STATEMENT OF BASIS
Air Pollution Control
Title V Permit to Operate
Permit No. V-LL-2706100011-09-02

The purpose of this document is to set forth the legal and factual bases for permit conditions, including references to applicable provisions of the Clean Air Act (CAA or Act) and implementing regulations. This document also gives the derivation of conditions as required by 40 C.F.R. § 71.11(b).

1. GENERAL INFORMATION

(A) Applicant and Stationary Source Information

Owner	Facility (SIC Code: 4922)
Great Lakes Gas Transmission Limited Partnership 5250 Corporate Drive Troy, Michigan 48908	Compressor Station No. 4 31641 Great Lakes Road Deer River, Minnesota 56636

Responsible Official	Facility Contact
Anthony Kornaga (248) 205-7465	Juan Rios (832) 320-5365

(B) Facility Description

Great Lakes Gas Transmission Limited Partnership (Great Lakes) operates nearly 2,000 miles of large diameter underground pipeline, which transports natural gas for delivery to customers in the mid-western and northeastern United States and eastern Canada. The Great Lakes pipeline system, and other interstate natural gas transmission pipelines, make up the long-distance link between natural gas production fields, local distribution companies, and end users. The pipeline's 14 compressor stations, located approximately 75 miles apart, operate to keep natural gas moving through the system. Compressors operated at these stations add pressure to natural gas in the pipeline causing it to flow to the next compressor station. The pipeline normally operates continuously, but at varying load, 24 hours per day and 365 days per year.

Compressor Station No. 4 (CS #4) is located approximately 3 miles west of the City of Deer River in Itasca County, Minnesota. The facility property occupies an area of approximately 20 acres and is owned and maintained by Great Lakes. CS #4 currently consists of two stationary natural gas-fired turbines (EU-001, EU-002), which in turn drive two natural gas compressors. Additionally, one natural gas-fired standby electrical generator (EU-003) provides electrical power for critical operations during temporary electrical power outages and during peak loading.

(C) Area Classification

CS #4 is located approximately 80 miles from the Wisconsin border on privately-owned fee land within the exterior boundaries of the Leech Lake Band of Ojibwe Indian Reservation. The U.S. Environmental Protection Agency is responsible for issuing and enforcing any air quality permits for the source until such time that the Tribe has EPA approval to do so.

The facility is located in Itasca County, Minnesota which is designated attainment for all criteria pollutants. There are no Prevention of Significant Deterioration (PSD) Class I areas within 100 kilometers of CS #4.

(D) Major Source Status

CS #4 requires a Title V permit because it has the potential to emit greater than 100 tons per year of nitrogen oxide and carbon monoxide.

(E) Enforcement Issues and Permit Shield

The EPA is not aware of any pending enforcement issues at this facility.

(F) Permit History

In the late 1990s, EPA reviewed the status of sources located in Indian country. During this review it was determined that the Great Lakes CS #4 was located in Indian Country and was erroneously issued both construction and operating permits by the State of Minnesota. Since Minnesota does not have authority to issue permits to sources in Indian Country, all air quality construction and operating permit issued by the Minnesota Pollution Control Agency (MPCA) are considered invalid for purposes of satisfying federal requirements. On September 28, 2004, EPA issued a Title V operating permit in accordance with 40 C.F.R. Part 71 to correct this oversight and issue Great Lakes a valid Title V operating permit. That Part 71 operating permit included the federal regulations applicable to the facility and did not reference or incorporate any permit issued by the State of Minnesota.

Although the permits issued by MPCA are not considered valid permits, these permits have been listed below for reference and informational purposes:

- Permit No. 365E-92-OT-1 (Issued by MPCA on July 9, 1992) - Permit authorizing Great Lakes to replace two existing smaller (7,500 hp and 7,800 hp) Orenda natural gas fired combustion turbines with one new General Electric 15,300 hp (at NEM conditions) natural gas fired turbine. Since this replacement

did not result in a significant increase in emissions (as defined by 40 C.F.R. Part 52), the facility was not required to perform a BACT analysis for this permit.

- Amendment No. 1 to Permit No. 365E-92-OT-1 (Issued by MPCA on July 12, 1993) - Amendment extending the date upon which Great Lakes must certify that the existing Orenda Turbines have been removed or made physically inoperable.

- Amendment No. 2 to Permit No. 365E - 92-OT-1 (Issued by MPCA on May 17, 1994) - Incorporates a custom fuel monitoring plan for sulfur in accordance with the New Source Performance Standards (NSPS), Subpart GG.

- Title V Operating Permit No. 06100011-001 (Issued by MPCA on December 2, 1998)

- Title V Operating Permit No. V-LL-R50002-04-01 (Issued by EPA on September 28, 2004)

Great Lakes submitted a Title V permit application to renew its 2004 Title V operating permit for CS # 4 to EPA on February 25, 2009. EPA is issuing this draft Part 71 permit based on the 2009 application.

2. PROCESS DESCRIPTION AND EMISSIONS

(A) Emission Unit Summary

Emission Unit	Description	Manufacturer /Model	Date of Construction	Heat Input (MMbtu/hr)
EU 001	Natural Gas-fired Turbine	Rolls Royce Avon 101G	1971	187.2
EU 002	Natural Gas-fired Turbine	General Electric LM 1600	1993, replaced two units originally installed in 1969 and 1970	184.0
EU 003	Natural Gas-fired Standby Electrical Generator	Waukesha Motor Co. L36GL (low emission unit)	1997, replaced a unit originally installed in 1968	7.2

(B) Insignificant Activities

Unit/Activity	Basis
3 Space heaters	40 C.F.R. § 71.5(c) (11) (i) (D)

1 Diesel storage tank (400 gallons)	40 C.F.R. § 71.5(c) (11) (ii) (A)
Natural-gas fired boiler (5.2 MMBtu/hr)	40 C.F.R. § 71.5(c) (11) (i) (D)
Gasoline-fired generator (2.8 HP)	40 C.F.R. § 71.5(c) (11) (ii) (A)
Gasoline-fired water pump (3.5 HP)	40 C.F.R. § 71.5(c) (11) (ii) (A)
Parts cleaning bin (30 gallons/year)	40 C.F.R. § 71.5(c) (11) (ii) (A)
Abrasive cleaning operation	40 C.F.R. § 71.5(c) (11) (ii) (A)
Welding (20 hours/year)	40 C.F.R. § 71.5(c) (11) (ii) (A)

(C) Potential Emissions

EPA prepared the following tables by calculating emission factors for the turbines for nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOC) from performance test performed at the facility in May of 2005. EPA used the maximum ambient horsepower rating (HP) for each unit when calculating Potential to Emit (PTE) for the system.

Emission Factors (lb/MMBtu)								
EU	Unit	PM	SO2	NOx	CO	VOC	Pb	Total HAPs
001	Turbine	0.0066[a]	0.0032[a]	0.205[d]	0.493 [d]	0.0021[a]	ND	0.00103[a]
002	Turbine	0.0066[a]	0.0032[a]	0.445 [d]	0.009 [d]	0.0021[a]	ND	0.00103[a]
003	Generator	0.0483[b]	0.000588[b]	0.574 [c]	0.317[b]	0.118[b]	ND	0.097[b]

a From EPA AP-42, Tables 3.1-1, 3.1-2a and 3.1-3, Chapter 3.1 for stationary gas turbines, published April 2000. Percent sulfur in pipeline quality natural gas defined by note h.
b From EPA AP-42, Table 3.2-1, Chapter 3.2 for gas-fired reciprocating engines, published July 2000.
c Based on manufacturer's specifications.
d From March 2005 performance test, submitted to EPA on May 11, 2005.
ND No Data

Potential to Emit Summary (tons per year)								
EU	Unit	PM	SO2	NOx	CO	VOC	Lead	Total HAPs
001	Turbine	5.4	2.64	168.1	404.2	1.72	ND	0.8
002	Turbine	5.3	2.58	358.6	7.25	1.69	ND	0.8
003	Generator	1.5	0.02	18.1	10.0	3.7	ND	3.1
Total Potential Emissions		12.2	5.24	649.8	504.1	7.11	ND	4.7

ND No Data

PTE Calculations:

PTE = Emission Factor x Maximum Designed Heat Input x Operational limitations

Example for EU 001: 187.2 MMBtu/hr

Particulate matter (PM): 0.0066 lb/MMBtu* 187.2 MI4Btu/hr * 8760 hr/yr * 0.0005 ton/lb = 5.4 tpy

(D) Actual Emissions

The following is based the facility's 2007 emission estimates.

