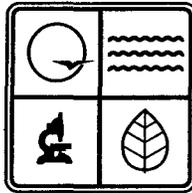


STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION



PERMIT BOOK

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: **092006-009** Project Number: 2006-06-002

Owner: Missouri Joint Municipal Electric Utility Commission

Owner's Address: 2407 West Ash, Columbia, MO 65203-0045

Installation Name: Missouri Joint Municipal Electric Utility Commission Generating Station #1

Installation Address:

Location Information: Intersection of Highway 54 and 532nd Street, Laddonia, MO 65401
Audrain County, S36, T51N, R7W

Application for Authority to Construct was made for:

Installation of natural gas driven turbine generator. This review was conducted in accordance with Section (5), 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 (listed as attachments starting on page 2) are applicable to this permit.

SEP 28 2006

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. 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. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. 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 this (these) air contaminant source(s).

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 as provided in RSMo 643.075. If you choose to appeal, the Air Pollution Control Program must receive your written declaration within 30 days of receipt of this permit.

If you choose not to appeal, this certificate, the project review, your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(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 Department of Natural Resources has established the Outreach and Assistance Center to help in completing future applications or fielding complaints about the permitting process. You are invited to contact them at 1-800-361-4827 or (573) 526-6627, or in writing addressed to Outreach and Assistance Center, P.O. Box 176, Jefferson City, MO 65102-0176.

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 Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention Construction Permit Unit.

Page No.	2
Permit No.	
Project No.	2006-06-002

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."

Missouri Joint Municipal Electric Utility Commission Generating Station #1
Audrain County, S36, T51N, R7W

1. Emission Limitation
 - A. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall emit less than 40 tons of nitrogen oxides (NO_x) in any consecutive 12 month period from the entire installation.
 - B. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall maintain an accurate record of NO_x emitted into the atmosphere from the entire installation. Attachment A or an equivalent form shall be used for this purpose. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall maintain all records required by this permit for not less than five (5) years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
 - C. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which the records from Special Condition Number 1.B. indicate that the source exceeds the limitation of Special Condition Number 1.A.
 - D. If the performance test required by Special Condition 3 indicates an emission rate of less than 9.1 pounds of NO_x per hour and 0.067 pounds of NO_x per MMBTU, Special Condition Number 1.A., 1.B., and 1.C. will not be applicable.
2. Operational Limitation
 - A. No fuels other than natural gas shall be combusted in the Solar Titan 130 Gas Turbine (EP01) at any time at this site.
 - B. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall not operate this turbine at loads less than fifty percent (50%) unless the turbine is in startup or shutdown mode.

Page No.	3
Permit No.	
Project No.	2006-06-002

SPECIAL CONDITIONS:

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

- C. At least once every year, after commencement of operation, Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall obtain from the fuel vendors or conduct their own fuel analysis to evaluate the typical sulfur content weight percent for natural gas. The fuel consumption records and statement shall be kept on-site for five (5) years and shall be made immediately available to the Missouri Department of Natural Resources' personnel upon request.
3. Compliance Testing
 - A. Stack tests shall be performed for Volatile Organic Compounds (VOC), carbon monoxide (CO) and NO_x on the Solar Titan 130 Gas Turbine (EP01) at the installation. These tests will be used to develop the emission factor(s) for demonstrating compliance with Special Condition 1 and for verifying VOC and CO emissions from the Solar Titan 130 Gas Turbine. The emission tests should provide emission factors for VOC, CO and NO_x for a full range of loads on the turbines (i.e. at loads from 50% to 100%) so that an accurate estimate of VOC, CO and NO_x emissions from the installation during all modes of operation can be determined. The installation shall conduct tests that represent, at a minimum, three (3) different operational scenarios for each pollutant.
 - B. The stack tests required by this permit shall be performed within 60 days after achieving the maximum production rate at which the turbines will be operated, but not later than 180 days after initial start-up for commercial operation of the turbines. The stack tests shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 4.
 - C. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall report to the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month, in which performance testing has been performed and indicates non-compliance with Special Condition 1.
 4. Proposed Test Plan
 - A. A completed Proposed Test Plan Form must 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. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.

Page No.	4
Permit No.	
Project No.	2006-06-002

SPECIAL CONDITIONS:

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

- B. Two (2) 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 (1) sample run.
- C. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.
- D. If the performance testing required by Special Condition 3 of this permit indicates that VOC or CO are emitted in amounts greater than those of NO_x, Missouri Joint Municipal Electric Utility Commission Generating Station #1 must propose a plan to the Air Pollution Control Program within thirty (30) days of submitting the performance test results. This plan must demonstrate how Missouri Joint Municipal Electric Utility Commission Generating Station #1 will reduce the emission rates below de minimis levels. Missouri Joint Municipal Electric Utility Commission Generating Station #1 shall implement any such plan immediately upon its approval by the Director.

