

217/782-2113

CONSTRUCTION PERMIT - PSD APPROVAL - NSPS SOURCE

PERMITTEE

Zion Energy L.L.C.
Attention: Andy Kellen, Project Manager
650 Dundee Road, Suite 350
Northbrook, Illinois 60062

Application No: 99110042

I.D. No.: 097200ABB

Applicants Designation: ZIONENERGY

Date Received: November 12, 1999

Subject: Electric Generation Peaking Station

Date Issued: December 8, 2000

Location: West Ninth Street, Zion, Lake County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission unit(s) and/or air pollution control equipment consisting of five simple cycle combustion turbines with distillate oil as back-up fuel (nominal plant capacity 800 MWe), five auxiliary boilers, two fuel heaters, and a fuel oil storage tank as described in the above referenced application and summarized in Attachment A. This Permit is granted based upon and subject to the findings and special conditions that follow:

In conjunction with this permit, approval is given with respect to the Prevention of Significant Deterioration of Air Quality Regulations (PSD) to construct the above referenced project, in that the Illinois Environmental Protection Agency (Agency) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et. seq., the Federal regulations promulgated thereunder at 40 CFR 52.21 for Prevention of Significant Deterioration of Air Quality (PSD), and a Delegation of Authority agreement between the United States Environmental Protection Agency and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with the provisions of 40 CFR 124.19. This approval is also based upon and subject to the following findings and conditions:

Findings

- 1a. Zion Energy L.L.C. (Zion Energy) has requested a permit for an electric generation facility that would include five "simple cycle" combustion turbines (CT). The facility would have the ability to generate up to about 800 MW (nominal) of electrical energy. The facility would be fired on natural gas as its primary fuel with capability to fire distillate oil as a backup fuel.

analysis shows that project will have an insignificant impact on the ambient air quality standards.

7. The Illinois EPA has determined that the proposed project complies with all applicable Illinois Air Pollution Board Regulations and the federal Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.
8. A copy of the application, the project summary and a draft of this permit were placed in a location in the vicinity of the project, and the public was given notice and an opportunity to examine this material and to submit comments and to participate in a public hearing on this matter.

The Illinois EPA is issuing approval to construct the proposed project subject to the following special conditions and consistent with the specifications and data included in the application. Any departure from the conditions of this approval or terms expressed in the application would need to receive prior written authorization by Illinois EPA.

Conditions

1. Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply to this project, unless superseded by the following special conditions.
- 2a. The fuels fired at the facility shall be only natural gas and distillate oil, as defined in 40 CFR 60.41c.
- b. Distillate oil shall only be fired as a backup fuel, that is:
 - i. For purposes of shakedown, evaluation of operation and emission testing of emission units; and
 - ii. At other times when and to the extent that circumstances such as natural gas supply curtailment or breakdown of natural gas delivery systems make it impossible for the Permittee to fire natural gas in one or more emission units. However, this requirement does not require that a unit, once operating on oil, be shutdown if natural gas becomes available for the unit during a day if the unit would then be restarted with natural gas on that same day.
- 3a. The combustion turbines (CT) shall each be equipped, operated, and maintained with low NO_x combustors for natural gas firing and water injection (WI) for oil firing.
- b.
 - i. Operation of the CTs (5 units) shall not exceed a combined total of 11,500 hours per year. Operation of each individual CT shall not exceed 3,300 hours in any single year and 2,300 hours averaged over any three consecutive years.

- ii. Operation of each CT when firing on backup fuel (distillate fuel oil) shall not exceed 500 hours per year.
- iii. Operation of each CT with steam injection for power augmentation shall not exceed 500 hours per year. Steam shall be injected only when the CTs are being fired on natural gas.
- iv. If at any time, the operation of an individual CT exceeds 2,300 hours in a year, the Permittee shall demonstrate that operation of such CT was consistent with its use as a peaking turbine, by making a detailed submittal of information to the Illinois EPA within 2 months that includes the following:
 - A. The total hours that the CT actually operated during such year and a summary of actual operating hours of the CT for prior years;
 - B. A description of the circumstances that contributed to actual operation for more than 2,300 hours in a year, with supporting documentation, including:
 - I. The circumstances with respect to the public demand for power, e.g., unusually cold or hot weather;
 - II. The circumstances with respect to unavailability of other CTs at the facility, e.g., unanticipated or extended outage of CTs;
 - III. The circumstances with respect to electric utility need for power, e.g., unexpected outages of major generating units or damage to power transmission systems;
 - IV. Other circumstances that the Permittee believes contributed to the operation of the CT for more than 2,300 hours in a year; and
 - C. Further information to demonstrate that the above circumstances are uncommon or unlikely to reoccur so as to result in actual operation of the CT for more than 2,300 hours in a year.
- v. Prior to operation of an individual CT for more than 2,300 hours in a year in a manner that is inconsistent with its use as a peaking turbine, the Permittee shall obtain a revised permit allowing such operation pursuant to PSD, 40 CFR 52.21, which permit may establish additional requirements for the CT as are appropriate as Best Available Control Technology.
- vi. For the purposes of this permit, peaking operation means operation when base load generating capacity is insufficient to meet electrical demand and operating reserve requirements, due to high demand, outage of base load generating units, restrictions or interruptions in the power grid, etc. It also includes operation

