

AIR EMISSION PERMIT NO. 01700011-003

IS ISSUED TO

Northern Natural Gas Company

Northern Natural Gas - Wrenshall
County Road 1
Wrenshall, Carlton County, MN 55797

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date	Issue Date	Action Number
Total Facility Operating Permit	09/15/1995	2/24/2000	001
Major Amendment	MPCA Re-opening	May 6, 2003	002
Major Amendment	MPCA RE-opening	See below	003

This permit authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; Pt 70

Issue Date: December 20, 2004

Expiration: February 24, 2005
All Title I Conditions do not expire.

Richard J. Sandberg
Air Quality Permits Section Manager
Industrial Division

for Sheryl A. Corrigan
Commissioner
Minnesota Pollution Control Agency

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NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
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Outside Metro Area	1-800-657-3864
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TTY	(651) 282-5332
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The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

The facility is a natural gas compressor station on County Road 1 near Wrenshall, Minnesota. The Wrenshall station is used to liquefy and store natural gas for later vaporization and distribution into the underground natural gas pipelines as needed. The facility consists of a compressor/turbine building which houses two natural gas-fired turbines, three natural gas-fired vaporizers, a 630,000 barrel LNG storage tank with a flare which is used to combust excess gasses from the tank, a diesel-fired fire water pump and a natural gas-fired space heater. The facility is a major PSD source. The turbines were installed in 1972 prior to the October 1977 effective date for the NSPS for Gas Turbines.

ACTION 002

This permitting action was a non-mandatory re-opening of the permit by the MPCA to change the Title V modeling requirements to reflect the current Minnesota Pollution Control Agency (MPCA) policy dated August 10, 2001. This permit changed the requirements from submittal of a protocol and modeling results, to the submittal of computer dispersion modeling information only.

ACTION 003

This permitting action was a re-opening of the permit by the MPCA due to an applicability determination request. This permitting action establishes a fuel sulfur content limit for EU 006, as it is subject to 40 CFR 60, Subp. GG. It also allows for the replacement of similar natural gas turbine units.

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item:**Total Facility**

What to do	Why to do it
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.	Minn. R. 7017.2025
Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdowns: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control or process equipment if the breakdown causes any increase in the emission of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required under the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon thereafter as possible, notify the Commissioner of the cause of the breakdown and the estimated duration. Notify the Commissioner again when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007.0800, subp. 5(B)
Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location.	Minn. R. 7007.0800, subp. 9(A)
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Subject Item: GP 001 Natural gas-fired Vaporizers**Associated Items:** EU 002 LNG Vaporizer

EU 003 LNG Vaporizer

EU 004 LNG Vaporizer

SV 002 LNG Vaporizer

SV 003 LNG Vaporizer

SV 004 LNG Vaporizer

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Subject Item: SV 001 Diesel-fired Fire Pump**Associated Items:** EU 001 Flare

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Subject Item: EU 005 Natural Gas-Fired Turbine**Associated Items:** SV 005 Natural Gas-Fired Turbine

