AIR EMISSION PERMIT NO. 03700014- 001

IS ISSUED TO

Northern Natural Gas Company

NORTHERN NATURAL GAS - FARMINGTON
4685 212th Street West
Farmington, Dakota County, Minnesota 55024

The emission units and emission stacks at the stationary source authorized in this permit are as described in the following permit applications:

Permit Type	Application Date
Total Facility Operating Permit	September 6, 1995
Minor Amendment Permit Application	June 11, 1996
Major Amendment Permit Application	June 1997

This permit authorizes the Permittee to operate and construct 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 and with all general conditions listed in Minn. R. 7007.0800, subp. 16, and all standard permit requirements listed in 40 CFR § 70.6(a), which are incorporated by reference. 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 as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; PSD/NSR

Issue Date: November 4, 1997

Expiration: November 4, 2002
All Title I Conditions do not expire.

Michael J. Sandusky
Acting Division Manager
Air Quality Division

for Peder A. Larson
Commissioner
Minnesota Pollution Control Agency

BN:yma

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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	(612)296-6300
Outside Metro Area	1-800-657-3864
TTY	(612)282-5332

The rule 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. Any requirements which have been determined not to apply are listed in Table A of this permit.

The permit shield, however does not apply to: Minn. R. ch. 7030 (Noise Pollution Control).

FACILITY DESCRIPTION:

The Farmington Compressor Station is used to pressurize natural gas in order to facilitate its transmission through a pipeline system. The main component of the facility is a compressor building which houses five natural gas-fired reciprocating compressor engines and a natural gas-fired turbine.

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

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
Nitrogen Oxides: less than or equal to 100 micrograms/cubic meter at the facility property line. Fenceline and beyond NOx concentrations shall be determined by using an approved computer model and protocol, including use of NOx emission rates determined during performance testing.	Title I Condition: to avoid violation of 40 CFR Section 50.11; Minn. R. 7009.0020
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
Operating and/or production limits will be placed on emission units based on operating conditions during compliance testing. Limits set as a result of a compliance test (conducted before or after permit issuance) apply until new operating/production limits are set following formal review of a performance test as specified by Minn. R. 7017.2025.	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
Shutdowns: Notify the Commissioner at least 24 hours in advance of shutdown of any process or control equipment if the shutdown would cause an increase in the emission of air contaminants. At the time of notification, notify the Commissioner of the cause of the shutdown and the estimated duration. Notify the Commissioner again when the shutdown is over.	Minn. R. 7019.1000, subp. 1
Breakdowns: Notify the Commissioner immediately of a breakdown of more than one hour duration of any process or control equipment if the breakdown causes an increase in the emission of air contaminants. At the time of notification or as soon thereafter as possible, the permittee shall also 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
Oral Notification of Deviations Endangering Human Health or the Environment: Within 24 hours of discovery, orally notify the Commissioner of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7007.0800, subp. 6(A)
Written 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: cause of the deviation; exact dates of the period of the deviation; if the deviation has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7007.0800, subp. 6(A)
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

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Application for Permit Amendment: If you need a permit amendment, submit 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)
Record keeping: 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 facility, 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 strip-chart 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 federally enforceable.	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

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 001**

Associated Items: EU 001 Natural Gas-Fired Reciprocating Engine

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning natural gas - maximum hourly emission is 0.053 lb/hr or 0.004 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 002**

Associated Items: EU 002 Natural Gas-Fired Reciprocating Engine

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning natural gas - maximum hourly emission is 0.053 lb/hr or 0.004 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 003**

Associated Items: EU 003 Natural Gas-Fired Reciprocating Engine

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning natural gas - maximum hourly emission is 0.053 lb/hr or 0.004 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 004**

Associated Items: EU 004 Natural Gas-Fired Reciprocating Engine

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning natural gas - maximum hourly emission is 0.14 lb/hr or 0.004 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 005**

Associated Items: EU 005 Natural Gas-Fired Reciprocating Engine

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning natural gas - maximum hourly emission is 0.14 lb/hr or 0.004 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 006**

Associated Items: EU 006 Emergency Generator

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning diesel fuel - maximum hourly emission is 0.47 lb/hr or 0.20 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **SV 007**

