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 3-1-215, Enterprise Jonah Gas Gathering Company, Paradise Compressor Station

Date: July 22, 2013

Introduction

Attached for your review is the draft renewal Wyoming Air Quality Standards and Regulations (WAQSR) Ch 6, Sec 3 operating permit 3-1-215 for the Paradise Compressor Station. The facility gathers and compresses natural gas. Permitted emission sources at the facility include: eight 3,668 hp Caterpillar G3612LE compressor engines, two 1,800 hp Caterpillar G3516BLE generator engines, one 425 hp Caterpillar G3408CLE compressor engine, one 3.8 MMBtu/hr hot oil heater/stabilizer, one 2.0 MMBtu/hr line heater, three 1,000 bbl condensate storage tanks, an emergency flare, and a combustion chamber.

Permitting History

All permits are listed to document the permitting history. The permits listed in this first paragraph have no remaining applicable requirements. CT-2250 (2/23/01): was issued for the construction of the Paradise Compressor Station, consisting of four Caterpillar 3612LE engines equipped with oxidation catalysts, one Caterpillar 3412TASI generator engine, one Onan emergency generator and condensate handling equipment. Nothing was installed under this permit and it expired. CT-3612 (6/1/04): revised the facility configuration to consist of five 3,668 hp Caterpillar G3612LE engines (E1-E5), three 637 hp Caterpillar G3412CLE engines, one 245 hp Caterpillar G3406TA engine, one 3.8 MMBtu/hr hot oil heater/stabilizer (H1), and six 400 bbl condensate storage tanks. Facility construction commenced on 8/17/05 but the conditions of this permit were superseded by permit MD-1139. MD-1139 (4/5/05): authorized the replacement of three 637 hp Caterpillar G3412CLE engines with two 1,800 hp Caterpillar G3516BLE generator engines (G1 & G2), and the replacement of one 245 hp Caterpillar G3406TA engine with one 425 hp Caterpillar G3408CLE engine (VRU). These engines were not yet installed and the conditions of this permit were superseded by permit MD-1187. MD-1187 (7/19/05): allowed for the addition of three 3,668 hp Caterpillar G3612LE engines (E6-E8) and one 2.0 MMBtu/hr line heater (H2). Engines G1 & G2 were installed in February 2006, E1-E3 & VRU were installed in March 2006, E4-E5 & H1-H2 were installed in May 2006, E6 was installed in October 2008, and E7 & E8 were installed in November 2008. All engines were tested as required. The conditions of this permit were superseded by permit MD-11562. wv-13985 (10/19/12): authorized the temporary operation of one 2,593 hp Caterpillar 3516BDITA diesel fired generator engine as needed to complete repairs on one of the two electric generators (G1 & G2) installed at the facility. The diesel generator was not run and the waiver expired on November 1, 2012. wv-14967 (5/20/13): authorized the temporary operation of one 2,539 hp Caterpillar 3516BDITA diesel fired generator engine as an emergency backup generator while one of the installed generators (G1) was being repaired. The diesel generator was not run and authorization to use the diesel generator expired on June 30, 2013. wv-15213 (7/10/13): authorized the

temporary operation of one 2,539 hp Caterpillar 3516BDITA diesel fired generator engine as an emergency backup generator while one of the installed generators (G1) was being repaired. The diesel generator was not run and authorization to use the diesel generator expires on July 31, 2013.

MD-11562 (12/9/11): The conditions of this permit supersede the conditions of all previously issued WAQSR Ch 6, Sec 2 permits and waivers. It allows for the replacement of six 400 bbl condensate storage tanks with three 1,000 bbl horizontal condensate storage tanks (T1-T3), authorizes pigging activities, and updates facility emissions. Permit requirements include:

- An initial performance test of the combustion chamber (CU-1) (completed on 5/31/12);
- NO_X, CO and VOC emission limitations for CU-1;
- NO_X, CO, VOC and formaldehyde emission limitations for all Caterpillar engines;
- VOC testing for all Caterpillar engines within 90 days of permit issuance (completed in January through April 2012);
- Formaldehyde testing for the one Caterpillar G3408CLE engine (VRU) within 90 days of permit issuance (completed on 1/9/12);
- Oxidation catalyst monitoring and maintenance, including installation of a thermocouple to measure the inlet catalyst temperature, and installation of a device to measure pressure drop across the catalyst;
- Annual testing for NO_X, CO and VOC for all Caterpillar engines and CU-1;
- Testing for formaldehyde or CO reduction per 40 CFR Part 63 §63.6615 for all Caterpillar engines;
- Notification and retesting if any engine tests outside the permitted limits;
- Compressor engine starter replacement conditions;
- VOC distance piece vent emission rate limitations and quarterly testing for the eight Caterpillar G3612LE engines (E1-E8);
- Engine stack height requirements (which have all been met);
- Emergency flare, CU-1, and VRU procedural, operational, and recordkeeping conditions;
- Emergency flare monitoring including installing a thermocouple in the flare stack and a flow indicator in the feed line;
- CU-1 monitoring including installing a thermocouple and a continuous recording device (or equivalent) to detect the presence of the pilot flame;
- CU-1 destruction efficiency standards;
- Annual reporting of actual fugitive VOC emissions;
- Implement a LDAR program following 40 CFR Part 60 Subpart KKK (program was operational and in compliance by 7/12/12); and
- Compliance with 40 CFR Part 60 Subpart Kb, 40 CFR Part 60 Subpart JJJ, and 40 CFR Part 63 Subpart ZZZZ.