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
ALTERNATIVE OPERATING SCENARIO FOR REPLACEMENTS MANUFACTURED AFTER OCTOBER 3, 1977	hdr
Sulfur Content of Fuel: less than or equal to 0.8 percent by weight	40 CFR Section 60.333(b); Minn.R. 7011.2350
Fuel Usage: Natural gas only, by design.	Minn. R. 7005.0100, subp. 35a
Reporting: If there is a change in fuel supply, the Permittee must notify the Administrator, of such change, for re-examination of the custom fuel-monitoring schedule. A substantial change in fuel quality shall be considered as a change in the fuel supply. (This requirement only applies if the Permittee utilizes a custom fuel monitoring schedule.)	40 CFR Section 60.334(b); Minn. R. 7011.2350
Retain Records: Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any malfunction in the operation of an affected facility; any malfunction in the operation of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.	40 CFR Section 60.7(b)
If required by sulfur content demonstration, analysis for fuel sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternate method. The reference methods are ASTM D1072-80; ASTM D3246-8; and ASTM D4084-82 as referenced in 40 CFR Section 335(b)(2).	40 CFR Section 60.334(d); Minn. R. 7011.2350
Fuel Monitoring: The Permittee shall follow the procedures in 40 CFR Section 60.334(b) to monitor sulfur and nitrogen (if replacement unit initial construction or reconstruction commenced on or after October 3, 1982) applicable content of the fuels combusted in EU 005, unless the Administrator approves: 1) a custom schedule according to 40 CFR Section 60.334(i)(3); 2) alternative monitoring procedures according to 40 CFR Section 60.13(i); or, 3) demonstrations according to 40 CFR Section 60.334(h)(3).	40 CFR Sections 60.334(b) and 60.13(i)
Notification of noncompliance: Should any sulfur analysis indicate noncompliance with 40 CFR Section 60.333, the Permittee shall notify the MPCA of such excess emissions and the custom fuel monitoring schedule shall be re-examined by the Administrator.	40 CFR Section 60.333(b); Minn.R. 7011.2350
Recordkeeping: Records of sample analysis and fuel supply pertinent to the custom fuel monitoring schedule shall be retained for a period of five (5) years, and be available for inspection by personnel of federal state and local air pollution control agencies.	40 CFR Section 60.333(b); Minn.R. 7011.2350
Replacement Combustion Turbine Compressor Engine (RCT): The Permittee may install and operate a pipeline natural gas-fired RCT at the facility as a permanent replacement for EU 005 (the RCT becomes EU 005 upon replacement). The RCT shall: 1. only be a similar unit not exceeding a rated heat input of 40.7 MMBtu/hr and a rated horse power of 4475 hp (at 60 degree F, sea level); 2. meet applicable emission limits and fuel requirements in this subject item; 3. meet the NOx limit in 40 CFR Section 60.332(a)(2) if initial construction or reconstruction (as defined in 40 CFR Section 60.15) of the RCT commenced on or after October 3, 1982; 4. conduct NOx testing as required by 40 CFR Sections 60.335 and 60.8, if initial construction or reconstruction of the RCT commenced on or after October 3, 1982, and NOx testing has not been conducted after the construction or reconstruction;	Minn. R. 7007.0800, subp. 2

(continued)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

<p>Replacement Combustion Turbine Compressor Engine (RCT) - continued:</p> <p>5. meet the gaseous fuel definition provided for natural gas in 40 CFR Section 60.331(u);</p> <p>6. demonstrate compliance with the sulfur content of the gaseous fuel according to 40 CFR 60.334(h);</p> <p>7. exhaust through a stack with dispersion characteristics equal to or better than SV 005. Dispersion characteristics are found in Appendix I.;</p> <p>8. have potential emission rates (in lb/hr) for all pollutants equal to or less than permit limits and potential emission rates of EU 005.</p> <p>The Permittee shall notify the MPCA and the U.S. EPA Chicago office prior to making the replacement. The Permittee shall record the date of commencement of initial construction (the date the manufacturer first constructed the turbine; this is not the date of the last refurbishment/overhaul of the turbine) or reconstruction of the RCT.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
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TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Subject Item: EU 006 Natural Gas-Fired Turbine**Associated Items:** SV 006 Natural Gas-Fired Turbine

