TECHNICAL REVIEW DOCUMENT
for
OPERATING PERMIT 95OPPR074
to be issued to:

Colorado Interstate Gas Company
Springfield Compressor Station
Prowers County
Source ID 0990003

Prepared by Stefan Drewes on January 16, 1997
Revised on March 5, 1997
Revised by Jacqueline Joyce on September 18, 1997

I. Purpose:

This document will establish the basis for decisions made regarding the Applicable Requirements, Emission Factors, Monitoring Plan and Compliance Status of Emission Units covered within the Operating Permit proposed for this site. It is designed for reference during review of the proposed permit by the EPA and during Public Comment. The conclusions made in this report are based on information provided in the original application submittal of November 13, 1995 and a review of the Air Pollution Control Division (APCD) files. This document and the permit were revised, following Public Comment and EPA review and prior to issuance, because errors were discovered. Some of the changes were made to clarify decisions while other changes were made to permit conditions. The changes made to permit conditions have been used in other permits for similar sources and went through Public Comment and EPA review without comments.

II. Source Description:

This source is classified as a natural gas compression facility defined under Standard Industrial Classification 4922. Gas is compressed to specification for transmission to sales pipelines using four (4) Internal Combustion Engines to power compressor units. Other significant activities include fugitive losses of VOCs from equipment leaks and two generators which are run frequently enough that they are not considered emergency generators.

The facility is located in Prowers County about 30 miles southwest of Lamar, CO in an area designated as attainment for all criteria pollutants. This facility is not within 100 km of a Federal Class I designated area and Kansas is the only state within 50 miles. The source emits greater than 250 tons per year of Nitrogen Oxides and Carbon Monoxide. Therefore, future modifications at the facility which trigger Prevention of Significant Deterioration (PSD) significance levels as defined in

Colorado Regulation 3, Part A, Section I.B.57 (for example: the addition of another engine with potential emissions greater than forty tons per year of NO_X) will require analysis of Best Available Control Technology (BACT) for the unit(s) in question. All significant emission units identified in this permit are exempt from construction permitting requirements (commenced construction and/or operation prior to February 1, 1972) in Colorado Regulation 3, Part B. This facility currently has no applicable MACTs and the source has stated that they are not subject to 112(r). The source indicated in their Title V application, that they consider themselves in compliance with all current applicable requirements. Facility wide emissions are as follows:

Pollutant	Potential Emissions (tpy)	Actual Emissions (tpy)
NO_X	625.3	274.3
CO	492.9	164.4
VOC	25.3	10.64
HAPs	23.1	1.1

Actual fugitive VOC emissions are assumed to be equal to PTE, since no actual measured data is available. Facility wide potential emissions are based on application data and actual emissions based on 1994 APEN and fuel use data.

III. Emission Sources:

The following sources are specifically regulated under terms and conditions of the Operating Permit for this Site:

Unit E001- Cooper Model GMVA-10, 2 Cycle Standard Rich Burn, Internal Combustion Engine, Site Rated at 1350 HP, Serial No. 43392. Design Heat Rate 8078 Btu/hp-hr, Max Design Heat Rate 10.9mmBtu/hr, Natural Gas Fired, Powers a Gas Compressor.

Unit E002- Cooper Model GMVA-10, 2 Cycle Standard Rich Burn, Internal Combustion Engine, Site Rated at 1350 HP, Serial No. 43390. Design Heat Rate 8078 Btu/hp-hr, Max Design Heat Rate 10.9mmBtu/hr, Natural Gas Fired, Powers a Gas Compressor.

Unit E003- Cooper Model GMVA-10, 2 Cycle Standard Rich Burn Internal Combustion Engine, Site Rated at 1350 HP, Serial No. 43391. Design Heat Rate 8078 Btu/hp-hr, Max Design Heat Rate 10.9mmBtu/hr, Natural Gas Fired, Powers a Gas Compressor.

Unit E004- Cooper Model GMVA-10, 2 Cycle Standard Rich Burn, Internal Combustion Engine, Site Rated at 1350 HP, Serial No. 43389. Design Heat Rate 8078 Btu/hp-hr, Max Design Heat Rate 10.9mmBtu/hr, Natural Gas Fired, Powers a Gas Compressor.

<u>Unit E005</u>- Ingersol/Rand Model PVG-8, 4 Cycle Standard Rich Burn, Internal Combustion Engine, Site Rated at 268 HP, Serial No. 6HP2748. Design Heat Rate 9131 Btu/hp-hr, Max Design Heat Rate 2.45 mmBtu/hr, Natural Gas Fired, Powers a Generator.

<u>Unit E006</u>- Ingersol/Rand Model PVG-8, 4 Cycle Standard Rich Burn, Internal Combustion Engine, Site Rated at 268 HP, Serial No. 6HP2750. Design Heat Rate 9131 Btu/hp-hr, Max Design Heat Rate 2.45 mmBtu/hr, Natural Gas Fired, Powers a Generator.

Discussion:

1. Applicable Requirements- The generator engines were installed in 1953 and the compressor engines in 1954, therefore they are all grandfathered from Colorado Construction Permitting requirements per Regulation 3, Part B, Section I.A (construction and/or operation commenced prior to February 1, 1972). Consequently, the only applicable requirements for these engines are a 20% Opacity limitation and APEN Reporting in accordance with Regulation 3, Part A, Section II.

2. Emission Factors- Emissions from these reciprocating engines are produced during the combustion process, and are dependent upon the air to fuel ratio adjustment, engine design and specific properties of the natural gas being burned. The pollutants of concern are Nitrogen Oxides (NO_X), Carbon Monoxide (CO) and Volatile Organic Compounds (VOC). Small quantities of Hazardous Air Pollutants (HAPs) are also emitted when combustion is incomplete. Approval of emission factors for this engine are necessary to the extent that accurate actual emissions are required to verify the need to submit Revised APENs to update the Division Emission Inventory and for determination of annual fees. CIG has proposed the use of AP-42 factors (fifth edition, Jan. 1995). For the compressor engines (2-cycle rich burn) CIG used the larger emission factor from either the 2-cycle lean burn or 4-cycle rich burn engines in Table 3.2 since there are no factors specific for 2-cycle rich burn engines. The emission factors for the generator engines are from Table 3.2-1 for 4-cycle rich burn engines. The emission factors are as follows:

Pollutant	Emission Factor
NO_X	11.0 g/bhp-hr (10.0 for the 4 Cycle Generator Engines)
CO	8.6 g/bhp-hr
VOC	0.43 g/bhp-hr

CIG proposes to convert these values to fuel-based factors (lb/MMSCF) using the equation outlined on the attached spreadsheet titled "Required Method of Fuel Consumption Allocation and Calculation of Fuel Based Emission Factor". The Division has reviewed and accepted their proposed method. The fuel-based emission factors identified in the permit are based on a heating value of 1,064 Btu/scf.

3. Monitoring Plan- CIG has proposed to calculate emissions for fee purposes based on fuel consumption. They will be required to conduct the emission calculations annually and submit a Revised APEN to the Division if emissions increase by more than 5 tons/year or 50%, whichever is less for each engine, compared to the latest APEN on file with the Division.

The Opacity standard of 20% will be demonstrated by a certification that the engine units have used pipeline-quality natural gas exclusively during the reporting period. The Division has determined, based on AP-42 emission factors and engineering judgement, that particulate emissions from these engines will be insignificant if pipeline quality natural gas is used exclusively as fuel. Use of pipeline quality natural gas will be the compliance demonstration method for the opacity standard.

4. Compliance Status- A current APEN reporting criteria emissions is on file with the Division. The November 11, 1995 application submittal included an APEN and HAP Addendum Form reporting 1994 actual emissions and formaldehyde and benzene emissions from these engines. CIG certified in the application that natural gas has been used exclusively as the fuel for this unit. A review of the APCD records indicated no outstanding compliance issues. Therefore, this facility is currently in compliance with all applicable requirements.

<u>Unit F001</u>- Fugitive Emissions of VOCs from Equipment Leaks

Discussion:

1. Applicable Requirements- Fugitive VOC emissions from equipment leaks exceed the APEN deminimis levels. However, since this facility commenced construction/operation prior to February 1, 1972, this facility is not subject to the construction permit requirements in Regulation 3, Part B, nor is it subject to the New Source Performance Standards (NSPS), Subpart KKK. Previous versions of this document and subsequently the draft permit, incorrectly identified this source of emissions as permitted with an annual VOC emission limit, which is not the case due to the aforementioned reasons. Because Fugitive VOC emissions are above APEN significance levels it has been included in the permit. The only applicable requirements for fugitive VOC emissions is APEN reporting requirements (Regulation 3, Part A, Section II) for the determination of annual fees.

The APEN is valid for a term of five years or as required by Colorado Regulation 3, Part A Section II.C. The five year term for this APEN expires on November 15, 2000. A revised APEN shall be submitted no later than 30 days before the five year term expires.

2. Emission Factors- CIG has calculated emissions from equipment leaks based on emission factors from EPA's Protocol for Emission Leak Estimates. Factors are multiplied by the number of components of each type (e.g. Compressor Seals) and the VOC weight percentage in the gas stream (since EPA emission factors are

given in terms of Total Organic Compounds) as determined in the most recent analysis.

3. Monitoring Plan- As a means of recordkeeping, CIG must do an annual accounting of the number of components in order to calculate emissions annually. A revised APEN shall be submitted in the event that the emissions increase exceeds the APEN significance levels for submittal of revised APENs as defined in Colorado Regulation 3, Part A, Section II.C.2.

4. Compliance Status- CIG submitted an APEN with their application reporting the current emission level. CIG has fulfilled their obligation to submit an APEN for this source of emissions, and therefore is in compliance for this point.

IV. Insignificant Activities

Heater Boiler	5 mmBtu/hr, gas fired
Scrubber Dump Drip Tank	12,700 gal.
Gasoline Storage Tank	insignificant emissions (<2 tpy)
Dirty Oil Storage Tank	6556 gal.
Clean Oil Tank	2537 gal.
Clean Oil Tank	6366 gal.
Ambitrol Storage Tank	6200 gal.
Hico Oil Reclaimer Tank	520 gal.
Purging/Venting during Start-up or Shut-down	insignificant emissions (<2 tpy)

V. Alternative Operating Scenarios

Temporary Engine Replacement-

CIG has indicated that replacement engines are typically not used during major engine overhaul. They are aware that any temporary or permanent replacement of engines at this site shall not be conducted without prior notification of the Division. The Division will determine whether the proposed change at the site will require a Construction Permit and/or modification of the Operating Permit. Installation of equipment not specifically identified in the Permit prior to notification of the Division shall be considered a violation subject to enforcement action.

VI. Permit Shield

The regulation citations identified as not applicable to this source in Section III of the Operating Permit are based on a condensed version of the requested Permit Shield citations as submitted with the original application for this plant. It is the Division's opinion that the Shield should be reserved for regulations that might otherwise be

applicable. The requested Shield items will be granted with the following exceptions:

Odor, Reg. No. 2 Section A - Although no odor problems are usually associated with compressor stations, the regulation still applies. No compliance demonstration is required for this regulation but complaints should be documented and reported to the Division.