MD-14105 (6/17/13): superseded the condition regarding annual reporting of actual fugitive VOC emissions in permit MD-11562 and implemented updated requirements for the same. This permit also requires that the permittee comply with all applicable requirements of 40 CFR 60 Subpart OOOO.

The permittee must also comply with all applicable requirements listed in the paragraphs below.

Applicable Requirements

In addition to the permit requirements listed above, all sources at the facility are subject to the visible emission limits set forth in WAQSR Ch 3, Sec 2. The hot oil heater/stabilizer (H1) and line heater (H2) are subject to the NO_X emission limit under WAQSR 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 Kb - *Volatile Organic Liquid Storage Vessels* (Affected sources are defined at §60.110b of the subpart, and currently include T1-T3),

Subpart JJJJ - *Stationary Spark Ignition Internal Combustion Engines* (Affected engines are defined at §60.4230 of the subpart, and currently include E6-E8),

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 - Stationary Reciprocating Internal Combustion Engines (All engines are subject to any applicable requirements from Subpart ZZZZ),

Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters (Affected sources are defined at §63.7490 of the subpart, and currently include H1 & H2).

Although the facility must implement a LDAR program following 40 CFR Part 60, Subpart KKK, the facility is not an affected facility under Subpart KKK because it is not an onshore natural gas processing plant.

Periodic Monitoring and CAM

Periodic Monitoring consists of the following:

- For *visible emissions* from the engines, monitoring and certification that natural gas is the sole source of fuel in lieu of visible emissions monitoring.
- Monitoring *visible emissions* from the flare when it exhibits visible emissions for more than five minutes.
- Quarterly monitoring of *visible emissions* from the combustion chamber with Method 22-like observations during active operation of the condensate storage tanks.
- Monthly monitoring of *inlet catalyst temperature and pressure drop* across the catalyst from the eleven Caterpillar engines equipped with oxidation catalysts, OR, compliance with 40 CFR Part 63 Subpart ZZZZ §63.6605 and §63.6640.
- Annual monitoring of *NO_X, CO, and VOC emissions* from the eleven Caterpillar engines and the combustion chamber using EPA reference methods or the Division's portable analyzer monitoring protocol.
- Annual monitoring of *Formaldehyde emissions* from the eleven Caterpillar engines using EPA reference methods and a Division approved testing method.
- Monitoring of *Formaldehyde emissions* or *CO reduction* from the eleven Caterpillar engines following 40 CFR §63.6615.

- Once every calendar year, monitoring of *NO_X and CO emissions* from the combustion chamber consisting of three 1-hour tests following EPA Reference Methods 1-4, 7E and 10 or other Division approved methods.
- Once every calendar year, monitoring of *VOC emissions* from the combustion chamber consisting of three 1-hour simultaneous tests at the inlet and outlet of the combustion chamber following EPA Reference Methods 1-4 and 25A or other Division approved methods.
- Quarterly monitoring of the *VOC distance piece vent emission rate* for the eight Caterpillar G3612LE engines (E1-E8) and one Caterpillar G3408CLE engine (VRU) following the distance piece vent testing and monitoring procedure included as Appendix A of the operating permit.
- Monitoring of the *fugitive VOC emissions from equipment leaks* following a LDAR program in compliance with 40 CFR 60 Subpart KKK and included as Appendix B of the operating permit. Subsequent emission calculations shall be calculated following the methodology described in Appendix C of the operating permit.
- Continuous monitoring of the *emergency flare* using a thermocouple and flow indicator.
- Continuous monitoring of the *combustion chamber pilot flame* using a thermocouple or equivalent device.

The hot oil heater/stabilizer and line heater (H1 & H2) are fuel burning equipment as defined in WAQSR Chapter 1. These uncontrolled units emit oxides of nitrogen (NOX) in relatively small quantities (having a combined potential to emit of less than 2.6 tons per year of NOX). In the absence of more stringent permit limits, the NOX 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.

WAQSR Ch 7, Sec 3, Compliance Assurance Monitoring (CAM) does not apply at this time because none of the current sources at the facility have pre-control emissions greater than the major source threshold of 100 tons per year.