What to do	Why to do it
Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.	40 CFR Section 60.7(b)
Sulfur Content of Fuel: less than or equal to 0.8 percent by weight	40 CFR Section 60.333(b); Minn.R. 7011.2350
Fuel Usage: Natural gas only, by design.	Minn. R. 7005.0100, subp. 35a
Reporting: If there is a change in fuel supply, the Permittee must notify the Administrator, of such change, for re-examination of the custom fuel-monitoring schedule. A substantial change in fuel quality shall be considered as a change in the fuel supply. (This requirement only applies if the Permittee utilizes a custom fuel monitoring schedule.)	40 CFR Section 60.334(b); Minn. R. 7011.2350
Retain Records: Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any malfunction in the operation of an affected facility; any malfunction in the operation of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.	40 CFR Section 60.7(b)
If required by sulfur content demonstration, analysis for fuel sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternate method. The reference methods are ASTM D1072-80; ASTM D3246-8; and ASTM D4084-82 as referenced in 40 CFR Section 335(b)(2).	40 CFR Section 60.334(d); Minn. R. 7011.2350
Fuel Monitoring: The Permittee shall follow the procedures in 40 CFR Section 60.334(b) to monitor sulfur and nitrogen (if replacement unit initial construction or reconstruction commenced on or after October 3, 1982) applicable content of the fuels combusted in EU 006, unless the Administrator approves: 1) a custom schedule according to 40 CFR Section 60.334(i)(3); 2) alternative monitoring procedures according to 40 CFR Section 60.13(i); or, 3) demonstrations according to 40 CFR Section 60.334(h)(3).	40 CFR Sections 60.334(b) and 60.13(i)
Notification of noncompliance: Should any sulfur analysis indicate noncompliance with 40 CFR Section 60.333, the Permittee shall notify the MPCA of such excess emissions and the custom fuel monitoring schedule shall be re-examined by the Administrator.	40 CFR Section 60.333(b); Minn.R. 7011.2350
Recordkeeping: Records of sample analysis and fuel supply pertinent to the custom fuel monitoring schedule shall be retained for a period of five (5) years, and be available for inspection by personnel of federal state and local air pollution control agencies.	40 CFR Section 60.333(b); Minn.R. 7011.2350
Replacement Combustion Turbine Compressor Engine (RCT): The Permittee may install and operate a pipeline natural gas-fired RCT at the facility as a permanent replacement for EU 006 (the RCT becomes EU 006 upon replacement). The RCT shall: 1. only be a similar unit not exceeding a rated heat input of 40.7 MMBtu/hr and a rated horse power of 4475 hp (at 60 degree F, sea level); 2. meet applicable emission limits and fuel requirements in this subject item; 3. meet the NOx limit in 40 CFR Section 60.332(a)(2) if initial construction or reconstruction (as defined in 40 CFR Section 60.15) of the RCT commenced on or after October 3, 1982; 4. conduct NOx testing as required by 40 CFR Sections 60.335 and 60.8, if initial construction or reconstruction of the RCT commenced on or after October 3, 1982, and NOx testing has not been conducted after the construction or reconstruction;	Minn. R. 7007.0800, subp. 2

(continued)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

<p>Replacement Combustion Turbine Compressor Engine (RCT) - continued:</p> <p>5. meet the gaseous fuel definition provided for natural gas in 40 CFR Section 60.331(u);</p> <p>6. demonstrate compliance with the sulfur content of the gaseous fuel according to 40 CFR 60.334(h);</p> <p>7. exhaust through a stack with dispersion characteristics equal to or better than SV 006. Dispersion characteristics are found in Appendix I.;</p> <p>8. have potential emission rates (in lb/hr) for all pollutants equal to or less than permit limits and potential emission rates of EU 006.</p> <p>The Permittee shall notify the MPCA and the U.S. EPA Chicago office prior to making the replacement. The Permittee shall record the date of commencement of initial construction (the date the manufacturer first constructed the turbine; this is not the date of the last refurbishment/overhaul of the turbine) or reconstruction of the RCT.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
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TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

Subject Item: CE 001 Flaring**Associated Items:** EU 001 Flare

TK 001 LNG

TK 002 Ethylene

TK 003 Pentane

TK 004 Butane

TK 005 Propane

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity	Minn. R. 7011.0715, subp. 1(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG
Permit Number: 01700011 - 003

Subject Item: TK 001 LNG

Associated Items: CE 001 Flaring

What to do	Why to do it
The storage vessel shall be equipped with a vapor recovery system or its equivalent.	Minn. R. 7011.1505, subp. 3(C)(2)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG
Permit Number: 01700011 - 003

