

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection**

B833724979

FACILITY: MUTTONVILLE COMPRESSOR STATION		SRN / ID: B8337
LOCATION: 36555 29 MILE RD., MUTTONVILLE		DISTRICT: Southeast Michigan
CITY: MUTTONVILLE		COUNTY: MACOMB
CONTACT: Bruce Bendes, R.S., CHMM, , Environmental Specialist		ACTIVITY DATE: 04/23/2014
STAFF: Sebastian Kallumkal	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Onsite Inspection		
RESOLVED COMPLAINTS:		

On April 23, 2014, I conducted a targeted inspection at ANR Pipeline Company's Muttonville Compressor Station located at 36555 29 Mile Rd. in Lenox Twp., Michigan. The purpose of the inspection was to verify facility's compliance with requirements of Article II, Air Pollution Control, Part 55 of Act 451 of 1994 and Renewable Operating Permit No.: MI-ROP-B8337-2010.

I arrived at the site at about 10:00 AM. At the facility I met Mr. Bruce Bendes and Mr. Mark Ogden, Operations Technician. I introduced myself and stated the purpose of the inspection and provided him my credentials including business card and DEQ brochure- Environmental Inspections: Rights and Responsibilities.

Mr. Bendes informed me that the field is down because they are done with their withdrawal season, but injection season has not been started. They always operate the dehydration system during the withdrawal season.

After the pre-inspection meeting, they accompanied me for an inspection of the facility. I inspected the natural gas fired emergency generator (300 KW), two RICEs, the glycol dehydrator, the condenser, the thermal oxidizer, etc. These processes were not operating at the time of my inspection.

FACILITY OVERVIEW

The Muttonville Compressor Station stores pipeline quality natural gas during the spring and summer months and withdraws the same gas during the fall and winter months as it is needed for heating purposes. The gas is supplied by Great Lakes Gas Transmission Company. The natural gas is stored in the Gray Niagaran Formation at a depth of approximately 1,600 feet. The natural gas field is approximately one-quarter of a mile wide, three-quarters of a mile long, and twenty five feet thick. The facility has two 3200 HP, 2 stroke lean burn natural gas-fired reciprocating internal combustion engines which drive compressors to pump natural gas into and out of the underground rock formations. Normally natural gas is pumped into the storage field from early March until early November and is withdrawn from early November until early March of the following year. Initially, the flow of natural gas into the pipelines is free flow during the withdrawal season, but has to be pumped out later in the season as the pressure decreases within the storage field. Mr. Bendes indicated that usually they don't need to use the engines to withdraw the gas out of the field.

During the storage period, the natural gas absorbs hydrocarbons and moisture while in the formation. To comply with federal regulations, the natural gas must be dehydrated prior to being pumped back into the pipelines. The facility has installed a glycol dehydration system with two dehydration towers to treat natural gas before sending into the pipeline system. Initially the gas from the field goes through two parallel scrubbers where some of the liquids are fallen out of the gas. Then the gas goes through glycol dehydration process.

In the glycol dehydration process, natural gas is pumped into one of two towers where it crosses a series of glycol trays. The glycol in these trays absorbs moisture and hydrocarbons in the natural gas and the clean gas is then sent to a Great Lakes Transmission Company

pipeline. The rich (dirty) glycol containing moisture and hydrocarbons accumulates at the bottom of each tower and is sent to a 3-Phase separator which separates heavy hydrocarbons from the glycol. From the 3-Phase separator, the resulting glycol is sent through a particulate filter, a charcoal filter, and another particulate filter before being sent to a reboiler unit. The reboiler drives off moisture from the glycol at 375 to 385 degrees Fahrenheit. The resulting clean glycol (lean glycol) is recirculated back to a surge tank and then to the glycol towers. The water vapor from the reboiler goes through the still tank and collected in the condensate tank. Vapors from the condensate tank go through a series of tubes, condensed and collected in the BTEX tank. The vapors from the BTEX are sent to the thermal oxidizer. Condensate is pumped out of the condensate tanks and into one of two brine tanks when necessary.

The facility's ROP requires the installation and proper operation of a thermal oxidizer to control emissions from the dehydrator. Either the thermal oxidizer or the condenser is required to be in operation when the glycol dehydration system is being used. The condenser is always used when the glycol dehy is used. During oxidizer malfunction events the vapors are vented to the atmosphere. Both the thermal oxidizer and condenser are equipped with temperature monitors as required by the facility's ROP. The glycol dehydration system was not in operation at the time of the inspection. Therefore, the thermal oxidizer and condenser were also not in operation.