Actual Emissions Summary (tons per year)								
EU	Unit	PM-10	SO2	NOx	CO	VOC	Lead	Total HAPs
001	Turbine	2.6	1.3	95.1	228.6	0.8	0.0	0.4
002	Turbine	2.7	1.4	221.8	4.5	0.9	0.0	0.4
003	Generator	0.0	0.0	0.2	0.1	0.0	0.0	0.0
Total Actual Emissions		5.3	2.7	317.1	233.1	1.7	0.0	0.8

3. APPLICABLE REQUIREMENTS

(A) Title V Operation Permitting

In accordance with 40 C.F.R. § 71.3(a) (1), all major stationary sources are required to obtain a Title V operating permit. "Major source" is defined in 40 C.F.R. § 71.2 as any stationary source belonging to a single major industrial grouping that directly emits, or has the potential to emit, 100 tons per year or more of any criteria pollutant. Since CS#4 has the potential to emit greater than 100 tons per year of NOx and CO, it is a major stationary source subject to Title V.

(B) New Source Performance Standards (NSPS)

In 1993, Great Lakes replaced two smaller gas turbines with one larger 23,000 hp gas turbine (EU-002), subjecting this unit to the NSPS, Subpart GG, Standards of Performance for Stationary Gas Turbines. (See 40 C.F.R. §60.330)

1. NSPS Limits for NOx

   In accordance with 40 C.F.R. § 60.332(d), "stationary gas turbines with a manufacturer's rated base load at ISO conditions of 30 megawatts or less ... shall comply with part 60.332 (a) (2)."

   i. EU 002 Manufacturer's rated base load:

$$23{,}000HP \times \frac{745.7W}{1HP} \times \frac{1MW}{10^6 W} = 17.1MW$$

ii. NSPS NOx emission limit:

$$STD = 0.0150\frac{(14.4)}{Y} + F$$

$$STD = 0.0150\frac{(14.4)}{11.00} + 0$$

STD = 196 ppm @ 15% O_2 on a dry basis

Where:

STD = allowable NOx emissions (percent by volume at 15 percent oxygen and on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

From table 4.1 of the February 25, 2009 application

$$Y = 11.00\frac{KJ}{W \cdot hr}$$

F = N0x emission allowance for fuel-bound nitrogen as defined in paragraph 40 C.F.R. § 60.332(a)(3). Since fuel bound nitrogen is less than 0.015% by weight, F equals zero.

2. NSPS SO_2 emission limit

The Permittee has elected to comply with 40 C.F.R. § 60.333(b), "... No owner or operator subject to provisions of this subpart shall burn in any stationary gas turbine any fuel which contains sulfur in excess of 0.8% by weight."

3. NSPS Subpart GG Custom Fuel Monitoring

On November 20, 1998, Great Lakes obtained EPA approval to implement a custom fuel monitoring plan for EU 002, in accordance with 40 C.F.R. § 60.334(i)(3). The custom plan was used in place of the sulfur monitoring requirements contained in section 60.334(i)(2). Under the plan, EPA waived the sulfur monitoring requirement as long as the facility uses pipeline quality natural gas. However, on February 24, 2006, EPA updated Subpart GG. 40 C.F.R. § 60.334(h)(3) no longer requires a custom fuel monitoring plan if the owner/operator of the turbine demonstrates that gaseous fuel meets the definition

of natural gas in 40 C.F.R. § 60.331(u). Great Lakes has chosen to make this demonstration using a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less. Therefore, EPA is removing the custom fuel monitoring plan requirements from the permit.

(C) PSD Permitting

Great Lakes has not undergone any construction activities that would have triggered PSD in the last 5 years.