Subject Item: TK 002 Ethylene

Associated Items: CE 001 Flaring

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG
Permit Number: 01700011 - 003

Subject Item: TK 003 Pentane

Associated Items: CE 001 Flaring

What to do	Why to do it
The storage vessel shall be equipped with a vapor recovery system or its equivalent.	Minn. R. 7011.1505, subp. 3(C)(1)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG
Permit Number: 01700011 - 003

Subject Item: TK 004 Butane

Associated Items: CE 001 Flaring

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG
Permit Number: 01700011 - 003

Subject Item: TK 005 Propane

Associated Items: CE 001 Flaring

What to do	Why to do it
The storage vessel shall be equipped with a vapor recovery system or its equivalent.	Minn. R. 7011.1505, subp. 3(C)(2)

TABLE B: SUBMITTALS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG
Permit Number: 01700011 - 003

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Computer Dispersion Modeling Information	due 1096 days after 02/24/2000 . Submit modeling data as specified in MPCA guidance for Modeling Information Requests for NOx. This modeling information is for data collection purposes, no modeling analysis is required at this time. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Total Facility

TABLE B: RECURRENT SUBMITTALS

12/20/04

Facility Name: Northern Natural Gas Co - Wrenshall LNG

Permit Number: 01700011 - 003

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 02/24/2000 . The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31.	Total Facility
Compliance Certification	due 31 days after end of each calendar year starting 02/24/2000 (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner, and to the U.S. EPA regional office in Chicago. This report covers all deviations experienced during the calendar year. The EPA copy shall be sent to: Mr. George Czerniak, Chief, Air Enforcement and Compliance Assurance Branch, Air and Radiation Division, EPA Region V, 77 West Jackson Boulevard, Chicago, Illinois 60604	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year starting 02/24/2000 (April 1). To be submitted on a form approved by the Commissioner.	Total Facility

Permit Number: 01700011-003

[illegible]

TECHNICAL SUPPORT DOCUMENT
For
DRAFT AIR EMISSION PERMIT NO. 01700011-003

This technical support document is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp.1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General Information

1.1. Applicant and Stationary Source Location:

Owner/Operator Address and Phone Number	Facility Address (SIC Code: 4922)
Mr. Ronald Beidelman Division Environmental Specialist 1650 West 82nd Street, Suite 1250 Bloomington, Minnesota 55431 952/887-1712	Northern Natural Gas Company Wrenshall Compressor Station County Road 1 Wrenshall, MN 55797

1.2. Description Of The Facility

The facility is a natural gas compressor station on County Road 1 near Wrenshall, Minnesota. The Wrenshall station is used to liquefy and store natural gas for later vaporization and distribution into the underground natural gas pipelines as needed. The facility consists of a compressor/turbine building which houses two natural gas-fired turbines, three natural gas-fired vaporizers, a 630,000 barrel LNG storage tank with a flare which is used to combust excess gasses from the tank, a diesel-fired fire water pump and a natural gas-fired space heater. The facility is a major PSD source. The turbines were installed in 1972 prior to the October 1977 effective date for the NSPS for Gas Turbines.

1.3 Description of the Activities Allowed by this Permit Action

The Permittee replaced an existing turbine with a similar turbine. The replacement turbine was, however, built in 1980. The Permittee subsequently submitted an applicability determination. In response, this amendment has been prepared. This amendment contains the NSPS sulfur content of fuel limit that was triggered. This amendment also allows the replacement of similar turbines.

This permit action is a state major amendment. Minn. R. 7011.1500. There are no increases in potential emissions as a result of this permit action.

1.4. Facility Emissions:

As stated above, this permit does not authorize any increase in potential emissions. The permit amendment specifically provides that the replacement turbine shall “have potential emission rates (in lb/hr) for all pollutants equal or less than permit emission limits and potential emission rates. . .” However, this permit amendment allows Northern Natural Gas to replace existing turbines as needed.