of a unit for purposes of verifying unit availability for the above purposes. Compliance with this requirement shall be presumed for an individual CT if it operates for no more than 2,300 hours per year.

The above limitations on operation are intended to assure that the facility is operated as a natural gas fired peaking facility, with distillate oil used as a backup fuel and steam augmentation only occurring when needed to meet the demand for power.

- c.
 - i. The emissions of NO_x from each CT when firing natural gas shall not exceed 9 ppm_{dv} @ 15% O₂ (without steam injection) and 12 ppm_{dv} @ 15% O₂ (with steam injection) on an hourly average.
 - ii. These emission limits do not apply during periods of startup and shutdown as addressed by Condition 4. Compliance with these limits shall be demonstrated during the shakedown period as provided in Condition 11(a).
- d. The emissions of NO_x from a CT when firing backup fuel (i.e. distillate fuel oil) shall not exceed 42 ppm_{dv} @ 15% O₂ on an hourly average.
- e. Each CT shall use good combustion practices to reduce emissions of CO and PM, which practices shall include routine operating practices, maintenance and repair practices, and other periodic assessments of the combustion performance of the CT to reasonably minimize emission of CO and PM.
- f. The emissions of CO and PM from each CT shall comply with the limits specified in Table 1A and 1B of the attachment B.
- g. The CT's shall not be fired with distillate oil with sulfur content greater than 0.05% by weight.
- 4. Each CT shall be operated in a manner consistent with good air pollution control practices to minimize emissions during startup and shutdown including:
 - a. The Permittee shall manage the operation of the CTs to minimize multiple startups of a CT in a single day, unless startup is tripped off, and to provide adequate time to follow the procedures for normal startup of the CTs, except for requests for immediate delivery of power as would result from unexpected loss of a transmission line or other generating capacity.
 - b. Operation in accordance with the manufacturer's written instructions or other written instructions developed and maintained by the Permittee that shall include at a minimum the following measures:

Review of operating parameters of the CT during startup or shutdown as necessary to make adjustments to reduce or eliminate excess emissions.

Implementation of inspection and repair procedures for a CT prior to attempting startup following repeated trips.

- c. The Permittee shall maintain each CT in accordance with written procedures developed and maintained by them. These procedures shall be reviewed at least annually and enhanced consistent with good air pollution control practice based on actual operating experience and performance of the CTs.
- 5a. Each fuel heater shall be equipped with low-NO_x burners designed to emit no more than 0.15 lb NO_x/million Btu heat input on an hourly average.
 - b. Each fuel heater shall be maintained and operated with good combustion practices to control emissions of CO and PM.
- 6a. Each auxiliary boiler shall be equipped, operated and maintained with low-NO_x burners.
 - b. The auxiliary boilers shall be operated only as reasonably needed for the purpose of power augmentation in the CTs.
 - c. The auxiliary boilers shall emit no more than 0.05 lb NO_x/million Btu heat input on an hourly average.
 - d. The auxiliary boilers shall be maintained and operated with good combustion practices to control emissions of CO and PM, which practices shall include routine operating practices, maintenance and repair practices, and other periodic assessments of the combustion performance of the auxiliary boilers to reasonably minimize emission of CO and PM.

Conditions 3, 4, 5 and 6 represent the application of the Best Available Control Technology as required by Section 165 of the Clean Air Act.

- 7a. The gas CTs are subject to the New Source Performance Standard (NSPS) for Stationary Gas Turbines, 40 CFR 60, Subpart A and GG. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement. In addition to complying with other applicable emission standards, each CT must comply with the applicable emission standards of the NSPS, as follow:
 - i. The NO_x emissions from each CT shall not exceed the limit established by the NSPS, pursuant to 40 CFR 60.332 (a)(1).
 - ii. The emission from each CT shall not contain SO₂ in excess of 0.015 percent by volume at 15 % O₂ and on a dry basis or the CT 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).

