draft

217/782-2113

CONSTRUCTION PERMIT -- REVISED

PERMITTEE

Soyland Power Cooperative, Inc.
Attention: Randy Fisher/Production Superintendent
Route 100
Pearl, Illinois 62361

Application No: 98120050 I.D. No.: 171851AAA
Applicants Designation: Date Received: December 9, 1999
Subject: Gas Turbines (Power Production)
Date Issued:
Location: 1175 East Campbell Road, Alsey, Scott County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of five gas turbines designated as ACT 1 through 5 as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1a. This permit is issued based on the turbines not being subject to the NSPS for the Stationary Gas Turbines because the turbines were originally constructed prior to October 3, 1977.

b. This permit is issued based on the turbines not being subject to the requirements of the Acid Rain Program because the turbines are simple cycle turbines and originally commenced operation before November 15, 1990 (40 CFR 72.6 (b)(1)).

2a. i. The only fuels fired at the facility shall be natural gas and distillate fuel oil.

ii. Distillate fuel oil with a sulfur content greater than 0.3 weight percent shall not be fired in the turbines.

b. Combined operation of the five turbines shall not exceed a fuel heat input of 1,131,818 mmBtu per year. Compliance with the annual limitation shall be determined from a running total of 12 months of data.

c. The LM 25 turbines shall each be equipped, operated during natural gas firing, and maintained with water injection technology in the combustors to control emissions of $NO_X$.

d. Hourly emissions from each ACT 1 and 2 turbines shall not exceed the following limits:

| Fuel | $NO_X$ | CO | VOM | $SO_2$ | $PM/PM_{10}$ |
|---|---|---|---|---|---|

| type | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) | (lb/hr) |
|---|---|---|---|---|---|
| Gas | 165.0 | 41.3 | 9.0 | 0.5 | 7.2 |
| Oil | 261.8 | 18.0 | 9.0 | 113.6 | 14.3 |

These limits are based on emission factors from USEPA's Compilation of Air Pollutant Emission Factors (AP-42) and information provided in the permit application.

e. Hourly emissions from each ACT 3 and 4 turbines shall not exceed the following limits. When ice fog is deemed a traffic hazard by the Permittee, the turbines may exceed the $NO_X$ lb/hr limit and are exempt from Condition 2(c).

| Fuel type | $NO_X$ (lb/hr) | CO (lb/hr) | VOM (lb/hr) | $SO_2$ (lb/hr) | $PM/PM_{10}$ (lb/hr) |
|---|---|---|---|---|---|
| Gas | 80.0 | 50.0 | 4.8 | 0.5 | 4.4 |
| Oil | 139.3 | 9.5 | 3.4 | 100.0 | 7.6 |

These limits are based on emission factors from USEPA's Compilation of Air Pollutant Emission Factors (AP-42) and information provided in the permit application.

f. Hourly emissions from ACT 5 turbine shall not exceed the following limits.

| Fuel type | $NO_X$ (lb/hr) | CO (lb/hr) | VOM (lb/hr) | $SO_2$ (lb/hr) | $PM/PM_{10}$ (lb/hr) |
|---|---|---|---|---|---|
| Gas | 134.7 | 33.7 | 7.4 | 0.2 | 5.9 |
| Oil | 210.1 | 14.5 | 5.1 | 15.2 | 11.4 |

These limits are based on emission factors from USEPA's Compilation of Air Pollutant Emission Factors (AP-42) and information provided in the permit application.

g. 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.

| Pollutant | Emissions (tons/year) |
|---|---|
| $NO_X$ | 249 |
| CO | 58 |
| VOM | 13 |
| $SO_2$ | 9 |
| $PM/PM_{10}$ | 11 |

The above limits are established pursuant to 40 CFR 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.

4. 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.

5a. Under this permit, ACT 5 may be operated for a period of up to 180 days from initial startup to allow for equipment shakedown and emissions testing. 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 facility as allowed by Section 39.5 (5) of the Environmental Protection Act.

6. The turbines shall be equipped, operated, and maintained with a system to measure and record their fuel consumption.

7. The Permittee shall sample and analyze for sulfur and nitrogen content of the fuels being fired in each CT in accordance with 40 CFR 60.334(b) unless the Permittee has a custom schedule approved by the USEPA, for the determination of these values based on the design and operation of the source and the characteristics of the fuel supply.

8. The sulfur and nitrogen content of the fuel oil shall be determined on each occasion that the fuel is transferred to the storage tank. The sulfur and nitrogen contents of the fuel shall be based on the weighted average of material in the storage tank, or the sulfur and nitrogen contents of the supply shall be assumed to be the highest content in any shipment transferred to the tank.

9a. Within 60 days after achieving the maximum production rate at which the gas turbines will be operated, but not later than 180 days after initial startup, the nitrogen oxides ($NO_X$), carbon monoxide (CO), and oxygen ($O_2$) concentrations in the exhaust of the turbines shall be measured by an approved independent testing service to determine compliance with the emission limits in Condition 2 while firing both natural gas and oil at maximum load.

b. The following USEPA methods and procedures shall be used for testing of emissions, unless another USEPA method is approved or specified by the Illinois EPA.

| | |
|---|---|
| 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 |
| Nitrogen Oxides | USEPA Method 20 |
| Carbon Monoxide | USEPA Method 10 |

c. 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 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 turbines and for testing for oil firing. The Permittee shall include the analytical methods and procedures used to determine the nitrogen content of the fuel oil being fired.

d. 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 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of five 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.

e. 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 $ft^3$ or gallons);

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.

f. With the Final Report, the Permittee shall also submit any request for revising the limits in Condition 2. This request shall be based on the results of emission testing.

10a. The Permittee shall maintain records of the following items:

i. The sulfur and nitrogen contents of the fuel used;

ii. Operating hours and fuel consumption for each turbine including fuel type, on a daily basis;

b. The Permittee shall keep a maintenance/repair log for each turbine, including a log for the water injection system on ACT 3 and 4.

c. The Permittee shall maintain the following records:

i. Heat content of the natural gas (Btu/$ft^3$) and fuel oil (Btu/gal) being fired, with supporting documentation;

ii. Fuel consumption for each turbine for each month since the previous record.

iii. Annual heat input of all turbines (mmBtu) based on monthly totals of fuel consumption and fuel heat content.

iv. The annual emissions of $NO_X$, $SO_2$, PM, VOM and CO for each month since the previous record with supporting calculations.

d. All records required by this permit shall be retained for three years and shall be available for inspection and copying by the Illinois EPA.

11. 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

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
5415 North University
Peoria, IL 61614

Telephone 309/693-5461 Facsimile 309/693-5467

It should be noted that this permit has been revised to include ACT 5.

If you have any questions concerning 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

CC: Region 2