Associated Items: EU 007 Gas Turbine Compressor

What to do	Why to do it
Performance Test: due 180 days after Initial Startup but no later than 60 days after achieving maximum production rate to determine NOx emissions per 40 CFR Section 60.332(d).	40 CFR Section 60.8(a)
Performance Test Pre-test Meeting: due 7 days before Performance Test for NOx.	Minn. R. 7017.2030, subp. 4
Nitrogen Oxides: less than or equal to 0.0157 percent by volume at 15 percent oxygen and on a dry basis.	40 CFR Section 60.332(d), Minn. R. 7011.2350
Opacity: less than or equal to 20 percent opacity once operating temperatures have been obtained. The averaging time for this limit is any ten consecutive seconds.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 1.75 lbs/million Btu heat input (this is met through the equipment capacity burning natural gas - maximum hourly emissions are 0.034 lb/hr or 0.0006 lb/MMBtu).	Minn. R. 7011.2300, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Subject Item: **EU 007 Gas Turbine Compressor**

Associated Items: SV 007

What to do	Why to do it
Sulfur Content of Fuel: less than or equal to 0.8 percent by weight	40 CFR Section 60.333(b), Minn. R. 7011.2350
Reporting: If there is a change in fuel supply, the Permittee must notify the MPCA 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 fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being re-examined.	40 CFR Section 60.334(b), Minn. R. 7011.2350
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, a gas chromatograph or an approved alternative method.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.334(b), Minn. R. 7011.2350
Sulfur monitoring shall be conducted twice monthly for six months. If this monitoring shows little variablility in the fuel sulfur content, and indicates consistent compliance with 40 CFR Section 60.333, then sulfur monitoring shall be conducted once per quarter for six quarters.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.334(b), Minn. R. 7011.2350
Sulfur Monitoring: If, after the first 2 years of sulfur monitoring, the sulfur content of fuel shows little variability and, when calculated as sulfur dioxide, represents consistent compliance with the sulfur dioxide emission limits specified under 40 CFR Section 60.333, sample analysis shall be conducted twice per annum. This monitoring shall be conducted during the first and third quarters of each calendar year.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.334(b), Minn. R. 7011.2350
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. Sulfur monitoring shall be conducted weekly during the interim period when this custom fuel-monitoring schedule is being re-examined.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.334(b), Minn. R. 7011.2350
Recordkeeping: Records of sample analyses and fuel supply pertinent to the custom fuel-monitoring schedule shall be retained for a period a five (5) years, and be available for inspection by personnel of federal, state, and local air pollution control agencies.	40 CFR Section 60.13(i) to comply with 40 CFR Section 60.334(b), Minn. R. 7011.2350

TABLE B: SUBMITTALS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Table B lists the submittals you must send to the Commissioner. Table B is divided into two sections, for source-specific submittal requirements and for submittals required of all permittees. Source-specific submittals are further organized as either one-time only or recurrent requirements. You may also be subject to additional reporting requirements contained in the compliance schedule located in Table C of this permit. All submittals must be postmarked or received by the date specified in the table, and certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Submittals which must be provided on standardized forms approved by the Commissioner are noted in Tables B and C.

Send any application for a permit or permit amendment to: Permit Information Coordinator, Permit Section, Air Quality Division, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4914. Also send the Permit Information Coordinator notices of: accumulated insignificant activities, installation of control equipment, replacement of an emissions unit, and changes that contravene a permit term.

Send all other submittals to: Compliance Tracking Coordinator, Compliance Determination Unit, Air Quality Division, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