REGULATORY ANALYSIS

The two identical 3200 HP, 2 stroke lean burn reciprocating internal combustion engines at the site (HAP Major source) are subject to 40 CFR 63, Subpart ZZZZ for Reciprocating Internal Combustion Engines (RICE) promulgated on February 24, 2004, by the EPA and revised on April 12, 2010. The final rule in 40 CFR 63.6590(b)(3) states that:

"A stationary source RICE which is an existing spark ignition 2 stroke lean burn (2SLB) stationary RICE, an existing spark ignition 4 stroke lean burn (4SLB) stationary RICE, an existing compressor ignition (CI) stationary RICE, an existing emergency stationary RICE, an existing limited use stationary RICE, or an existing stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis does not have to meet the requirements of this subpart (40 CFR 63, Subpart ZZZ) and of Subpart A (40 CFR 63, Subpart A) of this part. No initial notification is necessary."

For Subpart ZZZZ, stationary RICE is "existing" if construction or reconstruction of that RICE commenced prior to December 19, 2002. The two RICEs at the facility were installed in 1975 and 1976. Therefore, pursuant to 40 CFR 63.6590(b)(3), they are not required to comply with any of the requirements of Subpart ZZZZ or Subpart A including initial notification requirements.

The 300 KW (400 HP), natural gas fired, spark ignited (SI) emergency engine is subject to 40 CFR 63, Subpart ZZZZ. Facility is required to comply with the applicable requirements by October 29, 2013. The applicable requirements include work practice standards specified in Table 2c and operating and maintaining the emergency RICE according to maintenance plan specified in Table 6 to Subpart ZZZZ.

The RICEs are not subject to 40 CFR 60 Subpart JJJJ for RICE engines since they were installed before the effective date of the rule.

The glycol dehydration system is subject to 40 CFR 63, Subpart HHH for Natural Gas Transmission and Storage. 40 CFR 63.1274(d)(2) exempts affected sources emitting less than 0.9 megagrams of benzene per year from 40 CFR 63.1274(c). 40 CFR 63.1274(c) requires pollution control devices to be installed on a glycol dehydration system's process vents and establishes other monitoring, recordkeeping, and reporting requirements. The glycol dehydrator at the Muttonville Compressor Station qualifies for this exemption since benzene

emissions are far below the 0.90 megagram per year limit. For example, the records provided during the inspection indicate that 34.2 pounds of benzene were emitted from the glycol dehydrator in the 12-month period from May 2013 through April 2014.

The facility also has several storage tanks and three natural gas powered heaters which were previously determined to be exempt from permit-to-install requirements. The storage tanks associated with the RICEs include a 1,000 gallon waste oil tank, an 11,300 gallon lubricating oil tank, a 1,000 gallon maintenance oil tank, and a 4,700 gallon coolant tank. The storage tanks associated with the glycol dehydrator include a 9,000 gallon triethylene glycol storage tank, a 3,700 gallon glycol maintenance storage tank, and a 1,100 gallon condensate storage tank. The facility also has two 8,820 gallon brine storage tanks which are used to store excess condensate from the glycol dehydration condensate tank. All of the tanks containing petroleum liquids are less than 40,000 gallons in volume, and, therefore, not subject to NSPS Subpart K for Petroleum Liquid Storage Tanks. The three 6.5 MMBTU natural gas powered heaters are used to keep the pipeline from freezing during the withdrawal season. These heaters are exempt from permit to install requirements pursuant Rule 282(b)(i).

COMPLIANCE DETERMINATION

The inspection indicated the following with respect to the facility's compliance with ROP Number MI-PTI-B8337-2010.

EUGLYCDEHYDE-Glycol Dehydration System

Condition I.1.a: This condition set a daily VOC emission limit of 65 pounds per day. Daily records from May 2013 through April 2014 indicate that the highest daily emission of VOCs was 87.3 lbs occurring on December 2013 while the dehy operated 247.3 hours and condenser operated 36.7 hours.

Condition I.1.b: This condition sets a 12-month rolling VOC emission limit of 12 tons per year. Records from May 2013 through April 2014 indicate that the 12-month rolling emission of VOCs was 267.7 lbs.

Condition I.2: This condition sets a 12-month rolling benzene emission limit of 0.9 Mega grams (1 ton) per year. Records from May 2013 through April 2014 indicate that the 12-month rolling emission of benzene was 34.2 lbs.

Condition II.1: This condition sets a stripping gas usage limit of 40 standard cubic feet per minute. According to Mr. Bendes the facility does not use stripping gas. Therefore, this condition is not applicable to the facility's operations.

Condition III.1: This condition requires that the thermal oxidizer shall be operated at or above 760 degrees Celsius (1400 degrees Fahrenheit), with a minimum residence time of 0.5 seconds, and with a VOC destruction efficiency of 95%. The facility has set the low temperature alarm for the thermal oxidizer at 1425 degrees Fahrenheit and the records indicate that the oxidizer has been operated at a temperature greater than 1500 degrees Fahrenheit between May 2013 through April 2014. The residence time and destruction efficiency requirements are met per manufacturer's specifications.

Condition III.2: This condition requires that the glycol dehydration system shall not be operated during a thermal oxidizer malfunction unless the condenser exhaust temperature is lower than 140 degrees Fahrenheit. The submitted records indicate that the condenser was operating the days thermal oxidizer was not used and the condenser exhaust temperature was well below 140°F.