- b. The auxiliary boilers are subject to the New Source Performance Standard (NSPS) for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60, Subpart A and Db. The Illinois EPA is administrating NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

The emission of NO_x into the atmosphere from each boiler shall not exceed 0.10 lb/mmBtu as applicable for low heat release boiler. [40 CFR 60.44b(a)(1)(i)]

- c. The fuel oil storage tank is subject to the New Source Performance Standard (NSPS) for storage vessels, 40 CFR 60, Subpart A and Kb. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.
 - d. At all times, the Permittee shall maintain and operate the CTs, the auxiliary boilers and the fuel oil storage tank in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to the NSPS, 40 CFR 60.11(d).
- 8a. The emission of smoke or other particulate matter from each CT and auxiliary boiler 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.
- b. The emission of carbon monoxide (CO) into the atmosphere from each auxiliary boiler shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]
- 9a. Emissions from the CT shall not exceed the limits in Table 1A, 1B and 1C of Attachment B.
- b. Emissions of NO_x from each auxiliary boiler shall not exceed 11.25 lb/hr and 2.81 tons/yr.
 - c. Emissions of NO_x from each fuel heater shall not exceed 2.25 lb/hr and 2.59 tons/yr.
 - d. Compliance with the above annual limits shall be determined from a running total of 12 months of data.
- 10a. 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, because its VOM emissions during each seasonal allotment period are less than 10 tons. This reflects an expectation that actual VOM emissions will be much less than allowed by this permit.
- 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. 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 16(h)(v)]. By December 31 of the first year in which seasonal VOM emissions are 10 tons or greater, the 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)].
- 11a. Under this permit, each CT/auxiliary boiler 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 shakedown or perform emission testing, provided however that an hourly NO_x emission limit representing 15 ppm_dv NO_x @ 15% O₂ (equivalent to 0.062 lb/mmBtu) shall apply during such extended shakedown for both without steam injection and with steam injection CT operation.
 - b. Upon successful completion of emission testing demonstrating compliance with applicable limitations, the Permittee may continue to operate the facility as allowed by Section 39.5 (5) of the Environmental Protection Act.
 - c. This condition supersedes Standard Condition 6.
- 12a.
 - i. Within 60 days after operating a CT at the greatest load at which it will normally be operated but not later than 180 days after its initial startup, the Permittee shall perform emissions tests of the CTs as follows. Emissions shall be measured by an approved testing service during conditions which are representative of maximum emissions (peak load) for NO_x, CO, PM, VOM, and opacity and also at the minimum normal operating load, and two intermediate load levels for NO_x, for firing both natural gas and distillate oil. Emission measurements shall also be conducted for CTs firing natural gas with steam injection for NO_x, CO, PM, VOM and opacity.
 - ii. Within 60 days after operating each auxiliary boiler at the greatest load at which it will normally be operated but not later than 180 days after its initial startup, the Permittee shall perform emissions tests of the auxiliary boiler as follows. Emissions shall be measured by an approved testing service during conditions which are representative of maximum emissions for NO_x, CO, PM, VOM, and opacity.

- iii. The Permittee shall perform emission tests within 45 days of a written request by the Illinois EPA. The Illinois EPA will require these tests if, based on observations by Field personnel, units are poorly maintained or operated so as to make compliance with permit limitations uncertain.
 - iv. Any extension to these time periods that may be provided at its discretion by the Illinois EPA shall not alter the Permittee's obligation to perform emission testing for purpose of the NSPS in a timely manner as specified by 40 CFR 60.8.
- b. i. The following USEPA methods and procedures shall be used for testing of emissions:

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3 or 3A
Moisture	USEPA Method 4
Particulate Matter	USEPA Method 5
Nitrogen Oxides	USEPA Method 20 or 7 or 7E
Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Volatile Organic Material	USEPA Method 18 or 25A
PM10	USEPA Method 201 or 201A (40 CFR 51, Appendix M)

The Permittee may report all PM emissions measured by USEPA Method 5 as PM₁₀, including back half condensable particulate. If the Permittee reports USEPA Method 5 PM emissions as PM₁₀, testing using USEPA method 201 or 201A need not be performed.

- ii. Measurements for NO_x from the CTs shall be conducted in accordance with 40 CFR 60.335, as specified below, unless alternative testing procedures are approved by USEPA pursuant to 40 CFR 60.8(b):
 - A. The NO_x emissions shall be computed for each run using the equation in 40 CFR 60.335(c)(1).
 - B. The span values for Method 20 shall be 300 ppm of NO_x and 21 percent O₂, pursuant to 40 CFR 60.335(c)(3).
 - C. The NO_x emissions shall be determined at four points in the normal operating range of the CTs, including the minimum point in the range and peak load, pursuant to 40 CFR 60.335(c)(2).
 - D. All loads shall be corrected to ISO conditions using the appropriate equations supplied by the manufacturer, pursuant to 40 CFR 60.335(c)(2).

- iii. For auxiliary boilers, measurement of NO_x emissions and data collection shall be conducted in accordance with the test methods and procedures specified in 40 CFR 60.46b(e).
- iv. Measurements for other pollutants shall be conducted as follows:
 - A. CO, PM and VOM concentrations shall be measured at peak, intermediate and minimum CT load.
 - B. PM emissions measured by USEPA Method 5, including back half condensable particulate, may be provided as an alternative to measurement of PM₁₀ emissions using USEPA Method 201 or 201A.
 - C. Measurements for organic hazardous air pollutants in the VOM (e.g., formaldehyde, toluene, acetaldehyde, and acrolein) shall be provided, if VOM emissions are measured by Method 18. (See also Condition 12(c)(iii).)
 - D. Unless continuous emissions monitoring is conducted for the particular pollutant, measurements shall also be performed for emissions of NO_x, CO and VOM during startup of a CT, in accordance with a plan approved by the Illinois EPA. For purposes of these measurements, as approved by the Illinois EPA, the Permittee may adapt USEPA Reference Test Methods as necessary to address the short duration and transient conditions of startups.
- c. At least 60 days prior to the actual date of testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include as a minimum:
 - i. The person(s) who will be performing sampling and analysis and their experience with similar tests;
 - ii. The specific conditions under which testing shall be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which operating parameters will be tracked and recorded;
 - iii. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations, the test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods; and identification of any organic hazardous air pollutants that will be measured. As part of this plan, the Permittee may set forth a strategy for performing emission testing of selected CTs and auxiliary boilers provided that all units are fitted for testing, the identity of the units to be tested are determined immediately before testing by the Illinois EPA or otherwise randomly, and continuous emission monitoring of NO_x is present on all CTs. The

Permittee may also propose a plan for testing across the normal operating range of the CTs; and

- iv. The proposed plans for testing emissions during startup of a CT as required by Condition 12(b)(iv)(D), including the number of startups for which measurements will be performed; the procedures that will be followed for startup of the CT; the approach that will be generally followed to assure that measurements can be conducted for and will be representative of the startup period; any proposed adaptations to reference test methods; and any other significant considerations for testing of emissions during startup.
- d. The Illinois EPA shall be notified prior to these tests to enable the Illinois EPA to observe these tests. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Agency may at its discretion accept notifications with shorter advance notice, although the Illinois EPA will not accept such notifications if they interfere with the Illinois EPA's ability to observe testing.
- e. Three copies of the final reports for emission tests shall be forwarded to the Compliance Section in Springfield within 30 days after the test results are compiled and finalized. The final report from testing shall contain a minimum:
 - i. A summary of results;
 - ii. General information;
 - iii. Description of test method(s), including a description of sampling points, sampling train, analysis equipment, and test schedule;
 - iv. Detailed description of test conditions, including:
 - A. Fuel consumption (standard ft³);
 - B. CT firing rate (million Btu/hr);
 - C. CT/Generator output rate (MWe);
 - D. Auxiliary boiler firing rate (million Btu/hr);
 - E. Water injection rate during backup fuel firing; and
 - v. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.

- 13a. The Permittee shall install, operate, and maintain monitors to measure and record fuel consumption by each CT and each auxiliary boiler.
 - b. The Permittee shall install, operate, and maintain monitors on each CT to measure and record the ratio of water to fuel when firing backup fuel.
- 14a.
 - i. 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 and each auxiliary boiler to measure emissions of NO_x. The applicable procedures under 40 CFR 60.13, 60.47a(c) and 75.12 shall be followed for the installation, evaluation, and operation of this NO_x CEM system. These monitoring systems shall be operational through startup and shutdown of the CTs and auxiliary boilers.
 - ii. At least 30 days prior to initial startup of each CT and each auxiliary boiler, the Permittee shall submit a detailed monitoring plan to the Illinois EPA for review and comment. This plan shall describe the configuration and operation of the CEM system for each CT and each auxiliary boiler, including NO_x, diluents and exhaust flow monitoring devices.
 - iii. These monitoring systems shall be operated and collect data in accordance with the applicable provisions of the Acid Rain Program.
- b. 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.
- 15a. The Permittee shall sample and analyze for the sulfur content of the fuel for the CTs in accordance with the Federal Acid Rain Program 40 CFR 75.11(d) [refer to Part 75, Appendix D, Section 2.2 and Section 2.3 for fuel oil combustion and pipeline natural gas combustion, respectively] unless it elects to install and operate CEMS for emission of SO₂ from the CTs.
 - b. Sampling and analysis for the fuel nitrogen content of the fuel for the CTs is not required as a condition of this permit as continuous emission monitoring for NO_x emissions is required by Condition 14.
 - c. The above provisions establish a custom schedule for determination of sulfur content and nitrogen content of fuel, subject to case-specific approval by USEPA pursuant to 40 CFR 60.13(i), in which approval USEPA may establish additional requirements upon the Permittee for sampling and analysis of fuel. If USEPA does not approve a custom schedule for the CTs, the Permittee shall also sample and analyze for sulfur and nitrogen content of the natural gas and distillate oil being fired in the CTs in accordance with 40 CFR 60.334(b).
- 16a. The Permittee shall maintain a file of the following items:

- i. The written instructions being followed by the Permittee as good combustion practices and good air pollution control practice to minimize emission in accordance with Conditions 3(e), 4 and 5(b);
 - ii. The heat content of each of the fuel fired in the CTs or auxiliary boilers (Btu/standard ft³ or Btu/gallon);
 - iii. The composition of fuel as determined in accordance with Condition 15;
 - iv. For the life of fuel oil storage tank, the dimensions of the tank and an analysis showing the capacity of the tank;
 - v. The Sulfur content of backup fuel (weight %); and
 - vi. A copy of the Final Report(s) for emission testing conducted pursuant to Condition 12.
- b. The Permittee shall maintain the following daily operating records for the CTs:
- i. The quantity of fuel consumed for each CT (standard ft³ or gallons);
 - ii. Total CT-operating hours and number of startups for each CT;
 - iii. Facility operating hours on a daily basis. For this purpose, the Permittee shall consider the facility to operate for one hour if one or more CTs are operated during an hour. For example, if one CT or four CTs operate from 12:00 noon to 6:00 PM on a day, in both cases, this shall count as six operating hours;
 - iv. Each period when a CT was actually operated with steam injection for power augmentation, with the reason for such operation and with supporting documentation;
 - v. Each period when a CT was fired on backup fuel, with the reason(s) for use of backup fuel and supporting documentation along with water usage in the WI control system (gal/day); and
 - vi. Each period when a CT operates when the ambient temperature is less than or equal to 59°F with ambient temperature, by hour, for each hour.
- c. The Permittee shall keep inspection, maintenance, and repair logs with dates and the nature of such activities for the following:
- i. Each CT including combustors and WI system;
 - ii. Each auxiliary boiler; and
 - iii. Each fuel heater.

- d. For each auxiliary boiler operating day, the Permittee shall maintain records of the following items:
- i. Calendar date [40 CFR 60.49b(g)(1)];
 - ii. Total natural gas usage for each affected boiler (ft³/day) [40 CFR 60.49b(d)];
 - iii. Steam production for each auxiliary boiler;
 - iv. Each period when an auxiliary boiler was fired to produce steam for power augmentation;
 - v. The average hourly nitrogen oxides emission rates (expressed in lb/million Btu heat input) measured or predicted [40 CFR 60.49b(g)(2)];
 - vi. The 30-day average nitrogen oxides emission rates (lb/million Btu heat input) calculated at the end of each affected boiler operating day from the measured or predicted hourly nitrogen oxide emission rates for the preceding 30 affected boiler operating days [40 CFR 60.49b(g)(3)];
 - vii. Identification of the boiler operating days when the calculated 30-day average nitrogen oxides emission rates are in excess of the nitrogen oxides emissions standards under 40 CFR 60.44b, with the reasons for such excess emissions as well as a description of corrective actions taken [40 CFR 60.49b(g)(4)];
 - viii. Identification of the affected boiler operating days for which pollutant data have not been obtained, including reasons for not obtaining sufficient data, and a description of corrective actions taken [40 CFR 60.49b(g)(5)];
 - ix. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data [40 CFR 60.49b(g)(6)];
 - x. Identification of "F" factor used for calculations, method of determination, and type of fuel combusted [40 CFR 60.49b(g)(7)];
 - xi. Identification of the times when the pollutant concentration exceeded full span of the continuous monitoring system [40 CFR 60.49b(g)(8)];
 - xii. Description of any modifications to the continuous monitoring system that could affect the ability of the continuous monitoring system to comply with Performance Specification 2 or 3 [40 CFR 60.49b(g)(9)]; and

- xiii. Results of daily CEMS drift tests and quarterly accuracy assessments as required under Appendix F, Procedure 1 of 40 CFR 60 [40 CFR 60.49b(g)(10)].
- e. The Permittee shall maintain the following records related to each startup of the CTs:
- i. Date and time of startup;
 - ii. Type of startup, i.e. scheduled or emergency;
 - iii. Whether operating personnel for the CTs or air environmental staff are on site during startup; and
 - iv. A description of the startup, if written operating procedures are not followed during the startup or operating problems occur during the startup, including detailed explanation.
- f. The Permittee shall keep the following operating records for the CTs:
- i. Total operating hours of each CT (hours/month, hours/year (Calendar year));
 - ii. Total operating hours of each CT operated with a steam injection for power augmentation (hours/year (Calendar year)); and
 - iii. Total operating hours of each CT operated using backup fuel (distillate oil) (hours/year (Calendar year)).
- g. The Permittee shall keep the following records with regard to emissions:
- i. Other data, not addressed above, used or relied upon by the Permittee to determine emissions;
 - ii. NO_x emissions from each CT and each auxiliary boiler recorded hourly, quarterly, and annual (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;
 - iii. Monthly emissions of NO_x, CO, SO₂, VOM, and PM from each CT and auxiliary boiler (ton/month). NO_x emissions shall be based on data from the CEM. All other emissions shall be calculated based on fuel consumption, relevant factors developed from emission test data and fuel composition, with supporting calculations;
 - iv. Annual facility emissions of NO_x, CO, SO₂, VOM, and PM, compiled on at least a monthly basis;
 - v. Average NO_x emissions in ppm, on a monthly and annual basis, for comparison to the limits in Condition 3(c); and

- vi. Seasonal emissions of VOM (May through September) from the facility.
- h. The Permittee shall maintain records that identify:
 - i. Any periods during which a continuous monitoring system was not operational, with explanation; and
 - ii. Any day in which emissions exceeded an applicable standard or limit.
- 17. All records required by this permit shall be retained on site for a period of at least 3 years and shall be readily available for inspection and copying by the Illinois EPA upon request.
- 18a. The Permittee shall furnish the Illinois EPA with written notification as follows with respect to commencement of construction and operation of the CTs:
 - i. The date construction of the CTs and auxiliary boilers commenced, postmarked no later than 30 days after such date, pursuant to 40 CFR 60.7(a)(1). The notification for the CTs shall be accompanied by a description of the fuel and steam augmentation capabilities of the CT's burner system;
 - ii. The anticipated date of initial startup of the CTs and auxiliary boiler, postmarked not more than 60 days nor less than 30 days prior to such date, pursuant to 40 CFR 60.7(a)(2);
 - iii. The actual date of initial startup of the CTs and auxiliary boilers postmarked within 15 days after such date, pursuant to 40 CFR 60.7(a)(3); and
 - iv. The actual date that each CT begins gainful operation, with electricity produced by the CT available for sale at more than the minimum or avoided cost of the purchaser, postmarked within 15 days after such date.
- b. The Permittee shall furnish the Illinois EPA with written notification as follows with respect to firing of backup fuel:
 - i. Use of backup fuel in a CT for more than 72 hour in a rolling 12-month period following completion of shakedown and emission testing; and
 - ii. Use of backup fuel in a CT for a period of more than 6 hours, other than for purposes of shakedown, emission testing or backup fuel system evaluation.
- c. If there is any exceedance of the requirements of Condition 2 through 9 of this permit that is not addressed in the regular quarterly reports required by Condition 19(a), the Permittee shall submit a written

notification to the Illinois EPA's Compliance Unit in Springfield, Illinois within 30 days after the exceedance. The notification shall include a description of the exceedance, a copy of relevant records, and a description of the exceedance or violation and efforts to reduce emissions and future occurrences.

19a. The Permittee shall fulfill applicable reporting requirements in the NSPS, 40 CFR 60.7(c) and 60.49b for each CT and each auxiliary boiler. For this purpose, the quarterly reports shall be submitted no later than 30 days after the end of the calendar quarter.

b. In conjunction with the Annual Emission Report required by 35 IAC Part 254, the Permittee shall provide the following information for the preceding calendar year:

- The operating hours of each CT
- The operating hours of each CT with power augmentation
- The operating hours of each CT with distillate fuel
- The total number of startups of CTs
- The total natural gas and oil consumption of the CTs
- The operating hours of each auxiliary boiler
- The total natural gas consumption by the auxiliary boilers

c. The Permittee shall comply with applicable reporting requirements under the Acid Rain Program, with a single copy of such report sent to Illinois EPA. This copy shall be sent to the Division of Air Pollution Control, Compliance Unit.

d. If the emission testing required by Condition 12(a)(i) and (ii) is not performed within 45 days of beginning gainful operation of a CT, the Permittee shall submit a report summarizing NO_x, CO and VOM (or hydrocarbon) emissions of the CTs as determined by diagnostic measurements, e.g., combustion gas analyzers, during shakedown of the CTs.

20a. Any required reports and notifications concerning equipment operation, emissions testing, or a monitoring system shall be sent to the Illinois EPA at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control, Compliance Unit (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Telephone: 217/782-5811 Fax: 217/782-6348

- b. A copy of all reports and notifications, as required above, except the Annual Emission Report required by 35 Ill. Adm. Code 254, shall also be sent to the Illinois EPA at the following address:

Illinois Environmental Protection Agency
Division of Air Pollution Control
9511 West Harrison
Des Plaines, Illinois 60016

Telephone: 847/294-4000 Fax: 847/294-4018

- 21a. This permit shall become invalid if construction is not commenced within 18 months after this permit becomes effective, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. The 18 month period may be extended by the Illinois EPA upon a satisfactory showing that an extension is justified.
- b. This permit shall become invalid as applied to a particular CT or auxiliary boiler if construction is not commenced as part of commencement of construction of the facility, as addressed above or otherwise, within 18 months after this permit becomes effective, if its construction is discontinued for a period of 18 months or more, or if its construction is not completed within a reasonable period of time.
- c. For purposes of the above provisions, the definitions of "construction" and "commence" at 40 CFR 52.21 (b)(8) and (9) shall apply, which require that a source must enter into a binding agreement for on-site construction or begin actual on-site construction. (Also see the definition of "begin actual construction," 40 CFR 52.21 (b)(11))

This condition reflects provisions of the PSD rules, 40 CFR 52.21(r)(2). This condition supersedes Standard Condition 1.

- 22a. The approval for the above referenced project does not relieve the Permittee of the responsibility to comply with all Local, State and Federal Regulations which are part of the applicable Illinois State Implementation Plan, as well as all other applicable Federal, State, and Local requirements.
- b. This permit does not excuse the Permittee from any new requirements that would be applicable to construction or operation of the CTs based on the timing of their actual installation.

Please note that additional rules addressing NO_x emissions from these turbines may be adopted in the near future in response to USEPA's so called "NO_x SIP call" and the development of Illinois's plans for attainment of the ozone air quality standard in the Chicago and Metro-East ozone nonattainment areas.

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

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

DES:MNP

Attachments

CC: Region 1
CASM
USEPA

Attachment A

Significant Emission Units

Unit ID	Description	Number	Rated Heat Input ¹ (mmBtu/hr)	Control
CT 01 - 05	Simple Cycle Combustion turbine	5	1,719 ²	Low NOX combustors or Water injection, and Good combustion practices
BLR 01 - 05	Auxiliary Boiler	5	225	Low NOX combustors and Good combustion practices
FH 01 - 02	Fuel Heater	2	15	Good combustion practices
ST - 01	Storage Tank ³	1	--	--

1. Nominal capacity ratings are per unit.
2. Rated heat input when firing on natural gas, when firing on distillate fuel oil the rated heat input is 1928 mmBtu/hr.
3. Distillate fuel oil storage tank, maximum capacity 1.5 million gallon.

Project Emissions (ton/year)

Pollutant	Potential Emissions
NO _x	716.74
CO	258.03
PM/PM ₁₀	146.23
SO ₂	135.41
VOM	24.65

Attachment BTable 1A

Hourly Emission Limits for Each CT when Ambient Temperature Greater Than 59°F

Pollutant	Natural Gas				Fuel Oil	
	W/O Steam Inj.		W/ Steam Inj.			
	lb/mmBtu ¹	lb/hr ^{1,2}	lb/mmBtu ¹	lb/hr ^{1,2}	lb/mmBtu ¹	lb/hr ^{1,2}
NO _x	0.058	60.0	0.048	79.0	0.167	321.0
CO	0.017	29.0	0.027	47.0	0.034	65.0
PM/PM ₁₀	0.011	19.0	0.011	19.0	0.023	44.0
VOM	0.0016	2.8	0.0017	3.0	0.004	7.5
SO ₂	0.0022	3.8	0.0023	3.9	0.049	94.0

Table 1B

Hourly Emission Limits for Each CT when Ambient Temperature is 59°F or Lower

Pollutant	Natural Gas				Fuel Oil	
	W/O Steam Inj.		W/ Steam Inj.			
	lb/mmBtu ¹	lb/hr ^{1,2}	lb/mmBtu ¹	lb/hr ^{1,2}	lb/mmBtu ¹	lb/hr ^{1,2}
NO _x	0.037	64.0	0.048	79.0	0.176	340.0
CO	0.018	31.0	0.027	47.0	0.036	70.0
PM/PM ₁₀	0.011	19.0	0.011	19.0	0.023	45.0
VOM	0.0017	3.0	0.0017	3.0	0.004	8.0
SO ₂	0.0024	4.1	0.0023	3.9	0.052	100.0

1. Limits based on Low Heating Value (LHV) of fuel, vendor/manufacture data and information provided in the permit application.
2. Limits based on modeling data and information provided in the permit application. If the applicable limits for CO or PM/PM₁₀ are not met by a CT, it shall also be presumed to constitute failure to use good combustion practice as required by Condition 3(e), as well as an exceedance of Condition 3(f).

Table 1C: Total Annual Emission Limits for CTs^{1, 2}

Ton/year
697.50
234.25
140.50
22.23
134.73

1. The total annual emissions for NO_x, CO, PM/PM₁₀, VOM, and SO₂ are based on total 2,300 hours/year operation including 500 hours/year operation on natural gas with steam injection and 500 hours/year operation on backup fuel (fuel oil), at the hourly emission rate indicated in Table 1A as peaking turbines operate primarily in summer months.

2. Emissions of NO_x, CO and VOM during an hour that includes a startup shall be assumed to be at the limits in Table 1A or 1B, as applicable, multiplied by a startup factor (S_{ngas}): S_{NOX} = 1.25, S_{CO} = 7 and S_{VOM} = 7 when firing natural gas. Emissions of NO_x, CO and VOM during an hour that includes a startup shall be assumed to be at the limits in Table 1A or 1B, as applicable, multiplied by a startup factor (S_{oil}): S_{NOX} = 1, S_{CO} = 3 and S_{VOM} = 1.5 when firing fuel oil. For example, the CO emissions during an hour that includes startup when firing natural gas without steam injection when ambient temperature is above 59°F shall be assumed to be 203.0 lb/hr (7 x 29.0 = 203.0), unless an alternative determination of startup emissions is approved by the Illinois EPA in a subsequent permit.

The establishment of these procedures for determining compliance with the annual emission limits shall not shield the Permittee from responsibility to account for all emissions from the source, including emissions during startup or upset conditions, as other credible information may demonstrate that the above procedures do not adequately account for the actual emissions of the source.

Table 1D

Annual Emissions¹ (ton/year) for each CT

Pollutant	Natural Gas					Backup Fuel (Fuel Oil)	
	W/O Steam Inj.			W/ Steam Inj.		500 hours	(Total) ²
	1300 hours	1800 hours	2300 hours	500 hours	(Total) ¹		
NO _x	39.00	54.00	69.00	20.25	(74.25)	80.25	(139.50)
CO	18.85	26.10	33.35	11.75	(37.85)	16.25	(46.85)
PM/PM ₁₀	12.35	17.10	21.85	4.75	(21.85)	11.00	(28.10)
VOM	1.82	2.52	3.22	0.75	(3.27)	1.88	(4.45)
SO ₂	2.47	3.42	4.37	0.98	(4.40)	23.50	(26.95)

1. Total emissions include 1800 hours of operation w/o steam injection and 500 hours of operation w/ steam injection.
2. Total emissions include 1300 hours of operation w/o steam injection, 500 hours of operation w/ steam injection, and 500 hours of operation on backup fuel.

Table 2

Project Emissions (ton/yr)

Unit	NO _x	CO	PM	VOM	SO ₂
Turbines (CTs)	697.50	234.25	140.50	22.23	134.73
Auxiliary boilers	14.06	16.88	1.41	1.41	0.60
Fuel Heaters	5.18	6.90	4.32	0.87	0.08
Fuel Storage Tank				0.14	
Total Emissions	716.74	258.03	146.23	24.65	135.41