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

Project Number: 2006-06-002
Installation ID Number: 007-0058
Permit Number:

Missouri Joint Municipal Electric Utility Commission Complete: May 30, 2006
Generating Station #1 Reviewed: July 19, 2006
Intersection of Highway 54 and 532nd Street
Ladonia, MO 65401

Parent Company:
Missouri Joint Municipal Electric Utility Commission
2407 West Ash
Columbia, MO 65203-0045

Audrain County, S36, T51N, R7W

REVIEW SUMMARY

- Missouri Joint Municipal Electric Utility Commission Generating Station #1 has applied for authority to install a natural gas driven turbine generator.
- Insignificant amounts of Hazardous Air Pollutant (HAP) emissions are expected from the combustion of natural gas.
- 40 CFR Part 60 Subpart GG of the New Source Performance Standards (NSPS), *Standards of Performance for Stationary Gas Turbines*, apply to the proposed equipment. The heat input of the gas turbine is not greater than 250 MMBTU per hour. Therefore, Subparts D and Da do not apply to this installation.
- None of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) or currently promulgated Maximum Achievable Control Technology (MACT) regulations apply to the proposed equipment.
- No air pollution control equipment is being used in association with the new equipment. However, a heat recovery steam generator will be used to increase operating efficiency.
- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of nitrogen oxides (NO_x) are conditioned to de minimis levels.
- This installation is located in Audrain County, an attainment area for all criteria air pollutants.
- This installation is not on the List of Named Installations [10 CSR 10-6.020(3)(B),

Table 2].

- Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.
- Emissions testing is required for the equipment.
- A Basic Operating Permit application is required for this installation within 30 days of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

The Missouri Joint Municipal Electric Utility Commission (MJMEUC) Generating Station #1, located in Laddonia, Missouri, will be owned and operated by MJMEUC to provide power to the MJMEUC Power Pool. This is a new installation. Therefore, no permits have been issued to MJMEUC Generating Station #1 from the Air Pollution Control Program.

MJMEUC Generating Station #1 will not be considered a single source with the existing ethanol plant located adjacent to the generating station. Although the power plant is located on property adjacent to the ethanol plant, the other requirements for a single source are not met. The power plant and the ethanol plant belong to two (2) separate industrial groupings: electric power generation and chemical manufacturing, respectively. In addition, "control" has not been established between the ethanol plant and the power plant. The EPA has applied the definition of control set forth in the regulations (45 FED. Reg. 59874, 59878, Sept. 11, 1980) of the Securities and Exchange Commission (SEC) which states:

Control is the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a person (or organization or association) whether through the ownership of voting shares, contract, or otherwise.

Control can be established through contractual agreement giving one plant decision-making authority over the operations of the second plant. Control is also considered when a relationship exists between the two plants such that one would not exist apart from the other.

At the time of this review, there was no contractual agreement between MJMEUC Generating Station #1 and the existing ethanol plant for the exchange of the steam. Despite any contract which may occur between the two plants, steam is a product of exhaust gas from the gas turbine and not necessary for the operation of the power plant. The exchange of steam is solely based on increased efficiency for both the power plant and the ethanol plant. Missouri Ethanol has gas-fired boilers that provide all of the steam necessary for independent operation. MJMEUC Generating Station #1 generates electricity for the MJMEUC Power Pool. None of the electricity generated by

the gas turbine will be sent to the ethanol plant. Both plants are independently operated and therefore considered two sources.

PROJECT DESCRIPTION

MJMEUC Generating Station #1 is proposing to install a 135.1 MMBTU per hour Solar Titan 130-19501S Turbine with natural gas as the primary fuel of combustion. Only pipeline grade natural gas, which has very low sulfur content, will be used in this gas turbine. The low sulfur content in the fuel will effectively limit SO_x emissions.

Combustion turbines are heat engines that convert latent fuel energy into work using compressed hot gas as the working medium. Combustion turbines deliver mechanical output by means of a rotating shaft used to drive an electrical generator thereby converting a portion of the engine's mechanical output to electrical energy. Ambient air is first filtered and then compressed by the combustion turbine compressor. The combustion turbine compressor increases the pressure of the combustion air stream and also raises its temperature. The compressed combustion air is then combined with natural gas fuel and burned in the combustion turbine's high-pressure combustor to produce hot exhaust gases. These high pressure, hot gases will then expand and turn the combustion turbine to produce rotary shaft power, which is used to drive an electric generator.

The exhaust stream will pass through a Heat Recovery Steam Generator (HRSG) that will be owned and independently operated by the adjacent ethanol plant on an as-need basis. The hot exhaust gases from the combustion turbines will be used for the production of low pressure steam for the ethanol plant. Once the exhaust heat is recovered, exhaust gases are discharged into the atmosphere. Since the HRSG does not contribute to the emission of pollutants or change the operation of the turbine, all emissions from the turbine are attributed to the generating station. In addition, supplemental duct firing will not occur in the HRSG, and no duct burners are being permitted for the HRSG. Therefore, NSPS Subpart Db, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units*, does not apply to this equipment.

