TECHNICAL REVIEW DOCUMENT
OPERATING PERMIT 95OPKC052
to be issued to:

Tri-State Generation and Transmission Assn., Inc.
Burlington Generating Station
Kit Carson County
Source ID 0630003

Prepared by David H. Webb
May 9, 1996
Revised December 2, 1996
2nd Revision February 7, 1997

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, the Public and other interested parties. The conclusions made in this report are based on information provided in the original application submittal of March 1, 1995, and supplemental technical submittals of June 2, September 9, 1995 and August 15, 1996.

II. Source Description:

This source is primarily classified as an Electric Generating Station under Standard Industrial Classification 4911. Two General Electric turbines power generators for production of electricity. The turbines use #2 distillate blend oil as fuel. This station is currently used to supply additional power during peak electric demand.

The facility is located near the Town of Burlington in Kit Carson County, CO, in an area designated as attainment for all criteria pollutants. This facility is classified as a major source with facility wide emissions as follows:

Pollutant	Potential to Emit (tpy)*	Actual (tpy)
NO_x	3572.4	3.60
SO_2	2673.6	0.80
TOC (as Methane)	87.0	0.10
CO	245.6	0.20
PM	326.2	0.30
PM_{10}	312.2	0.30
HAPs	96.8	<1

*Note discussion under Applicable Requirements for the Turbines below.

Potential to Emit is based on the nominal design heat ratings (MMBtu/yr) or nominal yearly fuel use (1000 gal/yr) for each of the turbines multiplied by the compliance

emission factors as listed in Section II of the Permit. Actual emissions are based on: Actual 1993 fuel use data for each of the turbines multiplied by the compliance emission factors listed in the permit, assuming 134,000 Btu/gallon of fuel burned; current emissions from the storage tanks based on typical operations using the TANKS 2.0 emission model.

This facility is not subject to the requirements of Section 112(r) of the Clean Air Act Amendments of 1990.

The facility is not within 100 kilometers of any Federal Class I designated areas. Nebraska and Kansas are within a 50 mile radius of the plant, and are therefore considered affected states.

Tri-State Generation certified to compliance with all applicable requirements for this facility in their Title V application submitted March 1, 1995.

III. Emission Sources:

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

<u>Units G01, G02</u> - General Electric Model MS-7000-B Simple Cycle Combustion Turbines. Nominally Rated at 584.24 MMBTU/hr Each. #2 Distillate Fuel Oil Fired. Serial Nos. 248868, 248869.

Discussion:

1. Applicable Requirements- Prior to Title V application submittal, Colorado Construction permit C11, 232 defined applicable requirements for these two turbines. This permit lists the Colorado Regulation 1, Section III.A.1.c particulate limit of 0.10 lbs/MMBTU of heat input and the 20% Opacity standard. Since the fuel for the turbines is a source of sulfur dioxide emissions, Section VI standards of Regulation No. 1 will also apply; specifically, the 0.8 lb/MMBTU limitation for existing oil fired units with heat input greater than 300 MMBTU/hr of Section VI.A.3.b.(ii).

A 30% opacity limitation exists for these units during periods of start-up.

These units were installed in July of 1977 with potential emissions greater than 250 tons per year for several criteria pollutants. The PSD regulations in place at the time applied only to particulate and sulfur dioxide emissions from 18 specific source categories. Oil-fired turbines were not included in the list of 18, and therefore PSD did not apply at that time. Any modification at this site that will increase a criteria pollutant by more than the significance levels defined in Colorado Regulation No. 3, Part A, Section I.B.58 will be subject to PSD review in accordance with Colorado Regulation No. 3, Part B, Section IV.D.3.

2. Emission Factors- Emissions from these simple cycle turbines are

produced during the combustion process, and are dependent upon operating conditions and specific properties of the fuel oil being burned. The pollutants of concern are Nitrogen Oxides (NO_X), Carbon Monoxide (CO), Volatile Organic Compounds (VOC), Sulfur Oxides (SO_X), Particulate Matter (PM and PM_{10}) and Lead. Small quantities of Hazardous Air Pollutants (HAPs) are also emitted dependent upon the makeup of the fuel and combustion efficiency. The Compliance Emission Factors listed in the Permit for the turbines are from the EPA Compilation of Air Pollution Emission Factors (AP-42) Section 3.1, Table 3.1-1, Stationary Gas Turbines for Electric Generation, 10/96. These emission factors were proposed following preliminary review of the Draft Permit by Tri-State, after discovery that the Turbine emission factors in AP-42 had been updated in October of 1996.

3. Monitoring Plan- Conditions 1.1 to 1.7 in Section II of the Operating Permit list the Monitoring and Recordkeeping provisions necessary to verify compliance with Applicable Requirements for these two turbines. Monthly fuel use for the turbines will be determined and used in conjunction with the Compliance Emission Factors to determine monthly emissions. Total Million BTU for the fuel burned will also be determined monthly based on the latest results from the testing required under Condition 1.6.

Requirements for the frequency of fuel oil sampling/testing and Method 9 visual Opacity readings during normal operation were developed based on discussions during an August 1, 1995 meeting with representatives of the APCD and Colorado Utilities Coalition. It was determined that peaking station turbines (primarily used only during high electrical demand) burning distillate fuel oil would be unlikely to exceed the 20% Opacity standard if the turbines were operating properly. Abnormal operating conditions which result in high turbine temperature or inefficient power generation would trip the units off line. Tri-State argued that excess Opacity would only be likely during abnormal turbine operation. The built in safety features would lessen the likelihood of an extended period of excess Opacity. Therefore, the Division agreed to the frequency of testing as proposed by Tri-State in a September 20, 1995 supplemental Title V submittal. Testing requirements and maintenance procedures in Conditions 1.6 and 1.7 of the Permit will be used to optimize operation of the turbines to prevent excess Opacity.

It should be noted that the Division has decided to specifically list the 30% opacity limitation for start-up periods, and define specific monitoring requirements for this case, in order to insure compliance.

4. Compliance Status- Based on the latest fuel characteristics and fuel consumption rates as reported in the Title V application, the Burlington Generating Station is currently meeting the lb/MMBTU limits for particulate and sulfur dioxide. No opacity violations have been documented. The required Air Pollution Emission Notices are on file with the Division. Therefore, the turbines are currently in compliance with all applicable requirements.

<u>Units T01, T02</u> - Fuel Oil Storage Tanks, 2.8 Million Gallon Capacity

Discussion:

1. Applicable Requirements- Current actual uncontrolled emissions from breathing and working loss for these two tanks is below both APEN and Colorado Construction Permit applicability thresholds. However, given the size of these tanks and potential throughput based on the nominal amount of fuel the turbines could burn in one year (38.2 Million gallons each), the Division will require tracking of tank throughput and turnovers. An Air Pollution Emission Notice must be filed if the emissions of Volatile Organic Compounds in any one year exceed 2 tons/year.

The statewide requirements for Storage and Transfer of Petroleum Liquids in Section VI of Colorado Regulation No. 7 do not apply to these storage tanks. They are exempt per Section VI.B.1 since the liquid stored is #2 fuel oil.

2. Emission Factors- The TANKS 2.0 Model was used by Tri-State to calculate actual emissions from these tanks. Emission factors will be dependent upon the parameters that are input to this Model, including vapor pressure of the liquid being stored, tank throughput, tank configuration and design of the venting system

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3. Monitoring Plan- Tri-State will be required to annually calculate emissions from the two storage tanks using the TANKS 2.0 emission Model, and track fuel shipments, tank throughput and turnover rate.

4. Compliance Status- As stated above, no current emission based applicable requirements exist for these tanks. Tri-State will continue to monitor emissions to determine if applicability thresholds for emission reporting or permitting are triggered.

IV. Permit Shield

The permit shield request in the original permit application contained the same regulation citations that were listed on the Plant-Wide Applicable Requirements form. A letter was sent requesting clarification of this issue on May 9, 1996.

Tri-State responded with a revised Permit Shield request in a submittal of August 15, 1996. Table 1 in Section III of the Operating Permit reflects the regulations that Tri-State has specifically identified as non-applicable to this facility. Justifications for the determination are also provided.

Note that Prevention of Significant Deterioration permitting requirements do not <u>currently</u> apply to this facility. However, as previously stated, future modifications at this site which increase emissions may trigger major modification provisions of Colorado Regulation No. 3, Part B, Section IV.D.3.

V. Insignificant Activities

Fuel Unloading Rack

Tri-State has calculated potential emissions from the loading rack based on the maximum amount of fuel necessary to continuously run the turbines for a full year. Emissions calculate to just over 1000 pounds of VOC. This is well below the APEN reporting threshold of 2 tons per year.

Sandblasting and Painting Operations

Tri-State must sandblast and repaint the storage tanks at this site every several years. Calculations documenting that the emissions generated by these operations are below APEN and permitting thresholds has been submitted and approved by the Division. Due to the intermittent nature of this activity and the low emission levels, the Division will not list this as an insignificant activity in Appendix A of the Operating Permit.