The following Tables 1 and 2 have been taken out of the 2000 total facility technical support document.

Table 1. Total Facility Potential to Emit Summary:

EU #	SV#	Emission Unit Description	PM tpy	PM10 tpy	SO2 tpy	NOx tpy	VOC tpy	Pb tpy	CO tpy	HAPs tpy
001	001	Flare	0	0	0	86.67	7.14	0	471.59	NA
002	002	LNG Vaporizer	4.36	0.96	0.19	44.58	0.89	0	11.14	NA
003	003	LNG Vaporizer	4.36	0.96	0.19	44.58	0.89	0	11.14	NA
004	004	LNG Vaporizer	4.36	0.96	0.19	44.58	0.89	0	11.14	NA
005	005	Natural-Gas Turbine	0.52	0.52	0	60.64	0.36	0	30.32	NA
006	006	Natural-Gas Turbine	0.52	0.52	0	60.64	0.36	0	30.32	NA
007	007	Diesel-fired Fire	1.85	1.85	12.70	26.28	2.09	0	5.66	NA

TK#	Emission Unit Description	
001	LNG	The refrigerant components are stored in separate above ground storage tanks equipped with pressure relief valves. The valves are not vented to the atmosphere but instead to the flare. The emissions for the tanks are considered in those for the flare. Those from the refrigerants will be negligible (98% destruction)
002	Ethylene	
003	Pentane	
004	Butane	
005	Propane	

Total Facility Limited Potential Emissions*	15.9	5.77	13.2	367.97	12.62	0	571.31	NA
Total Facility Actual Emissions**	1.72	.40	0.071	51.53	2.801	0	168.28	NA

*These are the limited potential emissions from column 3 in GI-07. These total emissions numbers are what would appear in a public notice.

**These were based upon 1995 data

Table 2. Facility (TF) and Permit Classification

Classification (put x in appropriate box)	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	CO, NO _x		PM, PM10, SO _x , VOC, Pb
NAAR (list pollutant)			
Part 70 Permit Program	CO, NO _x		PM10, SO _x , VOC, Pb

- Refers to potential emissions that are less than those specified as major by 40 CFR 52.21, 40 CFR pt. 51, Appendix S, and 40 CFR pt. 70.

2. Regulatory and/or Statutory Basis

New Source Review

The facility is an existing major source under New Source Review regulations.

Under the NSR definition of “major modification,” a physical change or change in the method of operation does not include a “replacement” unit ((b)(2)(iii)(a)). In this situation, the action would appear to meet the definition of a “replacement” unit. In the current CFR, it is noted, that by court order on December 24, 2003, this provision is stayed indefinitely. Hence, this unit is treated as an existing unit. Accordingly, in calculation of emission increases the actual-to-projected actual applicability test is utilized. Given the replacement of a similar unit, there will not be any emission increases for this permit action.

Part 70 Permit Program

The facility is a major source under the Part 70 permit program.

New Source Performance Standards (NSPS)

New Source Performance Standards Subpart GG is triggered by this permit amendment.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

No changes are authorized by this permit.

Minnesota State Rules

No changes are authorized by this permit.

Table 5. Regulatory Overview of Units Affected by the Modification/Permit Amendment

EU, GP, or SV	Applicable Regulations	Comments:
EU 005, EU 006	40 CFR pt. 60, subp. GG	New Source Performance Standards (NSPS) for Stationary Turbines: Sulfur content of fuel

3. Technical Information

This permit action is in response to the applicability determination request that the Permittee submitted to the MPCA. In that applicability determination request, the Permittee submitted the following as background.

On October 13, 2003, the Permittee replaced a gas generator/power turbine (EU-006) on-site with the same model gas generator/power turbine. This replacement was not done as part of a permit action. The manufacturer recommended scheduled overhaul intervals every 24,000 to 26,000 hours due to degradation of internal components. Moreover, excessive vibration from the existing equipment required immediate replacement.