What to send	When to send	Portion of Facility Affected
Computer Dispersion Modeling Protocol	due 1,096 days after Permit Issuance . This protocol will describe the proposed modeling methodology and input data, in accordance with all requirements of 40 CFR pt. 51, App. W.	Total Facility
Notification of the Actual Date of Initial Startup	due 15 days after Initial Startup	EU007
Notification of the Anticipated Date of Initial Startup	due 30 days before Anticipated Date of Initial Startup but no earlier than 60 days before anticipated initial startup.	EU007
Notification of the Date Construction Began	due 30 days after Start Of Construction	EU007
Performance Test Notification (written)	due 30 days before Performance Test for NOx.	SV007
Performance Test Plan	due 30 days before Performance Test for NOx.	SV007
Performance Test Report - Microfiche Copy	due 105 days after Performance Test for NOx.	SV007
Performance Test Report	due 45 days after Performance Test for NOx.	SV007
Testing Frequency Plan	due 60 days after Initial Performance Test for NOx emissions. The Testing Frequency Plan (TFP) shall specify a testing frequency based on MPCA guidance and results of NOx emissions testing. Future performance tests based on year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required on written approval of MPCA. If a Compliance Plan is submitted as required by this permit, the TFP may be revised as necessary pending the elements in the Compliance Plan.	Total Facility

TABLE B: RECURRENT SUBMITTALS

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance . 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 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted on a form approved by the Commissioner. The report covers all deviations experienced during the calendar year.	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year following Permit Issuance (April 1). To be submitted on a form approved by the Commissioner.	Total Facility

TABLE C: COMPLIANCE SCHEDULE

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Table C contains the compliance schedule as required by Minn. R. 7007.0500, subp. 2 (K). You must complete the actions required in Table C by the dates listed in the table. All submittals must be postmarked or received by the date specified in the table, and certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21.

Subject Item: **Total Facility**

Citation	Corrective Action	When to complete the action
Title I Condition: to avoid violation of 40 CFR Section 50.11; 40 CFR Section 70.6(c)(3); Minn. R. 7007.0800, subp. 2	Equipment Installation	due before 11/10/97 . This equipment installation shall be the permanent extension of SV 004 and SV 005 to 50 feet above grade.
Title I Condition: to avoid violation of 40 CFR Section 50.11; 40 CFR Section 70.6(c)(3); Minn. R. 7007.0800, subp. 2	Computer Dispersion Modeling Results	due before 05/15/98 (using NOx emissions data from the most recent emissions testing).
Title I Condition: to avoid violation of 40 CFR Section 50.11; 40 CFR Section 70.6(c)(3); Minn. R. 7007.0800, subp. 9 (B)	Compliance Plan	due before 05/15/98 IF after installation of the 50-foot stacks, computer model fenceline NOx concentrations (using NOx emission rates determined during performance testing) exceed 100 micrograms per cubic meter. The Plan shall specify corrective actions to be taken, and a timeframe for each action, so that NOx concentrations at the fenceline and beyond do not exceed 100 micrograms per cubic meter.
Title I Condition: to avoid violation of 40 CFR Section 50.11; Minn. R. 7007.0800, subp. 2	Implement Compliance Plan	due before 11/01/98 for any Plan element that DOES NOT require a permit amendment prior to implementation.
Title I Condition: to avoid violation of 40 CFR Section 50.11; Minn. R. 7007.0800, subp. 2	Implement Compliance Plan	due before 07/01/99 for any Plan element that DOES require a permit amendment prior to implementation.
Minn. R. 7017.2030, subp. 1	Performance Test Notification (written)	due 30 days before Performance Test for each emission unit required to be tested.
Minn. R. 7017.2030, subp. 2	Performance Test Plan	due 30 days before Performance Test for each emission unit required to be tested.
Minn. R. 7017.2030, subp. 4	Performance Test Pre-test Meeting	due 7 days before Performance Test for each emission unit required to be tested.
Title I Condition: to avoid violation of 40 CFR Section 50.11; 40 CFR Section 70.6(c)(3); Minn. R. 7017.2020, subp. 1	Performance Test	due before 02/28/98 to measure NOx emissions. The Permittee shall conduct at least three tests for NOx: one test on a either EU 001, EU 002, or EU 003; one test on either EU 004 or EU 005; and one test on EU007. Testing must be conducted when the ambient air temperature is below 20 degrees F.
Minn. R. 7017.2035, subp. 1 and 2	Performance Test Report	due 45 days after Performance Test for each emission unit required to be tested.
Minn. R. 7017.2035, subp. 2	Performance Test Report - Microfiche Copy	due 105 days after Performance Test for each emission unit required to be tested.
40 CFR Section 70.6(c)(4); Minn. R. 7007.0800, subp. 6(B)	Progress Report	due 15 days after end of each calendar half-year following Permit Issuance

TABLE C: COMPLIANCE SCHEDULE

11/04/97

Facility Name: Northern Natural Gas - Farmington

Permit Number: 03700014 - 001

Title I Condition: to avoid violation of 40 CFR Section 50.11; Minn. R. 7009.0020	Computer Dispersion Modeling Protocol	due before 04/15/98 . This protocol, or other data accepted in lieu of the protocol, will describe the proposed modeling methodology and input data, in accordance with all requirements of 40 CFR pt. 51, App. W.

