

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: 032011-003 Project Number: 2011-02-009

Installation Number: 001-0003

Parent Company: Truman State University (Central Boiler Plant)

Parent Company Address: 100 E Normal, Kirksville, MO 63501

Installation Name: Truman State University (Central Boiler Plant)

Installation Address: 100 E Normal, Kirksville, MO 63501

Location Information: Adair County, S9, T62N, R15W

Application for Authority to Construct was made for:
Natural gas and No. 2 fuel oil fired, steam generating, 16.7 MMBtu per hour boiler. 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.

MAR 15 2011

EFFECTIVE DATE

A handwritten signature in black ink, appearing to read "James L. Kavanaugh".

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 Department's 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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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."

Truman State University (Central Boiler Plant)
Adair County, S9, T62N, R15W

1. Fuel Requirement
 - A. Truman State University (Central Boiler Plant) shall combust only natural gas, fuel oil 1&2 (ASTM D396), or diesel fuel 1&2 (ASTM D975) in Boiler #3 (EP-2).
 - B. Truman State University (Central Boiler Plant) shall not cause to be discharged into the atmosphere from Boiler #3 (EP-2) any gases that contain sulfur dioxide (SO₂) in excess of 215 ng/J (0.50 lb/MMBtu) heat input when combusting oil or diesel. Alternatively, oil or diesel fuel shall not exceed 0.5% weight sulfur (5,000 parts per million weight).
 - C. Truman State University shall obtain records from the fuel supplier for each oil or diesel fuel shipment that show sulfur content in weight percent or parts per million weight.
2. Performance Testing
Truman State University (Central Boiler Plant) shall conduct performance testing on Boiler #3 (EP-2) in accordance with 40 CFR 60 Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*.
3. Record Keeping and Reporting Requirements
 - A. Truman State University (Central 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 Material Safety Data Sheets (MSDS) for all materials used.
 - B. Truman State University (Central 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 shows an exceedance of a limitation imposed by this permit.

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

Project Number: 2011-02-009
Installation ID Number: 001-0003
Permit Number:

Truman State University (Central Boiler Plant)
100 E Normal
Kirksville, MO 63501

Complete: February 9, 2011

Parent Company:
Truman State University (Central Boiler Plant)
100 E Normal
Kirksville, MO 63501

Adair County, S9, T62N, R15W

REVIEW SUMMARY

- Truman State University (Central Boiler Plant) has applied for authority to install a natural gas and No. 2 fuel oil fired, steam generating, 16.7 MMBtu per hour boiler.
- Hazardous Air Pollutant (HAP) emissions are expected from the proposed boiler. HAPs of concern from this process are from the combustion of No. 2 fuel oil and natural gas.
- 40 CFR 60 Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* applies to the boiler. 40 CFR 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984* does not apply to the installation. Each storage vessel is greater than 75 cubic meters and less than 151 cubic meters in volume, but the maximum true vapor pressure of No. 2 fuel oil is less than 15 kilopascals.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to this installation. None of the currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed boiler.
- No air pollution control equipment is being used in association with the new 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 sulfur oxides (SO_x) and nitrogen oxides (NO_x) are above insignificant emission exemption levels, but are below de minimis levels.
- This installation is located in Adair County, an attainment area for all criteria pollutants.

- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The combined rating of the fossil-fuel boilers at the installation is 119.3 MMBtu per hour heat input. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.
- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Performance testing is required for the new boiler for compliance with NSPS Subpart Dc.
- An Intermediate Operating Permit application is required for this installation within 90 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Truman State University is located in Kirksville, Missouri. The Central Boiler Plant provides steam for campus buildings. It is a minor source under construction permits and a basic source under operating permits. The installation was permitted to install two dual fuel (natural gas and No. 2 fuel oil) boilers in 1989, each rated at 48.3 million British thermal units per hour heat input (MMBtu/hr). A 6 MMBtu/hr natural gas fired boiler was installed without a construction permit applicability determination from the Air Pollution Control Program. However, its potential emissions are less than the insignificant emission exemption levels in 10 CSR 10.061, *Construction Permit Exemptions* (3)(A)3.A. The following permits have been issued to Truman State University (Central Boiler Plant) from the Air Pollution Control Program.

Table 1: Permit History

Permit Number	Description
1089-008	Construction permit for 2 dual fuel boilers rated at 48.3 MMBtu/hr each
OP	Basic operating permit issued in 2002
OP	Basic operating permit issued in 2007

PROJECT DESCRIPTION

Truman State University (Central Boiler Plant) proposes to install a Johnston brand EFTA500-3LG200S model, dual fuel boiler rated at 16.7 MMBtu/hr. The primary fuel is natural gas. The secondary fuel is No. 2 fuel oil. The plant provides steam for heating most of the campus buildings. The new boiler will be used for low demand times and to supplement existing larger boilers. Emissions are uncontrolled. The new boiler is Boiler #3 and exhausts through EP-2. The stack is 36 feet tall and 2 feet in diameter.