The original gas generator was manufactured prior to October 3, 1977, (the effective date of the NSPS) and was not subject to NSPS Subpart GG. In 1980, the replacement gas generator/power turbine was manufactured. Northern noted that air emissions were not affected by the replacement. Based on the Permittee's information, the original and replacement units burn natural gas only.

On November 18, 2003, the Permittee determined that the replacement turbine was manufactured in 1980. It submitted this applicability determination request to the MPCA. The Permittee requested that the MPCA determine if this does meet the NSPS criteria and if construction permitting is required.

In its review, the MPCA considered three potential issues.

1) Notification

The first issue is whether EPA should have been notified of the replacement. As to the notification issue, the following EPA guidance has been provided. This guidance was provided in relation to the relocation of a unit subject to a particular NSPS subpart. EPA Applicability Determination Index Control Number # 9600105 (6/3/1996 - Region 4), in part, provides:

2. If the portable grinder is used only at Company locations within Region 4, is performance testing and notification required at each site the equipment is used?

Similarly, the notification of only the initial construction and the initial anticipated and actual startup dates are required under 40 CFR 60.7. Individual states may, however, have their own notification requirements for relocated facilities. Therefore, the owner or operator of a facility should address testing and notification requirements with the agency that has the authority to implement the regulation in the state to which the facility is relocated.

Hence, EPA did not have to be notified by this particular replacement. In the permit amendment, both EPA and the MPCA will be required to be notified prior to any subsequent turbine replacements.

2) NSPS Emission Limits

The second potential issue arises from whether the relocation of the replacement unit subjected the facility to any NSPS subpart GG requirements. By its manufacturing date, the existing turbine was not subject to NSPS.

40 CFR Sec. 60.330 (b), in part, provides:

any facility . . . which commences construction, modification, or reconstruction after October 3, 1977, is subject to the requirements of this part except as provided in paragraphs (e) and (j) of Sec. 60.332. These standards are for nitrogen oxides and sulfur dioxide. Paragraph (e), in part, provides that “stationary gas turbines with a heat input at peak load equal to or greater than 10 MM Btu/hr but less than or equal to 100 MMBtu/hour and that have commenced construction prior to October 3, 1982 are except from the nitrogen oxides standard found in paragraph (a).

To begin this issue, it must first be determined whether this replacement was a NSPS reconstruction, modification, or construction?

Reconstruction

An existing facility is considered to have been reconstructed and becomes subject to NSPS, if the components in the facility are replaced to the extent that the fixed capital cost of the new components exceeds 50 percent of the cost of a comparable new facility. 40 CFR Section 60.15. Northern has provided that the replacement turbine (about \$500,000) cost does not exceed 50% of the new turbine (\$10,000,000) cost. Hence, this action is not considered to be a NSPS reconstruction.

Modification

A NSPS modification is defined as any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of a regulated pollutant. 40 CFR Section 60.14. There are no emission increases associated with the turbine replacement. In addition, 40 CFR Section 60.14(e) addresses relocation and change in ownership. This section provides that relocation and change in ownership of an existing facility does not constitute a modification.

The following EPA relocation guidance has been provided. This guidance was provided in relation to the relocation of a turbine unit. EPA Applicability Determination Index Control Number # 0300006 (8/1/2002 - Region 10), in part, provides:

Q3: Do the Alyeska turbines that were manufactured before October 3, 1977 become subject to NSPS GG if they are relocated between TAPS pump stations as a pool of identical turbines to allow for maintenance of turbines?

A3: No. The relocation of a turbine as part of a pool of identical turbines would not make the turbine subject to NSPS Subpart GG if the turbine is not “modified” or “reconstructed,” as those terms are defined in 40 CFR Subpart A, as a result of the relocation.

Hence, this relocation is not considered a modification.

