

STATEMENT OF BASIS

To: Reviewers
Through: Lori Bocchino, Operating Permit Program Manager
From: Despina Nikolova, Air Quality Engineer
Subject: Draft Operating Permit 3-0-237, Wyoming Interstate Company
Douglas Compressor Station
Date: May 24, 2012

Introduction:

Attached is the draft Wyoming Air Quality Standards and Regulations (WAQSR) Ch 6, Sec 3 operating permit for Wyoming Interstate Company, Douglas Compressor Station. This facility has four combustion turbines that compress pipeline natural gas for interstate transport via underground pipeline. The gas passing through is sourced from coal bed methane. Emission points at the facility include three 6,278 hp Solar Taurus 60-T7300S turbine compressor engines, one 27,669 hp General Electric PGT-25 turbine compressor engine, one 529 hp Waukesha H24GL and one 1,150 hp Caterpillar G3516 TALE stand-by generator engines, one 4.6 million Btu per hour (MMBtu/hr) Parker boiler, one 100 bbl slop liquids tank, one 50 bbl storage tank for Ambitol, and fugitives emissions. The engines and Parker boiler are all natural gas-fired.

Permitting History:

Permit CT-1540 (7/20/99): was issued to Wyoming Interstate Gas, for construction of the Douglas Compressor Station consisting of one Solar Taurus 60-T7300S turbine and one Waukesha H24GL generator engine, and associated equipment.

Permit MD-453 (4/15/00): was issued to modify operations at the facility with the addition of one Solar Taurus 60-T7300S turbine engine.

Waiver AP-WL1 (5/31/01): allowed temporary installation of one 618 hp Caterpillar G3516 engine for 5000 hours of operation.

Permit MD-637 (5/28/01): was issued to modify operations at the facility with the addition of one Solar Taurus 60-T7300S turbine engine. MD-637 was corrected (10/1/01) for typographical errors.

Waiver AP-6863 (10/26/07): allowed installation of one Caterpillar G3516 TALE stand-by generator engine. The waiver sets NO_x and CO emissions limits for the engine, and limits the annual operating hours of the engine to 500 hours.

Permit MD-6401 (11/20/07): modified operations at the facility with addition of one 21,300 hp natural gas General Electric Model PGT-20 turbine engine. Permit MD-8249, listed below, was issued to upgrade the turbine engine and superseded this permit.

Permit MD-8249 (7/18/09): allowed the permittee to upgrade the General Electric Model PGT-20 turbine. The project involved software reprogramming to bring the General Electric Model PGT-20 to PGT-25 performance levels, resulting in a final horsepower of 27,669. This permit set two different NO_x and CO emission limits for the General Electric PGT-25 turbine based on the mode of operation of the turbine, due to gas volumes for the facility. Prior to any scheduled overhaul, the permittee is required to submit for review a demonstration whether any combustion control technologies have been developed which would reduce NO_x emissions from the General Electric PGT-25 turbine to 15 ppm or less at 15% O₂. If such NO_x control technology is commercially available for this turbine, the permittee shall install the technology during the scheduled overhaul (or as soon as practicable thereafter). Within 30 days of startup

of the turbine after the installation of the control technology, the permittee shall submit a Chapter 6, Section 2 permit application to lower the emission limits in the permit to reflect the installation of the control technology.

Permit CT-1540A (7/7/11): amended and superseded permits CT-1540, MD-453, MD-637 Corrected, listed above, to incorporate the latest revision to Subpart GG of 40 CFR Subpart 60, for *Stationary Gas Turbines*, and to revise the reporting requirement from 30 to 45 days. This permit sets NO_x and CO emissions limits and requires that the permittee follow a preventative maintenance program for the Solar Taurus turbines and the Waukesha engine. The permit also limits the annual operating hours of the Waukesha engine to 500 hours per year.

Applicable Requirements:

In addition to the permit requirements listed above, the sources at the facility are subject to visible emission limits of 20 percent in accordance with WAQSR Ch 3, Sec 2.

WAQSR Ch 3, Sec 3 limits NO_x emissions from new fuel burning equipment to 0.20 pounds per MMBtu heat input. This limit applies to the Parker Boiler (H-6203).

This facility is subject to the requirements of 40 CFR Part 60, Subpart GG, for *Stationary Gas Turbines*. Subpart GG limits the NO_x and SO₂ emissions from the Solar Taurus 60-T7300S turbine engines (CG-7101, CG-7201, CG-7301). Permit CT-1540A requires a more stringent NO_x emission limit.

The permittee must also comply with any applicable requirements from Ch 5, Sec 2 New Source Performance Standards, and 40 CFR Part 60, Subpart JJJJ - *Stationary Spark Ignition Internal Combustion Engines*. (Affected engines are defined at §60.4230 of the subpart). Currently, engines at the facility do not have any requirements under Subpart JJJJ. However, as required by temporary engine replacement condition of the operating permit, if an engine is replaced or reconstructed, subpart applicability will need to be reevaluated and a statement regarding applicability submitted to the Division.

The General Electric PGT-25 turbine engine (unit CG-7401) is subject to the requirements of 40 CFR Part 60, Subpart KKKK, *New Source Performance Standards for stationary combustion turbines*.

Per 40 CFR 63, Subpart ZZZZ *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, all reciprocating internal combustion engines, Waukesha H24GL (EG-6101) and Caterpillar G3516 TALE (EG-6401) Stand-by Generator engines are subject to the requirements of 40 CFR 63 Subpart ZZZZ at an area source.

Periodic Monitoring

For periodic monitoring of visible emissions from all sources, the permittee will monitor the type of fuel used to ensure natural gas is the sole fuel source for these sources. Periodic emissions monitoring from the four turbine compressor engines shall consist of annual NO_x and CO emissions monitoring. Periodic emissions monitoring from each stand-by generator engine shall consist of biennial NO_x and CO emission monitoring. NO_x testing for the General Electric turbine shall be conducted in accordance with 40 CFR part 60 Subpart KKKK §60.4400. For the other NO_x and CO emissions monitoring, the permittee shall use the Division's portable analyzer monitoring protocol or EPA reference methods.

The natural gas fired Parker boiler is limited to 0.20 pounds per MMBtu heat input. This source is fuel burning equipment as defined in WAQSR Ch 1. In the absence of more stringent permit limits for these type of sources, the NO_x emission limit for fuel burning equipment defaults to 0.20 pounds per million BTUs (lb/MMBtu) for sources constructed after April 9, 1973, as stated in WAQSR Ch 3, Sec 3 emission standards for nitrogen oxides. These regulatory limits have not been updated since 1973. Generally, these small fuel burning sources are uncontrolled and operate at a steady state; emission variations are not likely. The AP-42 emission factors were developed by the EPA to help estimate the quantity of a

pollutant from a given source type. In developing an AP-42 emission factor, emission data is averaged from sources of similar size and type and is then assigned a reliability rating based on quality and quantity of the data used. The rating scale runs from A to E, with an A rating providing the highest quality. The AP-42 emission factor for gaseous fuel burning sources less than 100 MMBtu/hr is 0.1 lb/MMBtu with a B rating. Because of the level of emissions from the Parker boiler, which is less than 2.5 TPY of NO_x, and considering the amount of data evaluated to develop the AP 42 emission factor, the Division feels it is extremely unlikely this source will operate out of compliance and considers further monitoring uneconomical.

