

217/782-2113

CONSTRUCTION PERMIT -- NSPS

PERMITTEE

Rocky Road Power, LLC
Attn: Wendy Lessig
1000 Louisiana, Suite 5800
Houston, Texas 77002

Application No: 99050098 I.D. No.: 089425AAC
Applicant's Designation: RR-T4 Date Received: May 28, 1999
Subject: Gas Turbine (T4)(Power Production)
Date Issued: October 27, 1999
Location: 1221 Power Drive, East Dundee, Kane County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of one gas turbine (T4), with a nominal capacity of 121 MWe (rated heat input 1,439 mmBtu/hr), and other ancillary operations, as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. The turbine (T4) is subject to the New Source Performance Standard (NSPS) for Stationary Gas Turbines, 40 CFR 60, Subpart A and GG. The Illinois EPA is administrating NSPS in Illinois on behalf of the United States EPA under a delegation agreement.
- b. The Permittee shall not emit into the atmosphere from any turbine any gases which contain nitrogen oxides (NO_x) in excess of the following equation, pursuant to 40 CFR 60.332 (a)(1), except as allowed by 40 CFR 60.332(f):

Where:

- STD = Allowable NO_x emission (percent by volume at 15 percent oxygen and on a dry basis).
- Y = Manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured as actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.
- F = NO_x emission allowance for fuel-bound nitrogen as defined in 40 CFR 60.332 (a)(3).

- c. The Permittee shall not emit into the atmosphere from any turbine any gases which contain sulfur dioxide in excess of 0.015 percent by volume at 15 percent oxygen and on a dry basis, or shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight, pursuant to 40 CFR 60.333 (a) and (b).
 - d. At all times, the Permittee shall maintain and operate the turbine in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to the NSPS, 40 CFR 60.11(d).
2. The turbine is affected unit under the Acid Rain Deposition Control Program pursuant to Title IV of the Clean Air Act and is subject to certain control requirements and emissions monitoring requirements pursuant to 40 CFR Parts 72, 73 and 75. As affected unit under the Acid Rain Program, Rocky Road Power, LLC must also obtain an Acid Rain Permit for operation of the turbine in accordance with 40 CFR 70.30(a)(2)(ii) and 72.32(a).
 3. The turbine shall be equipped, operated, and maintained with Low NO_x combustors.
 - 4a. The only fuel fired in the turbine shall be natural gas.
 - b. Hourly emissions from the turbine shall not exceed the following limits except as allowed during startup (See Condition 5(b)(ii)):

<u>NO_x</u> <u>(Lb/Hr)</u>	<u>CO</u> <u>(Lb/Hr)</u>	<u>PM/PM₁₀</u> <u>(Lb/Hr)</u>	<u>VOM</u> <u>(Lb/Hr)</u>	<u>SO₂</u> <u>(Lb/Hr)</u>
80.0	80.0	15.6	7.0	2.0

These limits are based on information from the turbine manufacturer provided in the permit application.

- c. The annual usage of natural gas from this turbine and three turbines already at the site (T1, T2, and T3) combined shall not exceed 6600 mmscf/year.
- d. The annual emissions of the four turbines (T1, T2, T3, and T4) shall not exceed the following limitations. Compliance with these annual limitations shall be determined from a running total of 365 days of data, with emissions calculated from operating data and emissions determined from testing in accordance with Condition 13 (NO_x, CO and VOM), sulfur content of fuel (SO₂) or standard emission factors (PM/PM₁₀).

<u>Pollutant</u>	<u>Emissions (Tons/Year)</u>
NO _x	245.0
CO	189.0
PM/PM ₁₀	47.0
VOM	17.0
SO ₂	5.0

The above limitations supersede limitations established in condition 4(b) and 4(d) of the Construction permit 98120016, which only addressed operation of the three turbines.

The above limits are established pursuant to 40 CFR 52.21, the federal rules for Prevention of Significant Deterioration of Air Quality (PSD) and 35 IAC Part 203, the state rules for Major Stationary Source Construction and Modification (MSSCAM). These limits ensure that the construction and operation of the turbine does not constitute a new major source pursuant to PSD or MSSCAM.

- 5a. The emission of smoke or other particulate matter from the turbine shall not have an opacity greater than 30 percent, pursuant to 35 IAC 212.123(a), except as allowed below (35 IAC 201.149, 212.123(b) or 212.124).
- b.
 - i. The Permittee is authorized to operate the turbine in excess of 30 percent opacity during startup pursuant to 35 IAC 201.262, provided that all reasonable efforts are made to minimize startup emissions. This authorization only extends for a period of up to 20 minutes following initial firing of fuel during each startup event.
 - ii. The Permittee shall implement established startup procedures to minimize startup emissions. These procedures shall be reviewed and enhanced consistent with good air pollution control practice based on actual operating experience and performance of the turbine.
- 6a. This permit is issued based on the source not being a participating source or new participating source under the Emission Reduction Market System (ERMS) (35 IAC Part 205).
- b. The Permittee shall become subject to the ERMS as a new participating source if the VOM emissions from the source are 10 tons or greater in any seasonal allotment period. In such case, the Permittee shall hold Allotment Trading Units (ATU) for its seasonal emissions in accordance with 35 IAC 205.150(c)(1) and 205.720, beginning with the following seasonal allotment period or the first seasonal allotment period for

which the Illinois EPA has issued ATUs, whichever occurs later. For this purpose, the source's VOM emissions shall be determined by the methods and procedures specified in this permit or the Clean Air Act Permit Program (CAAPP) permit for the source.

- c. The Permittee shall promptly notify the Illinois EPA if the source's VOM emissions are 10 tons or greater in a season [see also Condition 14(e)]. By December 31 of the year Permittee shall submit a request for a revision to this construction permit or the source's CAAPP permit to address applicable requirements of the ERMS. This request shall include a certification acknowledging that it will be required to hold ATUs by the end of each reconciliation period and an explanation of the means which it plans to obtain ATUs. [35 IAC 205.310(a) and (g)].

[This condition assumes seasonal VOM emissions in 1999 will be less than 10 tons.]

- 7a. Under this permit, the turbine may be operated for a period of up to 180 days from initial startup to allow for equipment shakedown and emissions testing as required. This period may be extended by the Illinois EPA upon request of the Permittee if additional time is needed to complete startup or perform emission testing.
- b. Upon successful completion of emission testing demonstrating compliance with applicable limitations, the Permittee may continue to operate the turbine as allowed by Section 39.5 (5) of the Environmental Protection Act.
- 8a. The Permittee shall furnish the Illinois EPA with bi-monthly (every other month) status/progress reports for the development of the plant, which describes the construction progress of the turbine T4 along with other development activities on site including weather enclosures, sound abatement (if any), landscaping etc. These reports may cease after the Permittee submits a final report stating that development of the plant is complete.
- b. The Permittee shall furnish the Illinois EPA with written notification for gas turbine T4 as follows:
 - i. The date construction of the turbine commenced, postmarked no later than 30 days after such date, pursuant to 40 CFR 60.7(a)(1).
 - ii. The actual date of initial startup of the turbine, postmarked within 15 days after such date, pursuant to 40 CFR 60.7(a)(3).
- 9. The turbine shall be equipped, operated, and maintained with a continuous monitoring system to monitor and record the fuel consumption being fired in the turbine.

10. The Permittee shall monitor sulfur content of the fuel being fired in the turbine as follows, pursuant to USEPA Custom Fuel Monitoring Document dated August 14, 1987.
 - a. Compliance with the sulfur content standard in 40 CFR 60.333(b) (Condition 1(c)) shall be determined by using ASTM D 1072-80, D 3031-81, D 4084-82, or D3246-81 for gaseous fuels, pursuant to 40 CFR 60.335(d). The analysis may be performed by the Permittee, a service contractor retained by the Permittee, the fuel vendor, or any other qualified agency, pursuant to 40 CFR 60.335(e).
 - b.
 - i. Sulfur monitoring shall be conducted monthly for six months.
 - ii. If monthly monitoring indicates consistent compliance with 40 CFR 60.333(b), then sulfur monitoring shall be conducted once per quarter for six quarters.
 - iii. If quarterly monitoring indicates consistent compliance with 40 CFR 60.333(b), then sulfur monitoring shall be conducted at least annually.
 - c. Should any sulfur monitoring as required in Condition 10(b) above indicate noncompliance with 40 CFR 60.333(b), the Permittee shall notify the Illinois EPA of such excess sulfur contents and return to monthly monitoring in accordance with Condition 10(b).
 - d. If there is a change in fuel supply, the Permittee must promptly notify the Illinois EPA of such change.
 - e. If the fuel received for this turbine is same and from the same source as for the three turbines already at site (T1, T2, and T3), monitoring activity may be considered in continuation with the three turbines already at the site.
- 11a. This permit is issued based on the turbine being a gas-fired peaking unit, as specified in 40 CFR Part 75, so that continuous emission monitoring is not required for NO_x. To maintain this status, the three year rolling average annual capacity factor of the turbine shall not be greater than 10 percent, and the highest annual capacity factor shall not be greater than 20 percent in any one of the three averaging years.
 - b. Should the operation of the turbine exceed the above requirements relating to the definition of a gas-fired peaking unit in 40 CFR 75, the Permittee shall install the appropriate Continuous Monitoring System(s) on the turbine by December 31 of the following calendar year, as defined in 40 CFR 75, in order to remain in compliance with the provisions of the Acid Rain Program.

12. Monitoring of fuel nitrogen content is not required as natural gas is the only fuel fired in the turbine, pursuant to USEPA Custom Fuel Monitoring Document dated August 14, 1987.
- 13a. Within 60 days after achieving the maximum production rate at which the turbine will be operated, but not later than 180 days after initial startup, the nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic material (VOM) and oxygen (O₂) concentrations in the exhaust of the turbine shall be measured by an approved independent testing service to determine compliance with the NO_x and CO limits in Condition 1 and 4 in the following manner:
 - i. The NO_x emission rate shall be computed for each run using the equation in 40 CFR 60.335(c)(1).
 - ii. Method 20 of 40 CFR 60, Appendix A, shall be used to determine the NO_x and O₂ concentrations. The span values shall be 300 ppm of NO_x and 21 percent O₂, pursuant to 40 CFR 60.335(c)(3).
 - iii. The NO_x emissions shall be determined at four points in the normal operating range of the turbine, including the minimum point in the range and peak load, pursuant to 40 CFR 60.335(c)(2).
 - iv. All loads shall be corrected to ISO conditions using the appropriate equations supplied by the manufacturer, pursuant to 40 CFR 60.335(c)(2).
 - v. Method 10 of 40 CFR 60, Appendix A, shall be used to determine CO concentrations at peak turbine load.
 - vi. Method 18 of 40 CFR 60, Appendix A, shall be used to determine VOM concentrations at peak turbine load.
 - vii. The test at each load shall consist of three separate runs each at least 60 minutes in duration. Compliance shall be determined from the average of the runs provided that the Illinois EPA may accept the arithmetic mean of two of the runs in circumstances described in 40 CFR 60.8(f).
- b. The Permittee shall submit a test plan to the Illinois EPA at least 60 days prior to testing. As part of this plan, the Permittee may propose for approval by the Illinois EPA a strategy for performing emission testing of similar turbines provided that all turbines are fitted for testing; the identity of the engines to be tested is determined immediately before testing, by the Illinois EPA or otherwise randomly. The Permittee may also propose a strategy for testing across the normal load range of the turbine.

- c. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification of the expected date of testing shall be submitted a minimum of thirty (30) days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five (5) working days prior to the actual date of the test. The Illinois EPA may, at its discretion, accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe the testing.
- d. The Final Report for these tests shall be submitted to the Illinois EPA within 60 days after the date of the tests. The Final Report shall include as a minimum:
 - i. A summary of results.
 - ii. General information.
 - iii. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
 - iv. Detailed description of test conditions, including:
 - A. Fuel consumption (standard ft³);
 - B. Firing rate (million Btu/hr); and
 - C. Turbine/Generator output rate (MW).
 - v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.
- 14a. The Permittee shall maintain records of the following items:
 - i. The sulfur content of the fuel used to fire the turbine as determined in accordance with Condition 10;
 - ii. Fuel consumption for the turbine monitored in accordance with Condition 9;
 - iii. Operating hours and fuel consumption for the turbine, on a daily basis; and
 - iv. Fuel consumption monitoring data and operating hours and fuel consumption on a daily basis for the three turbines already at the site (Turbines T1, T2, and T3). [See also Construction Permit 98120016]

- b. The Permittee shall maintain the following records related to startup of the turbine:
 - i. The following information for each startup of the turbine:
 - A. Date and time of startup;
 - B. Whether operating personnel for the turbine or air environmental staff are on site during startup; and
 - C. A description of startup, if operating problems are identified during the startup.
 - ii. The following information for the turbine when above normal opacity has been observed by source personnel as identified in (i)(B) above:
 - A. Name of observer, position and reason for being at site;
 - B. Date and duration of above normal opacity, including start time and time normal operation was achieved;
 - C. If normal operation was not achieved within 20 minutes, an explanation why startup could not be achieved;
 - D. A detailed description of the startup, including reason for operation and whether reduced loading was performed;
 - E. An explanation why reduced loading and other established startup procedures could not be performed, if not performed;
 - F. The nature of opacity following the end of startup or 30 minutes of operation, whichever occurs first, and duration of operation until achievement of normal opacity or shutdown; and
 - G. Whether exceedance of Condition 5(a) [30 percent opacity] may have occurred during startup, with explanation if qualified observer was on site.
- c. The Permittee shall keep a maintenance/repair log for the turbine.
- d. The Permittee shall maintain the following records on at least a quarterly basis:
 - i. Heat content of the natural gas (Btu/ft³) being fired during the quarter, with supporting documentation;

- ii. The emissions of NO_x, SO₂, PM, VOM and CO from the turbine for each day since the previous record with supporting calculations;
 - iii. The emissions of NO_x, SO₂, PM, VOM and CO from each turbine already at the site (Turbine T1, T2, and T3) for each day since the previous record with supporting calculations; and
 - iv. The annual emissions of NO_x, SO₂, PM, VOM and CO from all turbines, combined, for each day since the previous record.
- e. The Permittee shall also keep records of the seasonal emissions of VOM (May through September) from the facility.
 - f. The Permittee shall maintain records that identify:
 - i. Any periods during which a continuous monitoring system was not operational, with explanation.
 - ii. Any day in which emission exceeded an applicable standard or limit.
 - g. These records shall be retained for three years and shall be available for inspection and copying by the Illinois EPA.
15. If there is any exceedance of the requirements of Conditions 1 through 4 of this permit, as determined by the records required by this permit or by other means, the Permittee shall submit a report within 30 days after the exceedance. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.
16. Two copies of required reports and notifications concerning equipment operation or repairs, performance testing, or a continuous monitoring system shall be sent to:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
Telephone: 217/782-5811 Fax: 217/782-6348

and one copy shall be sent to the Illinois EPA's regional office at the following address, unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
1701 South 1st Avenue, 6th Floor
Maywood, Illinois 60153
Telephone 708/338-7969 Fax: 708/338-7930

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Please note that the provisions of this permit applying to the three turbines already at the site (Turbines T1, T2, and T3) become effective upon initial startup of this additional fourth turbine.

If you have any questions concerning this permit, please contact Manish Patel at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:MNP:jar

cc: Region 1
CASM
USEPA