TECHNICAL SUPPORT DOCUMENT
For Northern Natural Gas Company (624B)
AIR EMISSION PERMIT NO. 03700014-001

This Technical Support Document (TSD) is for all the interested parties of the permit. The purpose of this document is to set forth the legal and factual basis for the permit conditions, including references to the applicable statutory or regulatory provisions.

1. General

1.1. Applicant and Stationary Source Location:

Contact/Address	Stationary Source/Address (SIC Code: 4922)
Mr. Ronald Beidelman	Northern Natural Gas Company
Division Environmental Specialist	Farmington Compressor Station
1600 West 82nd Street, Suite 210	1600 West 82nd Street, Suite 210
Minneapolis, Minnesota 55431	Minneapolis, Minnesota 55431

Owner/Address
Mr. Gary P. Smith, V.P. Operations
Northern Natural Gas Company
7055 Vista Dr. Bristol Building
West Des Moines, IA 50266

1.2. Description Of The Facility

Facility Description: The facility is a natural gas compressor station near Farmington, Minnesota. From 1961 to 1965, five natural gas-fired reciprocating engines were installed for compression of pipeline natural gas. Emissions from these engines exceed PSD thresholds, and the facility is considered a major source. The first total facility permit was issued on June 2, 1993. This contained the 5 reciprocating engines.

1.2.5 Description of Permit Action

Permit Action - 1997: The facility will be issued their Part 70 total facility permit, incorporating the February 1997 moderate modification request.

1.2.6 Description of Comment Received during Public Notice Period

One comment was received during the public notice period, then subsequently withdrawn. The commentor did not want to hold up installation of the new turbine as it met his goal of installing lower-polluting equipment at the facility.

In response to concern about degradation of the atmosphere, I requested the Permittee conduct computer dispersion modeling. Preliminary results indicated potential violation of the NAAQS for NO_2. Therefore, the Permittee has also entered into a schedule of compliance to further reduce NOx impacts on the ambient air.

Resolution of this issue with the commentor involved education regarding a single source versus stationary sources and how the NAAQS will impact future growth and at this facility (i.e. they can not ever exceed the NAAQS). He will be kept informed of the progress of the facility towards reductions of NOx impacts on the ambient air.

1.3 Description of all submittals since the issuance of the last total facility permit, to be included in the Part 70 Permit.

Title V TFP Application: Received 9/15/95. Basis of reciprocating engine and insignificant activity calculations. Overview of total facility.

Minor Modification: In 1996 a 380 hp emergency generator was added. Application received 6/12/96.

Major Modification: The MPCA received a major modification application in February 1997 for permission to construct and operate a natural gas turbine. This modification does not trigger New Source Review as unrestricted emissions do not exceed the PSD modification significance thresholds for any of the criteria pollutants.

1.4. Facility Emissions:

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	Reciprocating Engine	0.0005	0.0005	0	331.40	3.19	0	109.62	NA
002	002	Reciprocating Engine	0.0005	0.0005	0	331.40	3.19	0	109.62	NA
003	003	Reciprocating Engine	0.0005	0.0005	0	331.40	3.19	0	109.62	NA
004	004	Reciprocating Engine	0.0016	0.0016	0	695.25	7.73	0	332.18	NA
005	005	Reciprocating Engine	0.0016	0.0016	0	695.25	7.73	0	332.18	NA
006	006	Emergency Generator	1.83	1.83	2.05	34.05	1.75	0	3.66	NA
007	007	Stationary Turbine	10.4	10.4	0.1	24.9	8.7	0	72.8	NA
Total Facility Limited Potential Emissions*			12.23	12.23	2.15	2443.65	35.48	0	1069.68	NA
Total Facility Actual Emissions**			2.72	2.72	0.11	595.60	18.05	0	87.1	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 determined from 1995 emissions inventory data and a letter dated 4/7/97 from Ron Beidelman.

