

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Natural Gas Pipeline Company of America
Attn: Kristine Akridge
370 Van Gordon Street, P.O. Box 281304
Lakewood, Colorado 80228-8304

Application No.: 01030079

I.D. No.: 073816AAA

Applicant's Designation: MLV RETROFIT

Date Received: March 27, 2001

Subject: MLV-14

Date Issued:

Location: 16648 Illinois Highway 82, Geneseo

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of the modified operation of gas reciprocating engine (10-ENG) with the installation of high pressure fuel injection as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1.0 Unit Specific Conditions

1.1 Natural Gas Fired Internal Combustion Engine

1.1.1 Description

The Permittee operates a natural gas-fired internal combustion engine which provides power to compressor units at the source that move natural gas through the source's associated transmission pipelines. The principle source of emissions is the engine exhaust. The applicant is installing high pressure fuel injection to the engine, reducing NO_x, but increasing CO emissions.

1.1.2 List of Emission Units and Pollution Control Equipment

Emission Unit	Description	Date of Construction	Emission Control Equipment
Internal Combustion Engine	One Reciprocating Engines (Worthington) Model MLV-14, 5,500 HP (Maximum Load -- 6,875HP)	1969 - 10-ENG	High Pressure Fuel Injection

1.1.3 Applicability Provisions and Applicable Regulations

An "affected engine" for the purpose of these unit specific conditions, is a natural gas fired internal combustion engine equipped with high pressure fuel injection which provides power to compressor units at the source.

1.1.4 Non-Applicability of Regulations of Concern

- a. Each affected engine is not subject to the requirements of 35 IAC 212.322 because it does not have a process weight rate as defined in 35 IAC 211.5250.
- b. Each affected engine is not subject to the requirements of 35 IAC 215.143 because the blowdown emissions associated with engines are not considered to be vapor blowdown pursuant to 35 IAC 215.143.

1.1.5 Operational and Production Limits and Work Practices

- a. Natural gas shall be the only fuel used in the engines.
- b. Startup Provisions

The Permittee is authorized to operate the engines during startup pursuant to 35 IAC 201.262, as the Permittee has affirmatively demonstrated that all reasonable efforts have been made to minimize startup emissions, duration of individual starts, and frequency of startups. This authorization is subject to the following:

- i. This authorization only extends for a period of up to two-hours following initial firing of natural gas during each startup event for each engine.
- ii. The Permittee shall take the following measures to minimize startup emissions, the duration of startups and minimize the frequency of startups:

Implementation of established startup procedures.

1.1.6 Emission Limitations

The affected engines are subject to the following:

- a. The emissions of smoke or other particulate matter from any affected engine shall not have an opacity greater than 30 percent, pursuant to 35 IAC 212.123(a), except as allowed by 35 IAC 201.149, 212.123(b), or 212.124.

b. The engine shall be equipped, operated, and maintained with high pressure fuel injection technology for natural gas firing:

i. The emissions of NO_x, CO, and NM/VOM from the affected engine shall not exceed 4.0 g/hp-hr, 3.0 g/hp-hr, and 0.50 g/hp-hr, respectively.

ii.

<u>Engine</u>	<u>NO_x</u>		<u>CO</u>		<u>NM/VOC</u>	
	<u>(Lb/Hr)</u>	<u>(TPY)</u>	<u>(Lb/Hr)</u>	<u>(TPY)</u>	<u>(Lb/Hr)</u>	<u>(TPY)</u>
10-ENG	60.50	264.99	45.38	198.76	7.46	32.67

1.1.7 Testing Requirements

a. Within 60 days after operating an affected engine at the greatest load at which it will normally be operated but not later than 180 days after its initial startup, the Permittee shall perform emissions tests of the engines as follows. These tests shall be used as the initial compliance tests to demonstrate compliance with the limits and conditions set in this permit.

b. Emissions shall be measured by an approved testing service at maximum load for NO_x, CO, and VOM. During the initial performance tests, emissions shall also be measured at the minimum load, and two intermediate load levels for NO_x and CO.

c. The following USEPA methods and procedures shall be used for testing of emissions. For each engine, measurement of NO_x emissions shall be conducted and data collected in accordance with the test methods and procedures specified in 40 CFR 60.335.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3 or 3A
Moisture	USEPA Method 4
Nitrogen Oxides	USEPA Method 20
Carbon Monoxide	USEPA Method 10
Volatile Organic Material	USEPA Method 18 or 25A

d. At least 60 days prior to the actual date of testing, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include as a minimum:

