TECHNICAL REVIEW DOCUMENT
for
OPERATING PERMIT 95OPCY048
to be issued to:

Colorado Interstate Gas Company
Kit Carson Compressor Station
Cheyenne County
Source ID 0170001

Prepared March 7, 1997 by Stefan Drewes
Revised on July 22, 1997
Revised October 20, 1997 by Jacqueline Joyce

I. Purpose:

This document establishes 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 March 1, 1995 a supplemental technical submittal of June 22, 1995, as well as numerous phone contacts with the applicant.

II. Source Description:

This source is classified as a natural gas transmission facility defined under Standard Industrial Classification 4922. Gas is compressed to specification for transmission to sales pipelines using ten (10) Internal Combustion Engines (ICEs) to power compressor units. Other significant activities include fugitive losses of VOCs from equipment leaks and three additional ICEs used for electric generation.

The facility is located near the rural community of Kit Carson in Cheyenne County, 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 affected state within 50 miles.

This source is grandfathered with respect to Prevention of Significant Deterioration (PSD) requirements. However, the source emits greater than 250 tons per year of Nitrogen Oxides (NO_X) and Carbon Monoxide (CO). 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.58 (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. A PSD permit was issued for this facility by the Environmental

Protection Agency (EPA) in the early 1980s. This PSD permit was issued for the addition of three (3) 8000 HP compressor engines and one (1) 370 HP engine driving a generator. According to the EPA, if the equipment was not installed within 18 months, the permit expires. Since CIG did not install the equipment and the 18 month time period has elapsed, this PSD permit is considered cancelled.

This facility currently has no applicable MACTs and has indicated that they are not subject to 112(r), the Accidental Release requirements. The source indicated in their Title V application, that they consider themselves to be in compliance with all current applicable requirements. Facility wide emissions are as follows:

Pollutant	Actuals (tpy)	Potential to Emit (tpy)
NO_X	570.4	1,262
VOC	30.2	57.2
CO	446.0	986
HAPs	negl.	5.2

Actual emissions are based on 1995 fuel usage data provided by the source.

III. Emission Sources:

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

Units E001 to E007 - Seven (7) Clark Model BA-6 1060 HP, 2-Cycle Rich Burn, Internal Combustion Engines Powering Compressors. Natural Gas Fired. Serial Nos. 36145-36151.

Units E008 to E010 - Three (3) Clark Model HBA-6 1160 HP, 2-Cycle Rich Burn, Internal Combustion Engines Powering Compressors. Natural Gas Fired. Serial Nos. 36229, 36269, 36294.

Units E011 to E013 - Three (3) Ingersol-Rand Model PVG-8 326 HP, 2-Cycle Rich Burn, Internal Combustion Engines Used for Electric Generation. Natural Gas Fired. Serial Nos. 8GP2390, 8GP2391, 8GP2393

Discussion:

1. Applicable Requirements- All of these units began operation between 1949 and 1954 and are therefore grandfathered from State and Federal permitting requirements since installation occurred prior to February 1, 1972. Consequently, the only applicable requirements for these engines are a 20% Opacity limit (Colorado Regulation 1, Section II.A.1) and Air Pollution Emission Notice (APEN) reporting in accordance with Colorado Regulation 3, Part A.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 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 these engines are necessary to the extent that accurate actual emissions are required to verify the need to submit Revised APENs to update the Division's Emission Inventory. Colorado Interstate Gas has proposed the use of AP-42 factors from Table 3.2-1 (7/93). All thirteen (13) engines are listed as 2-cycle rich burn engines in the Title V permit application. Table 3.2-1 does not list emission factors for 2-cycle rich burn engines. Therefore, the source has proposed to use the larger emission factor from either the 4-cycle rich or 2-cycle lean burn engine. The proposed emission factors are as follows :

Pollutant	Emission Factor
NO_X	11.0 g/bhp-hr
CO	8.60 "
VOC	0.43 "

CIG proposes to convert these values to fuel-based factors (lb/MMSCF) using the equation outlined on the attached spreadsheet titled "Emission Factor Conversion". The Division has reviewed and accepted their proposed method.

3. Monitoring Plan- Colorado Interstate Gas has proposed to calculate annual emissions for the purpose of determining compliance with APEN reporting requirements using the equation on the spreadsheet listed above. The source will be required to record fuel usage and calculate emissions annually and submit a Revised APEN to the Division as required by Reg 3, Part A.II.C.

The Opacity standard of 20% will be demonstrated by a certification that the engine unit has used 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 provided natural gas is the only fuel used.

This monitoring plan is consistent with the attached Monitoring grid developed by the Division for Internal Combustion Engines in Attainment areas.

4. Compliance Status- Colorado Interstate Gas has submitted updated APENs reporting actual 1994 emissions of criteria pollutants based on AP-42

factors and Hazardous Air Pollutants based on the EPA SPECIATE database. CIG certified within the application that natural gas has been used exclusively as the fuel for these engines. A review of the Division's records indicated no outstanding compliance issues therefore, all of these engines are currently in compliance with applicable requirements.

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

Discussion:

1. Applicable Requirements - Fugitive VOC emissions from equipment leaks exceed the APEN de minimis 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. Therefore the only applicable requirement for fugitive VOC emissions is APEN reporting requirements (Reg 3, Part A, Section II) for the determination of annual fees.

2. Emission Factors - CIG calculated emissions from equipment leaks based on emission factors from EPA's Protocol for Emission Leak Estimates (EPA-453/R-93-026), June 1993. Factors are multiplied by the number of components of each type (i.e. 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 by the most recent analysis.

3. Monitoring Plan- Since fugitive VOC emission rely on an accurate component count the Division is requiring the source to conduct an initial hard count of components (i.e. process valves, relief valves, pump seals, compressor seals and flanges/connections) and to maintain a running tally of additions or deletions during the permit term. CIG must also document steps taken to repair or mitigate leaks discovered during the reporting period.

4. Compliance Status- CIG appropriately and accurately quantified emissions of VOC from Equipment Leaks and submitted a representative APEN in the Operating Permit application. They are therefore currently in compliance with all applicable requirements.

IV. Insignificant Activities

Emissions from Purging/Venting during Start-up or Shut-Down

In response to a April 20, 1995 technical request by the Division, CIG calculated emissions from engine purging/venting prior to engine overhaul. It was assumed that 6000 cubic feet would be vented from each engine (13) once per year for engine repair. Based on a gas analysis submitted with the

application, which indicated that the natural gas used at this facility has a relatively low VOC content, emissions were determined to fall below APEN de minimis levels.

Gasoline Storage Tank

A 10,500 gallon gasoline storage tank for Company vehicles exists on site which does not fall under any specific insignificant activities listed in Colorado Regulation No. 3, Part C, Section III.E.3. However, in a response to a request from the Division for additional information, CIG documented, using the TANKS3 Emission Model, that emissions from this tank would be below APEN de minimis levels.

V. Alternative Operating Scenarios

Temporary Engine Replacement-

CIG has indicated within the Operating Permit application that there will be no temporary replacement of compressor engines at this site. Engines that require significant repair will be permanently replaced by identical units. CIG will be required to notify the Division if a replacement of this kind is planned. This scenario will not be listed as an Alternative Operating Scenario within the Permit.

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. The original list contained many citations that were clearly unnecessary for the shield. For example, CIG stated that Incinerator regulations would not apply since no equipment on site met the definition an incinerator. It is the Division's opinion that the Shield should be reserved for regulations that might reasonably otherwise apply to equipment at the plant in question. Therefore, the Division proposes that the Permit Shield be condensed to a format similar to that submitted for CIG's Vilas Station.