the fuel vendors or conduct their own fuel analysis to evaluate the typical sulfur content weight percent of the fuel oil.
3. Record Keeping and Reporting Requirements
 - A. Southeast Missouri State University - Central Steam Boiler Plant 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 fuel oil sulfur content testing or certification.
 - B. Southeast Missouri State University - Central Steam Boiler Plant shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than ten days after the end of the month during which any record required by this permit

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SPECIAL CONDITIONS:

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

show an exceedance of a limitation imposed by this permit.

4. **Operating Permit Determination**
Southeast Missouri State University - Central Steam Boiler Plant shall provide a complete emission unit list and potential to emit (PTE) calculations for all pollutants at the installation. Southeast Missouri State University - Central Steam Boiler Plant shall submit the requested documentation within 1 year of the startup of the last boiler.

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

Project Number: 2011-03-073
Installation ID Number: 031-0010
Permit Number:

Southeast Missouri State University
Central Steam Boiler Plant
One University Plaza - MS 7775
Cape Girardeau, MO 63701

Complete: March 23, 2011

Parent Company:
Southeast Missouri State University
Central Steam Boiler Plant
One University Plaza - MS 7775
Cape Girardeau, MO 63701

Cape Girardeau County, LG 2199

REVIEW SUMMARY

- Southeast Missouri State University - Central Steam Boiler Plant has applied for authority to install 4 dual-fired boilers with three boilers having a heat input rate of 30.6 MMBtu per hour and the remain boiler having a heat input of 14.3 MMBtu per hour.
- Hazardous Air Pollutant (HAP) emissions are expected from the combustion of fuel in the boilers, but in small amounts.
- 40 CFR 60 Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* of the New Source Performance Standards (NSPS) applies to the new boilers.
- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart JJJJJJ, *National Emission Standards for Area Sources: Industrial/Commercial/Institutional Boilers* applies to the new boilers.
- No controls are being used to control the emissions from the equipment in this permit.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of NO_x are conditioned to below de minimis levels. Potential emissions of all other pollutants are below their respective de minimis levels.
- This installation is located in Cape Girardeau County, an attainment area for all criteria pollutants.

- This installation was previously on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2, Number 26 – *Fossil-fuel fired steam electric plants of more than 250 MMBtu/hr heat input*. However, in the last few years, Boiler #1 has been dismantled and Boiler #4 has been mothballed and abandoned in place. The total heat input of the installation with the new boilers will be below 250 MMBtu/hr.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing are not required for the new boilers.
- A permit modification to your Part 70 Operating Permit is required for this installation within 1 year of equipment startup of the last of the 4 new boilers.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Southeast Missouri State University is an educational institution for higher learning located in Cape Girardeau County. The installation is a major source. The installation operates a power plant with one coal-fired boiler, coal handling equipment, and ash handling equipment. The installation also maintains petroleum storage tanks, emergency generators, a kiln, and cooling towers.

Southeast Missouri State University - Central Steam Boiler Plant received a Part 70 Operating Permit (Permit No. OP2010-023) on March 4, 2015. The controlled potential to emit listed in the Statement of Basis of this permit has been corrected and is listed in Table 2 below. These calculations should be verified and included in the next operating permit modification submittal as requested in the special conditions.

The following construction permits have been issued to Southeast Missouri State University - Central Steam Boiler Plant from the Air Pollution Control Program.

Table 1: Permit History

| Permit Number | Description |
|---------------|---|
| 0886-003 | Addition of a coal-fired boiler. |
| 0898-005 | Installation of two standby emergency generators. |

PROJECT DESCRIPTION

Southeast Missouri State University has applied for authority to install four new dual fuel boilers with the primary fuel being natural gas and No. 2 fuel oil used as the back-up fuel source. Three of the boilers (E22, E23 and E24) are 750 boiler horsepower fire tube boilers each with maximum heat input of 30.6 MMBtu/hr. The fourth boiler (E25) is a 350 boiler horsepower boiler with a maximum heat input of 14.3 MMBtu/hr. There are no control devices associated with the new boilers.