This gas turbine will be subject to NSPS Subpart GG, *Standards of Performance for Stationary Gas Turbines*. However, MJMEUC Generating Station #1 will not use water injection to control NO_x emissions. Therefore, a continuous monitoring system is not required and this turbine is not subject to 40 CFR §60.334(a).

EMISSIONS/CONTROLS EVALUATION

The emission rates for NO_x, CO and VOC for this project were estimated by the vendor

in the MJMEUC Generating Station #1 application. However, factory test data was not available for this unit at the time of the review, and field-testing will be necessary to verify emissions. In addition, the emission rates for PM₁₀, SO_x, and HAP were not supplied by the vendor. As a result, the emission factors used in the analysis for all pollutants were obtained from the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition, Section 3.1 *Stationary Gas Turbines* (4/00). Potential emissions of the application represent the potential of the new equipment, based on the maximum hourly design rate and assuming continuous operation (8760 hours per year).

The potential emissions of NO_x from this operation are above *de minimis* levels. However, the applicant has requested a limitation on the emission of NO_x to avoid review under Section (6). Performance testing is required as a condition of this permit to ensure the NO_x limitation will be met for a full range of loads. Actual operational hours will be based on compliance with the NO_x limitation using the emission rate determined by performance testing. However, if performance testing demonstrates that operation of the turbine at 8760 hours per year will not result in an annual emission rate greater than 40 tons of NO_x per year, the annual NO_x limit will no longer be applicable as indicated in Special Condition 1.D.

In addition, VOC and CO emissions estimated by the vendor are considerably greater than those predicted by AP-42. Therefore, performance testing is required for VOC and CO to verify these emissions. Since it was assumed that NO_x is the limiting pollutant, VOC and CO tested emissions should be less than NO_x tested emissions. If performance testing indicates that VOC or CO emissions are greater than NO_x emissions, MJMEUC will be required to submit a plan to reduce VOC or CO emissions to less than *de minimis* levels as required in Special Condition 4.D. However, if the performance testing demonstrates that operation of the turbine at 8760 hours per year will not result in an annual emission rate of VOC or CO greater than their respective *de minimis* levels, no annual emissions limit will be required.

Since this is a new installation, there are no existing potential or actual emissions. The following table provides an emissions summary for this project.

Table 1: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions	Potential Emissions of the Application	Installation Conditioned Potential
PM ₁₀	15.0	N/A	N/A	3.87	N/A
SO _x	40.0	N/A	N/A	1.99	N/A
NO _x	40.0	N/A	N/A	187.52	<40.0
VOC	40.0	N/A	N/A	1.23*	N/A
CO	100.0	N/A	N/A	48.05*	N/A
HAPs	10.0/25.0	N/A	N/A	0.06	N/A

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

*Vendor information indicates that VOC and CO emissions are greater than those estimated by AP-42.

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 de minimis levels.

APPLICABLE REQUIREMENTS

MJMEUC Generating Station #1 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 April 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 Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-3.090

SPECIFIC REQUIREMENTS

- *New Source Performance Regulations*, 10 CSR 10-6.070 – *New Source Performance Standards (NSPS) for Stationary Gas Turbines*, 40 CFR Part 60, Subpart GG
- *Maximum Allowable Emissions of Particulate Matter From Fuel Burning Equipment Used for Indirect Heating*, 10 CSR 10-3.060

AMBIENT AIR QUALITY IMPACT ANALYSIS

Prior to issuance of this construction permit, Missouri Ethanol relinquished the use of land formerly owned by Missouri Ethanol for the construction of MJMEUC. In doing so, Missouri Ethanol altered property boundaries used in a previous air quality analysis conducted during the review of the Missouri Ethanol construction permit (see Project #2005-05-009). As a result, Missouri Ethanol was required to re-evaluate their impact on air quality for NO_x and PM₁₀ using the proposed property boundary. On June 23, 2006, Missouri Ethanol submitted the revised air quality analysis with the MJMEUC portion removed. This analysis was reviewed and approved by Air Pollution Control Program staff.

Upon issuance of this construction permit, please note that Missouri Ethanol must treat MJMEUC property as ambient air and include MJMEUC in any future modeling analysis. Conversely, MJMEUC must treat Missouri Ethanol property as ambient air and include Missouri Ethanol in any future modeling analysis.

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.

Emily E. Wilbur
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated May 26, 2006, received May 30, 2006, designating Missouri Joint Municipal Electric Utility Commission 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 June 6, 2006.

Mr. John Grotzinger
Executive Director/ Engineering & Operations
Missouri Joint Municipal
Electric Utility Commission Generating Station #1
2407 West Ash
Columbia, MO 65203-0045

RE: New Source Review Permit - Project Number: 2006-06-002

Dear Mr. Grotzinger:

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 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 me at (573) 751-4817, or you may write to me at the Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:ewl
Enclosures

c: Northeast Regional Office
2006-06-002

Permit Number: