

STATEMENT OF BASIS

To: Reviewers
Through: Lori Bocchino, Operating Permit Program Manager
From: Hillary Killorn, P.E., Operating Permit Engineer
Subject: Draft Chapter 6, Section 3 Operating Permit 3-2-190, WGR Asset Holding Company LLC, Little Thunder-Stratus Compressor Station
Date: August 1, 2013

Introduction

Attached for your review is the draft renewal Wyoming Air Quality Standards and Regulations (WAQSR) Ch 6, Sec 3 operating permit for the Little Thunder-Stratus Compressor Station. The facility gathers coal-bed methane from nearby sites, removes hydrates from the gas, and then compresses the gas to pipeline pressure for further transmission. Emission sources include compressor engines, dehydrator heaters and reboilers, and multiple small storage tanks.

Permitting History

The permits in this section are listed to document the permitting history.

Permit CT-1453(12/8/98) was issued to allow construction of the compressor station consisting of three, 1500-hp Waukesha 7042GSI compressor engines and a glycol dehydration unit. All conditions of this permit have been superseded by permit CT-1712.

Permit CT-1712(2/8/00) allowed the replacement of the three Waukesha engines permitted under CT-1453 with two, 1680-hp Waukesha engines (E1 and E2) and four, 400-hp Caterpillar engines. The permit also required that one of the two Waukesha engines was to be tested to confirm the formaldehyde emissions were as presented in the permit application. In a letter dated December 19, 2001 the Division accepted formaldehyde test results performed on an engine at Western Gas's Pinto Station to meet the formaldehyde testing requirements of permit CT-1712. Engines E1 and E2 were installed under this permit. Requirements include NO_x and CO emission limits and annual testing. A preventative maintenance plan was required but was superseded by condition 14 in permit MD-1133.

Permit MD-491(7/5/00) allowed for the installation of two additional, 1680 hp Waukesha engines (E3 and E4). Requirements include NO_x and CO emission limits and annual testing. A preventative maintenance plan was required but was superseded by condition 14 in permit MD-1133.

Permit MD-597(2/27/01) allowed for the installation of two additional Waukesha L7044GSI compressor engines, but these engines have since been removed and there are no remaining requirements.

Permit MD-691(11/26/01) and MD-691 (Corrected) (9/3/02) was issued for the installation of an additional four Waukesha 7044GSI engines and three Waukesha 3524GSI engines, but these engines have since been removed and there are no remaining requirements.

Permit MD-691A (5/12/04) authorized the replacement of one, 1680-hp Waukesha L7044GSI with two, 840-hp Waukesha F3524GSI engines. Engines LTSC-6/E15 (now named E7) and LTSC-7/E16 were installed under this permit but LTSC-7 has since been removed. Remaining requirements include NO_x and CO emission limits and annual testing. A preventative maintenance plan was required but was superseded by condition 14 in permit MD-1133.

Permit MD-1133 (3/21/05) allowed the installation of one, 840-hp Waukesha F3524GSI compressor engine, a 75 MMSCFD amine unit with a 21 MMBtu/hr reboiler, and a 75 MMSCFD TEG dehydration unit with a 2 MMBTU/hr reboiler. The compressor engine was never installed and the emission limits for NO_x and CO for the amine unit reboiler and the facility engine configuration were superseded by permit MD-6598 Corrected. Remaining requirements include a condition addressing the shutdown and removal of engines, and monitoring and maintenance of the compressor engine catalysts. Catalyst monitoring and maintenance superseded all previous permit requirements for the engine preventative maintenance plans.

Waiver AP-4187 (2/13/06) was issued for the installation of a temporary generator. The waiver was never used and the permittee requested the waiver be terminated.

Waiver AP-5600 (1/4/07) allowed for the installation of one, 30-hp natural gas fired Generac standby generator (G1). The hours of operation are limited to 1000 hours per year. The permittee is also required to maintain documentation of the recommended maintenance performed on the generator.

Permit MD-6598 (12/11/07) and MD-6598 (Corrected) (5/19/08) revised the heat input of the amine reboiler originally permitted under MD-1133 from 21 MMBtu/hr to 36 MMBtu/hr. It also clarified that the reboiler is actually four separate, 9 MMBtu/hr units for a total of 36 MMBtu/hr. Emission limits for NO_x and CO were set for the four units (AMN1A, AMN1B, AMN1C and AMN1D) and initial performance testing was required for each. Permit MD-6598 (Corrected) removed the requirement for the initial performance testing.