The intent of this project is to convert the existing plant from coal firing to natural gas with No. 2 fuel oil as the back-up fuel source. The remaining coal-fired boiler (E03) will be retired once the new boilers become fully operational which is expected to be by the end of 2012. All coal delivery, storage, firing, and ash generation will be eliminated from the site.

EMISSIONS/CONTROLS EVALUATION

The emission factors used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, AP-42 Sections 1.3, *Fuel Oil Combustion* (09/1998) and Section 1.4, *Natural Gas Combustion* (07/1998). Although natural gas was indicated as the primary fuel, the boilers are capable of combusting both natural gas and fuel oil. The potential emissions of each type of fuel were determined and the highest rate for each criteria pollutant was used to determine the potential emissions of the project.

The following table provides an emissions summary for this project. Potential emissions of the application represent the potential of the new boilers, assuming continuous operation (8760 hours per year). The existing potential emissions are based on the latest Emissions Inventory Questionnaire (EIQ) submittal. The emission factors and maximum hourly design rates for the storage tanks were updated to reflect more accurate potential emissions. When calculating the existing potential emissions, it was assumed that boilers E01 and E04 have been dismantled. Southeast Missouri State University has confirmed the dismantling of these boilers, but they will verify the installation's potential to emit with their next operating permit submittal. Existing actual emissions were taken from the applicant's 2010 EIQ submittal.

Table 2: Emissions Summary (tons per year)

| Pollutant | Regulatory <i>De Minimis</i> Levels | Existing Potential Emissions | Existing Actual Emissions (2010 EIQ) | Potential Emissions of the Application | New Installation Conditioned Potential |
|--------------------------------|---|------------------------------------|---|---|---|
| PM | 25.0 | N/D | N/D | 10.96 | N/A |
| PM ₁₀ ¹ | 15.0 | 11.82 | 8.96 | 7.90 | N/A |
| PM _{2.5} ¹ | 10.0 | N/D | 6.01 | 7.07 | N/A |
| SOx | 40.0 | 925.70 | 415.29 | 0.72 | N/A |
| NOx | 40.0 | 150.41 | 40.98 | 66.41 | <40.0 |
| VOC | 40.0 | 3.98 | 0.27 | 2.51 | N/A |
| CO | 100.0 | 85.53 | 32.79 | 38.28 | N/A |
| HAPs | 10.0/25.0 | N/D | N/D | 2.36 | N/A |

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

¹PM₁₀ and PM_{2.5} include condensable PM.

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 NO_x are conditioned to below de minimis levels. Potential emissions of all other pollutants are below their respective de minimis levels.

APPLICABLE REQUIREMENTS

Southeast Missouri State University - Central Steam Boiler Plant 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. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required June 1 for the previous year's emissions.
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc 40 CFR 60 Subpart Dc
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Area Sources: Industrial/Commercial/Institutional Boilers*, 40 CFR Part 63, Subpart JJJJJJ

STAFF RECOMMENDATION

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

Susan Heckenkamp
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated March 18, 2011, received March 23, 2011, designating Southeast Missouri State University - Central Steam Boiler Plant as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Southeast Regional Office Site Survey, dated April 6, 2011.

Mr. Jeremiah Jamieson
Utility Engineer
Southeast Missouri State University - Central Steam Boiler Plant
One University Plaza - MS 7775
Cape Girardeau, MO 63701-4799

RE: New Source Review Permit - Project Number: 2011-03-073

Dear Mr. Jamieson:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, 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 with your amended operating permit 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 have any questions regarding this permit, please do not hesitate to contact Susan Heckenkamp, at the Department's 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

Kendall B. Hale
New Source Review Unit Chief

KBH:shl

Enclosures

c: Southeast Regional Office
PAMS File: 2011-03-073

Permit Number: