

217/782-2113

JOINT CONSTRUCTION AND OPERATING PERMIT -- NSPS
"REVISED"

PERMITTEE

Dynegy Midwest Generation, Inc.
Attn: Rick Diericx
2828 North Monroe
Decatur, Illinois 62526

<u>Application No.:</u> 98110018	<u>I.D. No.:</u> 183090AAE
<u>Applicants Designation:</u>	<u>Date Received:</u> October 22, 1999
<u>Subject:</u> Gas Turbines (Power Production)	<u>Operating Permit</u>
<u>Date Issued:</u> June 1, 2000	<u>Expiration Date:</u> April 1, 2002
<u>Location:</u> 80 West First Street, Tilton	

Permit is hereby granted to the above-designated Permittee to CONSTRUCT and OPERATE emission source(s) and/or air pollution control equipment consisting of four gas turbines as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. The turbines are 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):

$$STD = 0.0075 \left(\frac{14.4}{Y} \right) + F$$

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 manufacture'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 turbines in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to the NSPS, 40 CFR 60.11(d).
2. The turbines are affected units under the Acid Rain Deposition Control Program pursuant to Title IV of the Clean Air Act and are subject to certain control requirements and emissions monitoring requirements pursuant to 40 CFR Parts 72, 73 and 75. As affected units under the Acid Rain Program, Dynegy Midwest Generation, Inc. must also obtain an Acid Rain Permit for operation of the turbines in accordance with 40 CFR 70.30(a)(2)(ii) and 72.32(a).
 3. The turbines shall each be equipped, operated, and maintained with water injection (WI) in the combustors.
 - 4a. The only fuel fired at the facility shall be natural gas.
 - b. The turbines, in total, shall not fire more than 4,250 million ft³ of natural gas per year. Compliance with this limit shall be determined from a running total of 12 months of data.
 - c. Hourly emissions from each turbine shall not exceed the following limits, except when ice for is deemed a traffic hazard by the Permittee:

Nitrogen Oxides <u>(lb/hr)</u>	Carbon Monoxide <u>(lb/hr)</u>	Particulate Matter/PM ₁₀ <u>(lb/hr)</u>	Sulfur Dioxide <u>(lb/hr)</u>	Volatile Organic Material <u>(lb/hr)</u>
50	63	1.0	1.0	1.5

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

- d. i. The annual emissions from the facility shall not exceed the following limitations. Compliance with the annual limitations shall be determined from a running total of 12 months of data.

<u>Pollutant</u>	<u>Emissions (tons/year)</u>
NO _x	197
CO	192
PM ₁₀	10
SO ₂	10
VOM	10

- ii. For purpose of determining compliance with the above limits, emissions of NO_x and CO during an hour that includes a startup shall be assumed to 20 percent higher than the limits in Condition 4(c), e.g., 60 lb/hr rather than 50 lb/hr NO_x, unless an alternative determination of startup emissions is approved by the Illinois EPA in a subsequent permit.

The above limits are established pursuant to 40 CFE 52.21, the federal rules for Prevention of Significant Deterioration of Air Quality (PSD). These limits ensure that the construction and operation of the turbines do not constitute a new major source pursuant to PSD.

- 5a. Each turbine (CT) shall be operated in a manner consistent with good air pollution control practice to minimize emissions of NO_x during startup, malfunction, and shutdown including:

- i. Operation in accordance with the manufacturer's written instructions or other written instructions developed and maintained by the Permittee, which shall include at a minimum the following measures:

- A. Review of operating parameters of the unit during startup, malfunction, and breakdown, or shutdown as necessary to make adjustments to reduce or eliminate excess emissions;
- B. Operation of the WI system as soon as and as long as the unit operating conditions are amenable to its effective use.

- ii. Maintenance of the WI systems in accordance with written procedures developed and maintained by the Permittee, which procedures shall be reviewed at least annually.

- b. i. Upon malfunction/breakdown of the WI system that will result in NO_x emissions in excess of the applicable limit in Condition 4(c). The Permittee shall as soon as practicable repair the affected system or remove the CT from service so that excess emissions cease;

- ii. Consistent with the above, if the Permittee has maintained and operated a CT/WI so that malfunctions are sudden, infrequent, not caused by poor maintenance or careless operation, and in general are not reasonably preventable, the Permittee shall begin shutdown of the CT within 90 minutes, unless the malfunction is expected to be repaired in 120 minutes or such shutdown could threaten the stability of the regional electrical power system. IN such case, shutdown of the CT shall be undertaken when it is apparent that repair will not be accomplished within 120 minutes or shutdown would not endanger the regional power system. In no case shall shutdown of a CT be delayed solely for the economic benefit of the Permittee.

- iii. Notwithstanding the above, if the Permittee determines that the NO_x continuous emission monitoring system (CEMS) is inaccurately reporting excess NO_x emissions, the Permittee may continue operation provided the Permittee records the information it is relying upon to conclude that the CT is functioning properly and the CEMS is reporting inaccurate data and the Permittee takes prompt action to resolve the accuracy of the CEMS.
- 6. The emission of smoke or other particulate matter from a turbine shall not have an opacity greater than 30 percent, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 201.149, 212.123(b) or 212.124.
 - 7. Each turbine shall each be equipped, operated, and maintained with a continuous monitoring system to monitor the fuel consumption, pursuant to 40 CFR 60.334(a).
 - 8a. To demonstrate compliance with the NO_x limits of this permit, the Permittee shall install, operate, and maintain a Continuous Emissions Monitoring (CEM) system on each CT/HRSG system to measure emissions of NO_x. The applicable procedures under 40 CRR 60.13, 60.47a(c) and 75.12 shall be followed for the installation, evaluation, and operation of this NO_x CEM system.
 - b. These monitoring systems shall be operated and collect data in accordance with the applicable provisions of the Acid Rain Program.
 - c. Notwithstanding the above conditions of the permit specifying monitoring practices, other credible evidence may be used to establish compliance or noncompliance with applicable emission limits.
 - 9a. The Permittee shall monitor sulfur content of the gas fired in the turbines pursuant to the applicable provisions in 40 CFR Par 75, Appendix D, Section 2.3 for pipeline natural gas combustion.
 - b. Monitoring of fuel nitrogen content is not required, as natural gas is the only fuel fired in the turbines.
 - c. The above provisions establish a custom schedule for determination of sulfur content and nitrogen content of fuel in accordance with 40 CFR 60.334(b)(2) and USEPA's Custom Fuel Monitoring Document dated August 14, 1987, subject to case-specific approval by USEPA pursuant to 40 CFR 60.13(i).
 - 10a. Within 90 days of a written request from the Illinois EPA, the nitrogen oxides (NO_x), carbon monoxide (CO), and oxygen (O₂) concentrations in the exhaust of the turbines 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. 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 selected 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 turbines.
 - 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.
- 11a. The Permittee shall maintain records of the following items:
- i. The sulfur contents of the fuel used to fire the turbines as determined in accordance with Condition 9;
 - ii. Fuel consumption for each turbine in accordance with Condition 7, on a daily basis;
 - iii. Operating hours for each turbine, on a daily basis;
- b. The Permittee shall keep a maintenance/repair log for the turbines and the water injection system on each turbine.
- c. NO_x emissions from each gas turbine recorded hourly (in lb/mmBtu) by combining the NO_x concentration (in ppm) and diluent concentration (in percent O₂ or CO₂) measurements according to the procedures in 40 CFR 75 Appendix F;
- d. The Permittee shall maintain the following records:
- i. Heat content of the natural gas (Btu/ft³) being fired during the quarter, with supporting documentation, on a quarterly basis;
 - ii. Fuel consumption for each turbine on a monthly basis;
 - iii. The running 12-month total emissions of NO_x, SO₂, PM, CO and VOM on a monthly basis, with supporting calculations.
- e. The Permittee shall maintain records that identify:
- i. Any periods during which a continuous monitoring system was not operational, with explanation.
 - ii. Any period when the turbine was in operation during which ice fog was deemed to be a traffic hazard, the ambient conditions existing during the periods, the date and time the water

injection system was deactivated, and the date and time the system was reactivated.

- iii. Any day in which emissions exceeded an applicable standard or limit.
- f. The Permittee shall maintain following records related to startup, malfunction and breakdown, and shutdown of each CT:
 - i. The time and date of startup, malfunction or breakdown and shutdown of a CT and confirmation that standard practices were followed;
 - ii. Each incident when operation of a CT continued during malfunction or breakdown with excess emissions, including the following information:
 - A. Date and duration of malfunction or breakdown;
 - B. A description of the malfunction or breakdown;
 - C. The reason continued operation was necessary, including supporting documentation;
 - D. The corrective actions used to reduce the quantity of emissions and the duration of the incident;
- g. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Illinois EPA upon request. Any records retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA request for records during the course of a source inspection.
- 12. If there is an exceedance of the requirements of this permit as determined by the records required by this permit, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois 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.
- 13. Two (2) 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

and one (1) 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
2009 Mall Street
Collinsville, Illinois 62234

Telephone 618/346-5120 Facsimile 618/346-5155

It should be noted that this permit has been revised to address startup, malfunction, and breakdown.

If you have any questions on this permit, please contact Troy Poorman at 217/782-2113.

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

DES:TDP:KJL:psj

cc: Region 3