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, Section 1.3 *Fuel Oil Combustion* September, 1999 and Section 1.4 *Natural Gas Combustion* July, 1998. The Source Classification Code (SCC) selected for criteria pollutant and trace element potential emissions from fuel oil combustion was 1-03-005-01 for a No. 2 distillate oil fired boiler for institutional use. The SCC selected for organic compound potential emissions was 1-01-004-01 for electric generation using No. 6 oil. This SCC was selected because there are no emission factors for organic compounds from No. 2 oil. Each of these organic compounds is a HAP. The SCC selected for all potential emissions from natural gas combustion was 1-03-006-02 for a 10 to 100 MMBtu/hr institutional boiler.

The boiler is subject to NSPS Subpart Dc. According to the permit application, the boiler can fire No. 2 distillate fuel oil, which is defined as fuel oil 1&2 (ASTM D396), or diesel fuel 1&2 (ASTM D975) in Subpart Dc. The installation can show compliance with the SO₂ standard by providing certification from the fuel supplier showing sulfur weight less than or equal to 0.5%. This limit was used as the sulfur weight % for calculating the potential SO_x emissions using fuel oil. The installation is not subject to the particulate matter (PM) standard if the fuel oil meets the sulfur weight limit.

Existing potential emissions were calculated for the three existing boilers (EP-1 and EP-5). EP-1 is a shared emission point for Boilers 1 and 2. Permit 1089-008 was for the construction of Boiler 1 and 2, but does not list the potential emissions, just an emissions increase over the boilers being replaced. Therefore, the potential emissions of the new boilers in that permit were recalculated for the existing potential emissions of this project. Sulfur content of the fuel oil was kept at 0.3%, as per permit 1089-008. Existing potential emissions represent the worst case per pollutant, regardless of fuel. Potential emissions of the application represent the potential of the new boiler, assuming continuous operation (8,760 hours per year) and the worst case per pollutant, regardless of fuel. Potential emissions of PM, particulate matter less than 10 microns in diameter (PM₁₀), particulate matter less than 2.5 microns in diameter (PM_{2.5}), SO_x, and NO_x are higher using No. 2 oil. Potential emissions of volatile organic compounds (VOC), carbon monoxide (CO), and hazardous air pollutants (HAPs) are higher using natural gas. The following table provides an emissions summary for this project.

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 Potential
PM	15.0	6.04	N/D	1.04	7.09
PM ₁₀	10.0	3.35	0.76	1.24	8.44
PM _{2.5}	15.0	3.35	N/D	1.11	7.55
SO _x	40.0	133.91	1.24	37.62	168.18
NO _x	40.0	72.53	5.41	10.45	70.89
VOC	40.0	2.42	0.52	0.39	2.82
CO	100.0	37.01	7.98	6.02	43.03
HAPs	10.0/25.0	0.83	N/D	0.14	0.97

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 SO_x and NO_x are above insignificant emission exemption levels, but are below de minimis levels.

APPLICABLE REQUIREMENTS

Truman State University (Central 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 a hardcopy Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions. Alternatively, submission of an electronic copy via MoEIS is required May 1.
- *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 Visible Air Contaminants*, 10 CSR 10-6.220
- *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 Small Industrial-Commercial-Institutional Steam Generating Units*, 40 CFR Part 60, Subpart Dc.
- *Restriction of Emission of Sulfur Compounds*, 10 CSR 10-6.260
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-3.060. The maximum allowable PM emissions for this boiler are 0.51 pounds per MMBtu heat input. The potential PM emissions from this boiler are 0.014 pounds per MMBtu heat input.

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.

David Little
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated January 24, 2011, received February 9, 2011, designating Truman State University (Central Boiler Plant) as the owner and operator of the installation.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Northeast Regional Office Site Survey, dated February, 15, 2011, received March 2, 2011.

Mr. Karl Schneider
Physical Plant Director
Truman State University (Central Boiler Plant)
100 E Normal
Kirksville, MO 63501

RE: New Source Review Permit - Project Number: 2011-02-009

Dear Mr. Schneider:

Enclosed with this letter is your permit to construct. Please study it carefully. 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 with your 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 David Little, at the Departments' 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:dll

Enclosures

c: Northeast Regional Office
PAMS File: 2011-02-009

Permit Number: