217/782-2113

CONSTRUCTION PERMIT -- NSPS SOURCE

PERMITTEE

Energy Systems Group, Inc.
Attn: Mr. Lawrence Roth
101 Plaza East Boulevard, Suite 320
Evansville, Indiana 47715

Application No.: 03120025 I.D. No.: 097125ABP
Applicant's Designation: ENERGY CENTER Date Received: December 3, 2003
Subject: 1 Boiler and 1 gas turbine with 1 Heat Recovery Steam Generator
Date Issued: TO BE DETERMINED
Location: 3001 Green Bay Road, North Chicago, 60064

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of the Energy Center Expansion (ECX), which is comprised of one natural gas and #2 fuel oil fired steam boiler (Boiler No. 3, 63 mmBtu/hr), one (1) Taurus 70-10301S Axial natural gas-fired combustion turbine (Combustion Turbine No. 2, 94.47 mmBtu/hr) with heat recovery steam generator (HRSG No. 2, 35.0 mmBtu/hr) as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Combustion Turbine No. 2 is 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.

   a. The Permittee shall not emit into the atmosphere from any turbine any gases which contain nitrogen oxides (NO_x) in excess of the applicable standards pursuant to 40 CFR 60.332(a)(2).

   b. The Permittee shall not emit into the atmosphere from any turbine any gases which contain sulfur dioxide (SO_2) 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).

   c. 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).

   d. The Permittee shall also sample and analyze for sulfur and nitrogen content of the natural gas being fired in the turbines in accordance with 40 CFR 60.334(b).

2. Steam Boiler No. 3 and Heat Recovery Steam Generator No. 2 are subject to a New Source Performance Standard (NSPS) for Small Industrial Steam Generating Units, 40 CFR 60, Subparts A and Dc. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.

   a. At all times, the Permittee shall maintain and operate the boilers in a manner consistent with good air pollution control practice for minimizing emissions, pursuant to 40 CFR 60.11(d).

   b. No owner or operator of an affected facility that combusts oil shall cause to be discharged into the atmosphere from that affected facility any gases that contain SO_2 in excess of 215 ng/J (0.5 lb/million Btu) heat input; or, as an alternative, no owner or operator of an affected facility that combusts oil shall combust oil in the affected facility that contains greater than 0.5 weight percent sulfur, pursuant to 40 CFR 60.42c(d).

   c. No owner or operator of an affected facility that combusts oil and has a heat input capacity of 8.7 MW (30 million Btu/hr) or greater shall cause to be discharged into the atmosphere from that affected facility any gases that exhibit greater than 20 percent opacity (6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity, pursuant to 40 CFR 60.43c(c).

   d. The Permittee shall fulfill applicable notification and recordkeeping requirements of NSPS 40 CFR 60.48c.

3a. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any fuel combustion emission unit to exceed 0.3 lb/mmBtu in any one hour period when burning distillate fuel oil exclusively, pursuant to 35 Ill. Adm. Code 214.122(b)(2).

b. No person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to exceed 2000 ppm, pursuant to 35 Ill. Adm. Code 214.301.

c. Pursuant to 35 Ill. Adm. Code 214.304, the emissions from the burning of fuel at new process emission units burning distillate fuel oil exclusively, located in the Chicago major metropolitan areas shall comply with 35 Ill. Adm. Code 214.122(b)(2).

4. No person shall cause or allow the emission of carbon monoxide (CO) into the atmosphere from each fuel combustion emission unit with actual heat input greater than 2.9 MW (10 mmBtu/hr) to exceed 200 ppm, corrected to 50 percent excess air, pursuant to 35 Ill. Adm. Code 216.121.

5a. Natural gas and distillate fuel oil shall be the only fuel(s) fired in the Steam Boilers (Nos. 1, 2, and 3).

b. Natural gas shall be the only fuel burned in the Combustion Turbines (Nos. 1 and 2) and the Heat Recovery Steam Generators (HRSG Nos. 1 and 2).

c. Diesel fuel oil shall be the only fuel fired in the back-up generator.

6. At the above location, the Permittee shall not keep, store or utilize in the gas turbines, boilers, or backup generator:

   a. Distillate fuel oil (Grades Nos. 1 and 2) with a sulfur content greater than the large of the following two values:

      i. 0.28 weight percent, or

      ii. The wt. percent given by the formula:

      Maximum Wt. percent Sulfur = (0.000015) x (Gross Heating Value of oil, Btu/lb).

   b. Organic liquid by-products or waste materials shall not be used in any fuel combustion emission source without written approval from the Illinois EPA.

   c. The Illinois EPA shall be allowed to sample all fuels stored at the above location.

   d. The Permittee shall notify the Illinois EPA prior to any change in the type of fuel used at the source.

7. Emissions and operation of the Energy Center Steam Boilers shall not exceed the following limits:

   a. The hours of operation of any individual boiler shall not exceed 500 hours per year when firing distillate fuel oil.

   b. Emissions from Steam Boilers Nos. 1 and 2 shall not exceed the following limits:

	E M I S S I O N S		
	Each Unit		2 Units Combined
Pollutant	(Lb/mmBtu)	(Lb/Hour)	(Tons/Year)
CO	0.039	2.48	20.34
NO_x	0.118	7.43	19.44
PM/PM_{10}	0.021	1.32	3.78
SO_2	0.300	18.89	9.82
VOM	0.004	0.25	1.68

   c. Emissions from Steam Boiler No. 3 shall not exceed the following limits:

	E M I S S I O N S		
Pollutant	(Lb/mmBtu)	(Lb/Hour)	(Tons/Year)
CO	0.039	2.48	10.17
NO_x	0.118	7.43	9.72
PM/PM_{10}	0.021	1.32	1.89
SO_2	0.300	18.89	4.91
VOM	0.004	0.25	0.84

d. These limits are based on representations of the maximum actual emissions determined using the maximum hours of operation using distillate fuel oil, unlimited natural gas usage, vendor performance data, and standard emission factors.

8. Emissions and operation of the Energy Center Combustion Turbines and Heat Recovery Steam Generators shall not exceed the following limits:

a. Emissions from Combustion Turbine No. 1 and Heat Recovery Steam Generator No. 1 shall not exceed the following limits:

Pollutant	(Lb/mmBtu)	(Lb/Hour)	(Tons/Year)
CO	0.105	6.18	23.12
NO_x	0.129	7.21	26.95
PM/PM_{10}	0.014	0.80	3.03
SO_2	0.001	0.04	0.14
VOM	0.014	0.79	2.94

b. Emissions from Combustion Turbine No. 2 and Heat Recovery Steam Generator No. 2 shall not exceed the following limits:

Pollutant	(Lb/mmBtu)	(Lb/Hour)	(Tons/Year)
CO	0.160	12.15	45.47
NO_x	0.165	11.17	41.75
PM/PM_{10}	0.014	0.88	3.34
SO_2	0.001	0.04	0.13
VOM	0.014	0.85	3.17

c. These limits are based on representations of the maximum actual emissions determined using the maximum hours of operation and vendor performance data.

9. Emissions and operation of the Back-Up Generator shall not exceed the following limits:

Operating Hours		Emission Factor	Emissions	
(Hours/Year)	Pollutant	(Lb/mmBtu)	(Lb/Hour)	(Tons/Year)
300	CO	0.092	0.48	0.07
	NO_x	2.399	12.33	1.85
	PM/PM_{10}	0.177	0.91	0.14
	SO_2	0.290	1.8	0.3
	VOM	0.019	0.10	0.01

These limits are based on representations of the maximum actual emissions determined using the maximum hours of operation, vendor performance data and emission factors from Section 3.3, AP-42, Volume I, Fifth Edition, Supplement B, October 1996.

10. Emissions and operation of the Energy Center shall not exceed the following limits:

CO		NO_x		PM/PM_{10}		SO_2		VOM	
(T/Mo)	(T/Yr)	(T/Mo)	(T/Yr)	(T/Mo)	(T/Yr)	(T/Mo)	(T/Yr)	(T/Mo)	(T/Yr)
9.92	99.17	9.97	99.71	1.22	12.18	1.53	15.3	0.86	8.64

a. The above limitations are being established in this permit pursuant to Title I of the Clean Air Act, specifically 35 Ill. Adm. Code Part 203, Major Stationary Sources Construction and Modification and 40 CFR 52.21, Prevention of Significant Deterioration (PSD). The source has requested that the Illinois EPA establish emission limitations and other appropriate terms and conditions in this permit that limit the CO, NO_x, PM_{10}, SO_2, and VOM emissions from the Energy Center below the levels that would trigger the applicability of these rules.

b. The emissions of Hazardous Air Pollutants (HAPs) as listed in Section 112(b) of the Clean Air Act from the Energy Center shall be less than 10 tons/year of any single HAP and 25 tons/year of any combination of such HAPs. As a result of this condition, this permit is issued based on the emissions from the Energy Center not triggering the requirements of Section 112(g) of the Clean Air Act.

c. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

11a. The Energy Center may be operated for a period of 180 days under this Construction Permit. Within this time period, or within 60 days after achieving maximum firing rates, whichever occurs first, the Permittee shall conduct initial performance tests in accordance with Conditions 12 and 13.

b. Combustion Turbine No. 2, Heat Recovery Steam Generator No. 2, and Steam Boiler No. 3 shall not begin operation until construction, including construction of any air pollution control equipment is complete, and reasonable measures short of actual operation have been taken to verify proper operation.

12. The emissions of Combustion Turbine No. 2 and Heat Recovery Steam Generator No. 2 shall be measured by an independent testing service approved by the Illinois EPA as follows to determine compliance with the emissions limits in Conditions 1 and 8(b):

a. Within 60 days after operating a turbine at the greatest load at which it will normally be operated but not later than 180 days after its initial startup, provided however that if the Permittee provides representative monitoring data for CO, NO_x and SO_2 emissions, the Illinois EPA may extend the time for emissions testing.

b. Within 120 days after a written request from the Illinois EPA, for such pollutants listed above as specified by the request.

c. 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(a).

d. The following methods and procedures shall be used for testing of emissions from Combustion Turbine No. 2:

i. USEPA Reference Test Methods shall be used as follows:

Opacity	USEPA Method 9
Carbon Monoxide	USEPA Method 10
Nitrogen Oxides	USEPA Method 20 or as specified in 40 CFR 75.
Sulfur Dioxide	USEPA Method 20

ii. Measurements for NO_x shall be conducted in accordance with 40 CFR 60.335.

iii. Opacity of exhaust shall be measured at peak, intermediate and minimum gas turbine load.

13. The emissions of Steam Boiler No. 3 shall be measured by independent testing service approved by the Illinois EPA as follows to determine compliance with the emissions limits in Conditions 2 and 7(c):

a. The performance test(s) and monitoring requirements for sulfur dioxide emissions may be met by sampling and analyzing the initial tank of oil and demonstrating that it contains less than the required weight percent sulfur. Thereafter, the tank shall be sampled and analyzed after each new shipment of oil, as specified in 40 CFR 60.44c. Alternatively, the Permittee shall comply by meeting the fuel supplier certification requirements described in 40 CFR 60.48c.

b. The performance test(s) required to evaluate compliance with 40 CFR 60.43c shall be conducted in accordance with 40 CFR 60.45c(a)(7), USEPA Method 9, the determination of opacity from stack emissions. Satisfactory completion of these tests is a prerequisite to the issuance of an operating permit.

14. Testing Notifications

a. 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 the operating parameters for Combustion Turbine No. 2 and Steam Boiler No. 3 will be tracked and recorded;

iii. The specific determinations of emissions those are intended to be made, including sampling and monitoring locations and identification of air pollutants that will be measured. As part of this plan, the Permittee may set forth a strategy for performing emission testing of Combustion Turbine No. 2 and Combustion Turbine No. 3 provided that these emission units are fitted for testing; the identity of the emission units to be tested is determined immediately before testing, by the Illinois EPA or otherwise randomly; and continuous emission monitoring of CO, NO_x and SO_2 is present on all turbines. The Permittee may also propose a plan for testing across the normal operating range of Combustion Turbine No. 2; and

iv. The test method(s) that will be used, with the specific analysis technique, if the method can be used with different analysis techniques.

b. 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.

c. 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 ft^3);

B. Firing rate (million Btu/hr);

C. Fuel heat content, both high heat value and low heat value (million Btu/Standard ft^3); and

D. Turbine/Generator output rate (MW).

v. NO_x and CO emissions data determined from the CEMS as recorded for each test run; and

vi. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.