Permit MD-6598A (5/16/13) corrected the facility engine configuration in MD-6598 (Corrected) to include the Generac Emergency Generator (G1) in addition to the five Waukesha compressor engines (E1-E4 and E7) currently installed at the facility. This permit also includes all other requirements set forth in MD-6598 (Corrected), including NO_x and CO emission limits for the four amine treater heater burners (AMN1A-AMN1D).

Applicable Requirements

In addition to the permit requirements listed above, the sources at the facility are subject to the visible emission limits set forth in WAQSR Ch 3, Sec 2. The Dehy Reboiler Heaters (D1b, D2b and D4b) are limited to NO_x emissions of 0.20 lb/MMBtu heat input under Ch 3, Sec 3.

The permittee must also comply with any applicable requirements from the following Chapter 5, Section 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),

Subpart OOOO – *Crude Oil and Natural Gas Production, Transmission and Distribution* (Affected sources are defined at §60.5365 of the subpart),

and from the following Chapter 5, Section 3 National Emission Standards for Hazardous Air Pollutants, and 40 CFR Part 63:

Subpart ZZZZ for *Stationary Reciprocating Internal Combustion Engines* (All engines are subject to any applicable requirements from Subpart ZZZZ).

Periodic Monitoring and CAM

Periodic Monitoring consists of the following:

- For *visible emissions* from the engines (E1-E4, E7 and G1) and reboiler heaters (AMN1A-AMN1D, D1b, D2b and D4b) at the facility, the permittee shall verify that natural gas is the sole fuel source used.
- Monitoring and documenting the *operating hours* of the Generac Emergency Generator engine (G1).
- Annual monitoring of *NO_x emissions* from the Waukesha F3524GSI engine (E7) using EPA reference methods or the Division's portable analyzer monitoring protocol.
- Documenting operating hours and maintenance activities for the Generac Emergency Generator engine (G1).

WAQSR Ch 7, Sec 3, Compliance Assurance Monitoring (CAM) is applicable to the Waukesha L7044GSI engines (units E1-E4) for NO_x and CO emissions and to the Waukesha F3524GSI engine (E7) for CO emissions and includes continuous monitoring of the exhaust gas temperature into the catalyst. The pressure drop across the catalyst is also measured once per month. The effectiveness of the CAM monitoring parameters shall be evaluated and verified by annual NO_x and CO testing.

The Dehy Reboiler Heaters (D1b, D2b and D4b) are fuel burning equipment as defined in WAQSR Chapter 1. These uncontrolled units emit oxides of nitrogen (NO_x) in relatively small quantities (combined total of less than 2.3 tons per year of NO_x). In the absence of more stringent permit limits, the NO_x emission limit for fuel burning equipment defaults to 0.20 pounds per million BTUs (lb/MMBtu). Generally, small fuel burning sources like these units operate at a steady state; emission variations are not likely. 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 the emission factor 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 small gaseous fuel burning sources (less than 100 MMBtu/hr) is 0.1 lb/MMBtu with a B rating. Considering the amount of data evaluated to develop the AP-42 emission factor and that the WAQSR Ch 3, Sec 3 emission limit is twice the AP-42 value, the Division feels it is extremely unlikely these sources will operate out of compliance and considers further testing of these sources to be uneconomical.

The Amine Treater Reboiler heaters (AMN1A, AMN1B, AMN1C and AMN1D) are fuel burning equipment as defined in WAQSR Chapter 1. These uncontrolled units emit oxides of nitrogen (NO_x) and carbon monoxide (CO) in relatively small quantities (each less than 1.6 tons per year of NO_x and

less than 3.2 tons per year of CO). The burners on the reboiler heaters are low-NO_x burners with manufacturer guaranteed maximum emission rates of 0.04 lb/MMBtu of NO_x and 0.08 lb/MMBtu of CO. These values are well below the default NO_x emission limit of 0.20 lb/MMBtu in WAQSR Ch 3, Sec 3. Initial performance tests showed operation well within the permitted limits. In response to this data and the AP-42 emission factor discussion above, the Division feels it is extremely unlikely these sources will operate out of compliance and considers further testing of these sources to be uneconomical.