- i. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - ii. The specific conditions under which testing shall be performed including a discussion of why these conditions will be representative of maximum emissions and the means by which the operating parameters for the engine will be tracked and recorded.
 - iii. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations. As part of this plan, the Permittee may set forth a strategy for performing emission testing of selected engines provided that all engines are fitted for testing; the identity of the engine to be tested is determined immediately before testing, by the Illinois EPA or otherwise randomly; and continuous emission monitoring of NO_x is present on all engines.
 - iv. The test method(s) which will be used, with the specific analysis method, if the method can be used with different analysis methods.
- e. The Illinois EPA shall be notified prior to these tests to enable it to observe these tests. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
- f. Three copies of the Final Reports for these tests shall be forwarded to the Illinois EPA, Compliance Section in Springfield within 30 days after the test results are compiled and finalized, in advance of the operating permit application if necessary. The Final Report from testing shall contain a minimum:
- i. A summary of results;

- ii. General information;
 - iii. Description of test method(s), including a description of sampling points, sampling train, analysis equipment, and test schedule;
 - iv. Detailed description of test conditions, including:
 - A. Fuel consumption (standard ft³);
 - B. Firing rate (million Btu/hr); and
 - C. Engine output rate (hp);
 - v. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.
- g. Submittals and notification with respect to emissions testing shall be made to the following:

Illinois Environmental Protection Agency
Division of Air Pollution Control
5415 North University
Peoria, Illinois 61614

Illinois Environmental Protection Agency
Emission Monitoring and Testing Unit
P.O. Box 19276
Springfield, Illinois 62794-9276

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276

Telephone: 217/782-5811 Fax: 217/782-6348

1.1.8 Monitoring Requirements

None

1.1.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items for all engines to demonstrate compliance with Condition 1.1.6:

- a. Annual aggregate NO_x, CO and VOM emissions from the engine, based on hours of operation and the applicable emission factors, with supporting calculations;
- b. Hours of operation per year;
- c. Number of startups totaled per month and per year for the engine; and
- d. Inspection, maintenance, and repair logs with dates and nature of the engine.

1.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section of non-compliance with the operating requirements and emissions as follows:

- a. The total emissions of NO_x, PM, SO₂, and VOM from the engine in excess of the limits specified in Condition 1.1.6 and calculated by using emission factors and equation from Condition 1.1.12 based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

b. Reporting for Startups of Engines

The Permittee shall provide an annual report, submitted with the Annual Emission Report, to the Illinois EPA, Compliance Section and Regional Field Office, pursuant to Section 39.5(7)(b) of the Act, concerning startup of the engine. At a minimum, this report shall include:

For the engine, the total number of startups.

1.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

1.1.12 Compliance Procedures

Compliance with the emission limits in Condition 1.1.6 shall be based on the recordkeeping requirements in Condition 1.1.9 and calculated based on the emission factors and formulas listed below:

Hourly Emission Factors (g/hp-hr, each engine)

Pollutants	Engine 10-ENG (g/hp-hr)
NO _x	4.0*
VOM	0.50
CO	3.0*

* Emission factor is based on the manufacturer's emission factor

$$\text{Emissions (lb / mo)} = \text{E.F.} \times \frac{\text{Hours}}{\text{month}} \times \text{hp} \times 453.9$$

Emission factors other than marked *) are based on the standard emission factors from AP-42.

If you have any questions on this, please call Bob Smet at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:RPS:jar

cc: Region 2

ATTACHMENT 1

Netting Table

Change in NO_x and CO Emissions in Tons/Year

Permitted increase in NO_x emissions in tpy:

 Install High Pressure Fuel Injection 10-ENG: 215.85

Past actual NO_x emissions: 503.90

Net change in NO_x emissions = 215.85 - 503.90 = -288.05 (tons/year)

Permitted increase in CO emissions in tpy:

 Install high pressure fuel injection on 10-ENG: 198.76

Past Actual CO emissions: 101.18

Net change in CO emission = 198.76 - 101.18 = 97.58 (tons/year)

RPS:psj