Table 2. Facility(TF) and Permit Classification

Classification (put x in appropriate box)	Major/Affected Source	*Synthetic Minor	*Minor
PSD (list pollutant)	NO_x, CO		
NAAR (list pollutant)			x
Part 70 Permit Program (list pollutant)			x

* 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

Summary Regulatory and/or Statutory Basis of the Emission or operational Limit

Regulatory Overview of Facility

The purpose of this table is to give a summary overview of the significant sources of emissions and the applicable regulations and standards(e.g., NEHSAPS, NSPS.Title I conditions, special operating parameters) It is not designed for the discussion of specific limits or requirements, unless they are unusual and need some explanation, nor is it for the discussion of compliance demonstration requirements. This information is obtainable from the permit itself, this section is intended to provide users in the future with a quick picture of how the facility is being regulated and permitted..

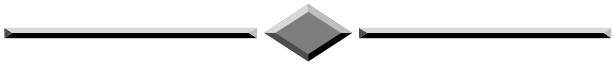
*EU, GRP, or SV #	Applicable Regulations	**Comments:
FC	Minn. R. 7009 and 40 CFR pt. 50	Since facility is a major source of NO_x, they must submit a dispersion modeling protocol and results.
FC	Minn. R. 7009 and 40 CFR pt. 50	Records will be maintained at the facility
SV001, 002, 003, 004, 005, 006, 007	Minn. R. 7011.2300	Standards of Performance for Internal Combustion Engines • Applies to reciprocating engines, emergency generator and stationary gas turbine • SO_x limit applies as the facility is located within the MSP AQ Control Region, SO_x is limited by equipment design burning natural gas
EU007 SV007	40 CFR 60.13(i) to comply with 40 CFR pt. 60, subp.GG Minn. R. 7011.2350	National Standards of Performance for Stationary Gas Turbines and enabling Minn. Standards of Performance for Stationary Gas Turbines. NO_x testing and fuel sulfur monitoring • Monitoring of fuel nitrogen content is required according to custom fuel-monitoring schedule per 60.334(b) per criteria discussed in EPA memo dated 8/14/87. This schedule has been approved by EPA for pipeline-quality natural gas compressor stations (see CD-01 forms and attached memo) • Permittee has authorization to use a gas chromatograph to measure fuel sulfur content. The use of the alternative testing method has been approved by EPA for pipeline-quality natural gas at natural-gas compressor stations. (see attached memo) • Turbine contains a low-NO_x burner • Permittee has chosen to comply with 60.333(b) sulfur limit of 0.8% by weight vs. complying with 60.333(a)

FC	40 CFR pt. 50; Minn. R. 7009.0020; 40 CFR pt. 70	Compliance Schedule. Preliminary computer dispersion modeling indicated non-compliance with NAAQS for NOx. A schedule of compliance was therefore incorporated into the permit. The schedule will require raising stack heights, emissions testing of representative units, modeling of facility-wide emissions based upon most recent emissions test and develop of a detailed compliance plan. The plan will include raising stack heights, installing clean-burn technology and/or limiting hours of operation.

* Insert the number that identifies the level the limit was set on.

** Comments column is for name of the regulation, citations that need further explanation, and to include essential data used to determine the applicability of that particular regulations, standard or permit condition.. Most rows should not have any further explanation needed and will contain only the name of the regulation.

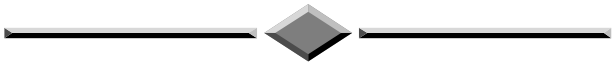
3. Technical Information



STACK/VENT I.D.: 001, 002 and 003
EMISSION UNITS: 001, 002 and 003 - Reciprocating Engine: 11.9 MMBtu/hr each

Emission Limit and/or Special Conditions: Sulfur Dioxide limit
Factual and legal basis for above: Minn. R. 7011.2300
Comments: The sulfur limit applies as the facility is located within the MSP air quality control region. The engine is only capable of burning natural gas by equipment design.

