

Technical Support Document
Air Quality Title V Permit to Operate
Permit No. V-LL-2706100011-14-01

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	Tiffany Grady (832) 320-5835

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 loads, 24 hours per day and 365 days per year.

Compressor Station No. 4 (CS #4) is located approximately three 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.

On January 9, 2015, TransCanada, owners of Great Lakes Transmission Limited Partnership, sent a letter notifying of a proposed power turbine and jet exchange for unit 402 of a 23,000 horsepower General Electric Model LM1600 turbine.

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 permits 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 and 7,800 hp) Orenda natural gas fired combustion turbines with one new General Electric 15,300 hp 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 Standard (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.
- Title V Operating Permit No. V-LL-2706100011-09-02 (Issued by EPA on October 2, 2009).

On April 30, 2014, Great Lakes submitted its Title V Part 71 permit renewal application to EPA. EPA is proposing to issue the Title V renewal permit based on this 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 (18,000 hp)	Rolls Royce Avon 101G	1971	187.2
EU 002	Natural Gas-fired Turbine (23,000 hp)	General Electric LM 1600	1993, replaced two units originally installed in 1969 and 1970	184.0
EU 003	Natural Gas-fired Standby Electrical Generator (899 hp)	Waukesha Motor Co. L36GL (low emission unit)	1997, replaced a unit originally installed in 1968	7.2
EU 004	Natural Gas-fired Boiler	Kewanee L3W125-G	1993	5.23

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)
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)
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C. Potential Emissions

EPA prepared the following tables by calculating emission factors for the turbines for nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOC) from performance tests 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 ₁₀	SO ₂	NO _x	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
004	Boiler	7.6	0.6	100	84	5.5	ND	---- ^e

- 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.
 - e HAP emission factors are from AP-42 Emission Factor Table 1.4-3, July 1998.
- ND No Data

Potential to Emit Summary (tons per year)								
EU	Unit	PM ₁₀	SO ₂	NO _x	CO	VOC	Lead	Total HAPs
001	Turbine	5.41	2.79	201.70	485.07	1.72	ND	0.84
002	Turbine	5.32	2.74	483.55	29.01	1.69	ND	0.83
003	Generator	0.61	0.02	18.08	117.18	0.93	ND	1.02
004	Boiler	0.17	0.01	2.25	1.89	0.12	ND	0.04
Total Potential Emissions		11.51	5.56	705.58	633.16	4.47	ND	2.73

ND No Data

PTE Calculations:

$$\text{PTE} = \text{Emission Factor} \times \text{Maximum Designed Heat Input} \times \text{Operational limitations}$$

Example for EU 001: 187.2 MMBtu/hr

Particulate matter (PM):

$$0.0066 \text{ lb/MMBtu} \times 187.2 \text{ MMBtu/hr} \times 8760 \text{ hr/yr} \times 0.0005 \text{ ton/lb} = 5.4 \text{ tpy}$$

D. Actual Emissions

The following is based the facility's 2012 actual emissions based on the actual amount of natural gas consumed by each unit and using the recorded hours of operation.

Actual Emissions Summary (tons per year)								
EU	Unit	PM ₁₀	SO ₂	NO _x	CO	VOC	Lead	Total HAPs
001	Turbine	0.006	0.003	0.22	0.52	0.002	ND	0.0009
002	Turbine	0.006	0.003	0.50	0.03	0.002	ND	0.0009
003	Generator	0.02	0.0005	0.48	3.12	0.02	ND	0.03
004	Boiler	0.005	0.0004	0.06	0.05	0.003	ND	0.001
Total Actual Emissions		0.03	0.007	1.26	3.72	0.03	ND	0.03

ND No Data

3. APPLICABLE EQUIREMENTS

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 NO_x and CO, it is a major stationary source subject to Title V.

In this renewal of an existing part 71 permit, the EPA is not including the emergency provisions located in permit condition Q. Emergency Provisions in the existing part 71 permit. These provisions were modeled on the "Emergency provision" contained in the regulations contained in 40 CFR part 71 applicable to federal operating permit programs. Specifically, in the regulations discussing the contents of title V operating permits issued under the federal operating permits program, 40 CFR 71.6(g) provides that certain "emergency" events that can constitute "an affirmative defense in an action brought for non-compliance" with certain emission limits contains in the permit, when certain conditions are met. However, nothing in the CAA or 40 CFR part 71 requires that these types of emergency provisions be included as conditions in operating permits issued by the EPA, and for the reasons discussed below, we are exercising our discretion not to include them in this [final OR proposed renewal] part 71 permit.

In 2014, a federal court ruled that the CAA does not authorize the EPA to create affirmative defense provisions applicable to certain enforcement actions. *See NRDC v. EPA*, 749 F.3d 1055 (D.C. Cir. 2014). The court ruled that Sections 113 and 304 of the Clean Air Act preclude the EPA from creating affirmative defense provisions in the Agency's regulations imposing hazardous air pollutants emission limits on sources. The court concluded that those affirmative defense provisions purported to alter the jurisdiction of federal courts generally provided in the CAA to assess liability and impose penalties for violations of emission limits in private civil enforcement cases, and that the CAA did not provide authority for the EPA to do so. Consistent with the reasoning in the *NRDC v. EPA*

court decision, EPA has determined that is also not appropriate under the CAA to alter the jurisdiction of the federal courts through affirmative defenses provisions in its title V regulations, such as those contained in the emergency provisions of 40 CFR 71.6(g), and that such provisions are inconsistent with the CAA. In light of the above-described D.C. Circuit Court decision and the EPA's obligation to issue title V permits consistent with the applicable requirements of the Act, it is no longer appropriate to [include OR propose to include] permit conditions modeled on affirmative defenses such as those contained in the emergency provisions of 40 CFR 71.6(g) in operating permits issued by the EPA.

Although the EPA views the Part 71 emergency provisions as discretionary (i.e., neither the statute nor the regulations mandate their inclusion in Part 71 permits), the EPA is considering whether to make changes to the operating permit program regulations in order to ensure the EPA's regulations are consistent with the recent D.C. Circuit decisions; and if so, how best to make those changes. Until that time, as part of the normal permitting process, it is appropriate for the EPA permitting authorities to rely on the discretionary nature of the existing emergency provisions to choose not to continue to include permit terms modeled on those provisions in operating permits that we are issuing in the first instance or renewing. By doing so, we are not only fulfilling the EPA's obligation to issue title V permits consistent with the applicable requirements of the Act, but we will also help ensure that permittees do not continue to rely on permit provisions that have been found legally invalid. Accordingly, in this proposed renewal part 71 permit, the EPA is exercising its discretion to not include the emergency provisions located in permit condition Q in the existing part 71 permit, in order to ensure the Part 71 permit is in compliance with the applicable requirements of the Act.

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). In 2015, Great Lakes replaced the LM 1600 turbine, unit 402, with a "like-kind" replacement. There are no other changes to the permit from the 2009 operating permit.

1. NSPS Limits for NO_x

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)."

2. NSPS SO₂ 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."

C. PSD Permitting

Great Lakes has not undergone any construction activities that would have triggered PSD

during the last five years.