Construction

The issue becomes what NSPS GG requirements were applicable at the replacement turbine’s initial “construction”? Again, original gas generator/power turbine was manufactured prior to 1977. The replacement gas generator/power turbine was manufactured in 1980. NSPS Subpart GG is applicable to any facility (greater than 10 MMBtu) which commences construction after October 3, 1977. 40 CFR Section 60.330(b). Again, the replacement gas generator/power turbine was manufactured in 1980. Hence, the replacement unit is subject to NSPS Subpart GG.

The NSPS Subpart GG Standards for Sulfur dioxide is applicable. This standard provides, as one option, that fuel must not contain sulfur in excess of 0.8 percent by weight. 40 CFR Section 60.333. In addition, Subpart GG provides that owners 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 . . . must be approved by the Administrator before they can be used. . . . 40 CFR Section 60.334(b)(2).

40 CFR Section 60.332(e), in part, provides, however, that stationary gas turbines (meeting size thresholds) that have commenced construction prior to October 3, 1982 are exempt from the nitrogen oxides emission standard. Hence, there is no NSPS subpart GG NOx emission limit.

Accordingly, the NSPS fuel sulfur content limit was placed in the permit. Language was also added in the permit to address subsequent turbine replacements (if constructed or reconstructed after the trigger date) that may trigger NOx limits.

3) Fuel Monitoring

It is noted that during the permit review process, the applicable NSPS was modified. One of the July 8, 2004, modifications allowed for the demonstration of sulfur content of natural gas without a custom monitoring schedule. The permit was written, in a manner, to allow the Permittee the option to either use a custom monitoring schedule or to demonstrate compliance according to 40 CFR Section 60.334(h)(3). If the Permittee seeks to use a custom monitoring schedule the following issues need to be resolved between EPA and the Permittee.

The first issue is whether EPA can waive the initial sulfur performance testing requirements. The Permittee claims that its pipeline natural gas is currently being checked on a daily basis for sulfur content from its largest source (Northern Border Pipeline). EPA has retained authority on this particular NSPS. Accordingly, the Permittee would need to resolve such initial performance testing requirements directly with EPA.

Secondly, there is ambiguity as to whether the Permittee has received approval of a custom monitoring schedule for its units. A July 24, 2001, letter is attached. This 2001 EPA letter asks for additional clarification on the Permittee's custom monitoring request. No subsequent correspondence has been found to resolve this issue. Accordingly, Northern must receive EPA approval if it intends to use a custom monitoring schedule. Northern will need to work directly with EPA on this issue, if a custom monitoring schedule is to be utilized. Based on the new NSPS provisions, however, Northern Natural Gas may elect to not utilize a custom monitoring schedule.

3.2 Periodic Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considers the following:

- The likelihood of violating the applicable requirements;
- Whether add-on controls are necessary to meet the emission limits;
- The variability of emissions over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- The technical and economic feasibility of possible periodic monitoring methods; and
- The kind of monitoring found on similar units elsewhere.

Table 4 summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

Table 6. Periodic Monitoring

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
	Examples		
EU 005, EU 006	Sulfur content of fuel: less than 0.8 percent by weight (NSPS)		Northern will seek to have an EPA custom monitoring schedule or follow the 40 CFR 60.334(h) provisions

3.3 Delta

During this permitting action, GP 002 was removed. GP 002 contained EU 005 and EU 006 (the natural gas fired turbines). The requirements were added under each emission unit. This was done because the requirements were no longer identical.

3.4 Comments Received

If comments were received during the public notice period from the public or if comments are received from EPA, they should be described briefly here, as well as any changes made to the permit as a result of the comments. Generally, the comment letters should also be provided as attachments to the TSD.

4. Conclusion

Based on the information provided by Northern Natural Gas, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 01700011-003 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Bruce Braaten (permit writer/engineer)
 Bob Beresford (enforcement)
 Jenny Reinertsen (peer reviewer)

Attachments: 1. July 24, 2001 EPA memo