- 1.75 lb/MMBtu x 11.9 MMBtu/hr = 20.825 lb/hr = 91.21 tpy NOT LIMITING
- Gas has 0.0001% sulfur => 104.07 MMCF/yr x 0.0448 lb/CF x .0001 x 10^6/2000 = 0.233 tpy
  = 0.053 lb/hr



STACK/VENT I.D.: 004 and 005
EMISSION UNIT: 004 and 005 - Reciprocating Engine: 32 MMBtu/hr each

Emission Limit and/or Special Conditions: Sulfur Dioxide limit
Factual and legal basis for above: Minn. R. 7011.2300
Comments: The sulfur limit applies as the facility is located within the MSP air quality control region. The engine is only capable of burning natural gas by equipment design.

- 1.75 lb/MMBtu x 32 MMBtu/hr = 56 lb/hr = 245.28 tpy NOT LIMITING
- Gas has 0.0001% sulfur => 280.32 MMCF/yr x 0.0448 lb/CF x .0001 x 10^6/2000 = 0.63 tpy
  = 0.14 lb/hr

STACK/VENT I.D.: 001 - 005
EMISSION UNIT: 001 - 005 - Reciprocating Engines

Emission Factor Comparison
Comments: Permittee used conservative values to calculate potential emissions. Manufacturer data is considered more applicable to these engines. PM emissions are 0.0005 tpy, which is considered negliglibe. Sulfur emissions are also negligible.

	AP-42, 1995		AP-42, 1993		MFR	
NO_x	2.3 lb/MMBtu	119.7 tpy			26.00 g/hp-hr	**331.40 tpy**
CO	1.6 lb/MMBtu	83.26 tpy	8.60 g/hp-hr	**109.62 tpy**		
PM/PM_{10}	NA	-	-	-	-	
VOC	0.27 lb/MMBtu	14.05 tpy			0.25 g/hp-hr	**3.19 tpy**
SO_2	NA	-				

STACK/VENT I.D.: 006 EMISSION UNIT: 006 - Emergency Generator

Emission Limit and/or Special Conditions: Sulfur Dioxide limit
Factual and legal basis for above: Minn. R. 7011.2300
Comments: The sulfur limit applies as the facility is located within the MSP air quality control region. The engine is capable of burning diesel fuel.

- 1.75 lb/MMBtu x 2.39 MMBtu/hr = 4.18 lb/hr = 18.32 tpy NOT LIMITING

Using emission factors from the manufacturer:
0.47 lb/hr = 2.05 tpy SOx

STACK/VENT I.D.: 007 EMISSION UNIT: 007 - Gas Turbine
Emission Limit and/or Special Conditions: NO_x emissions shall not exceed 0.0157% by volume at 15 percent oxygen and on a dry basis
Factual and legal basis for above: 40 CFR 60, Subp. GG - Standards of Performance for Stationary Gas Turbines. 60.332(a)(2)
Comments: Stationary gas turbine (not electric utility turbine) with a manufacturer's rated base load of 30 megawatts or less...

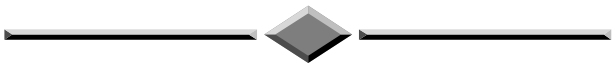
From AP-42, Section 3.1.1: 4021 hp is equivalent to 3 MW, therefore 7000 hp = 5.2 MW

STACK/VENT I.D.: 007 EMISSION UNIT: 007 - Gas Turbine

Emission Limit and/or Special Conditions: Sulfur Dioxide limit
Factual and legal basis for above: Minn. R. 7011.2300
Comments: The sulfur limit applies as the facility is located within the MSP air quality control region.

- 1.75 lb/MMBtu x 56.9 MMBtu/hr = 99.575 lb/hr = 436 tpy NOT LIMITING

Using emission factors from the manufacturer:
0.0006 lb/MMBtu x 56.9 MMBtu/hr = 0.034 lb/hr x [8760/2000] = 0.1 tpy SO_x



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. 03700014-001 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Attachments:	Staff Members on Permit Team:
Comment letter and withdrawal letter	Bonnie J. Nelson, P.E.
Permit (GI and CD forms)	Marshall Cole
EC forms and supporting documents	Stuart Arkley
Memos	