15. The Permittee shall maintain records of the following items:

a. Number of operating hours for distillate fuel oil usage for each steam boiler and back-up generator (hours/month and hours/year);

b. Number of operating hours for each steam boiler, each combustion turbine and heat recovery steam generator, and the back-up generator (hours/month and hours/year);

c. Pursuant to 40 CFR 60.48c(e)(11) and 60.48c(f)(1), if fuel supplier certification is used to demonstrate compliance, the Permittee shall retain records of fuel supplier as described below. In addition to records of fuel supplier certification, the report shall include a certified statement signed by the owner or operator of the affected facility that the records of fuel supplier certifications submitted represent all of the fuel combusted during the reporting period. Fuel supplier certification shall include the following information for distillate oil:

i. The name of the oil supplier; and

ii. A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil in 40 CFR 60.41c.

d. Pursuant to 40 CFR 60.48c(g), the owner or operator of each affected facility shall record and maintain records of the amounts of each fuel combusted during each day;

e. Pursuant to 40 CFR 60.334(b), the owner or operator of any stationary gas turbine subject to the provisions of 40 CFR 60 Subpart GG shall monitor sulfur content and nitrogen content of the fuel being fired in the turbine. The frequency of determination of these values shall be as follows:

i. If the turbine is supplied its fuel from a bulk storage tank, the values shall be determined on each occasion that fuel is transferred to the storage tank from any other source.

ii. If the turbine is supplied its fuel without intermediate bulk storage the values shall be determined and recorded daily. Owners, operators or fuel vendors may develop custom schedules for determination of the values based on the design and operation of the affected facility and the characteristics of the fuel supply. These custom schedules shall be substantiated with data and must be approved by the USEPA and Illinois EPA before they can be used to comply with 40 CFR 60.334(b).

f. Monthly and aggregate annual emissions of CO, NO_x, PM, PM_{10}, SO_2, and VOM from each steam boiler, each combustion turbine and heat recovery steam generator, and the back-up generator with supporting calculations.

16. 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.

17. 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.

18. 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
9511 West Harrison
Des Plaines, Illinois 60016

Please note that during the analysis of this permit application, it was determined that your facility has the potential to emit more than 100 tpy of nitrogen oxides (NO_x) and sulfur dioxide (SO_2) and will be classified as a major source under the Clean Air Act Permit Program (CAAPP). To avoid the CAAPP permitting requirements, you may want to consider applying for a Federally Enforceable State Operating Permit (FESOP). A FESOP is an operating permit which contains Federally enforceable limits in the form of permit conditions which effectively restrict the potential emissions of a source to below major source thresholds, thereby excluding the source from the CAAPP. Please contact the Permit Section at 217/782-2113 to request the necessary application forms.

If you have any questions on this, please call Randy Solomon at 217/782-2113.

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

DES:RBS:psj

cc: Region 1

Attachment A - Emission Summary

This attachment provides a summary of the maximum emissions of the Energy Center operating in compliance with the requirements of this federally enforceable permit. In preparing this summary, the Illinois EPA used the annual operating scenario which results in maximum emissions from such a plant. This is 500 hours per year of operation of the steam boilers and 300 hours per year of operation of the back-up generator on distillate fuel oil, and a total maximum 8,760 hours per year of natural gas usage for the steam boilers and combustion turbines and heat recovery steam generators. The resulting maximum emissions are well below the levels, e.g., 100 tons per year of carbon monoxide, 100 tons per year of nitrogen oxides, 100 tons per year of sulfur dioxide, and 25 tons per year of volatile organic material, at which this source would be considered a major source for purposes of Title I of the Clean Air Act, specifically 35 Ill. Adm. Code Part 203, Major Stationary Sources Construction and Modification and 40 CFR 52.21, Prevention of Significant Determination (PSD). Actual emissions from the Energy Center will be less than predicted in this summary to the extent that less distillate fuel oil is fired by the Energy Center, gaseous fuel is used, and control measures are more effective than required in this permit.

	Annual Emissions (Tons/Year)				
Item of Equipment	CO	NO_x	PM/PM_{10}	SO_2	VOM
Steam Boilers Nos. 1 and 2	20.34	19.44	3.78	9.82	1.68
Steam Boiler No. 3	10.17	9.72	1.89	4.91	0.84
Combustion Turbine No. 1 and Heat Recovery Steam Generator No. 1	23.12	26.95	3.03	0.14	2.94
Combustion Turbine No. 2 and Heat Recovery Steam Generator No. 2	45.47	41.75	3.34	0.13	3.17
Back-Up Generator	0.07	1.85	0.14	0.3	0.01
Totals	99.17	99.71	12.18	15.3	8.64

RBS:psj