Condition III.3: This condition requires that stripping gas shall not be used while the condenser is the primary control for the glycol dehydration system. As previously discussed, Mr. Bendes indicated that stripping gas is not used at the facility.

Condition IV.1: This condition requires that the glycol dehydration system shall not be used unless a properly operating flash tank which removes VOCs from the glycol stream and routes them to the reboiler is installed and operated properly. AQD staff verified that such a tank is installed at the facility during the April 23, 2014 inspection of the facility (it is called the 3-Phase Separator by the facility).

Condition IV.3: This condition states that the glycol dehydration system may be operated in the event of a thermal oxidizer malfunction if the condenser is installed and operated properly. The condenser is installed and operated at all times while the dehydration unit is operating.

Condition V.3: This condition requires that the chemical composition of the natural gas processed by the glycol dehydration system be determined yearly. Ms. Tiffany Grady, Air Quality Specialist, sent the gas analysis performed on February 8, 2014, based on sampling which took place on February 6, 2014. The chemical analytical results are attached to this report.

Condition V.4: This condition requires that the emission factor specified in Condition VI.11 shall be recalculated each time the natural gas composition is analyzed. The emission factor calculation based on the results of the February 2014 sampling event is attached to this report.

Condition VI.1: This condition requires that a temperature monitor for the thermal oxidizer shall be maintained. A temperature monitor for the thermal oxidizer is being maintained.

Condition VI.2: This condition requires that a temperature monitor shall be maintained to monitor the condenser exhaust temperature. A temperature monitor is maintained to measure the condenser exhaust temperature.

Condition VI.3: This condition requires that the thermal oxidizer temperature shall be recorded daily (except in the event of a thermal oxidizer malfunction). Records from May 2013 through April 2014 indicate compliance with this condition.

Condition VI.4: This condition requires that the condenser exhaust system temperature shall be recorded daily when the glycol dehydration system is operating. The records indicate that the facility has used condenser alone or together with the thermal oxidizer on certain days. The facility has kept temperature records during those days.

Condition VI.5: This condition requires that the total hours of operation of the glycol dehydrator shall be recorded daily. Records from May 2013 through April 2014 indicate compliance with this condition.

Condition VI.6: This condition requires that the total hours of operation for the thermal oxidizer shall be recorded daily. Records from May 2013 through April 2014 indicate compliance with this condition.

Condition VI.7: This condition requires that the amount of natural gas processed through the glycol dehydrator shall be recorded daily. Records from May 2013 through April 2014 indicate compliance with this condition.

Condition VI.8: This condition requires that the amount of stripping gas used in the glycol dehydrator shall be recorded daily. As previously discussed, stripping gas is not used in the glycol dehydration system.

Condition VI.9: This condition requires that VOC emissions in pounds shall be calculated daily. Records from May 2013 through April 2014 indicate compliance with this condition.

Condition VI.10: This condition requires that 12-month rolling emission records shall be calculated for benzene and VOCs at the conclusion of each month. Records from May 2013 through April 2014 indicate compliance with this condition.

Condition VI.11: This condition requires that VOC and benzene emissions factors shall be calculated yearly through the use of the GRI-GLYCalc computer model. Emission factors established from the February, 2014 sampling event and subsequent chemical analysis of the gas were established using the GRI-GLYCalc computer model. The calculations are attached to this report.

Conditions VIII.1 and Condition VIII.2: These conditions require that the condenser and thermal oxidizer stacks discharge unobstructed vertically 20 feet above ground level. Based on the field portion of the inspection, the stacks appeared to meet this requirement.

FGCOMPENGINES (2 reciprocating internal combustion engines)

Condition III.1: This condition requires that pipeline quality natural gas shall be burned in the RICEs. Mr. Bendes stated that the natural gas combusted in the RICEs is filtered and dewatered prior to being combusted in the engines.

Condition VI.1: This condition requires that the quantity of natural gas combusted in the RICEs be recorded monthly. Records of monthly natural gas usage from May 2013 through April 2014 indicate compliance with this condition.

Condition VIII: This condition requires that the stacks for the RICEs discharge unobstructed vertically to the ambient air. Based on the field portion of the inspection, the RICE stacks comply with this requirement.

Emergency Engine:

The 300 KW (400 HP), natural gas fired, spark ignited (SI) emergency engine is subject to 40 CFR 63, Subpart ZZZZ. Facility is required to comply with the applicable requirements by October 29, 2013. The applicable requirements include work practice standards specified in Table 2c and operating and maintaining the emergency RICE according to maintenance plan specified in Table 6 to Subpart ZZZZ. The facility is required to keep records of work standards and malfunction records.

Work Practice Standards-Change oil and filter every 500 hours of operation or annually, whichever comes first; inspect spark plugs every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.)

Management Practices: Operating and maintaining the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or develop and follow facility's own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

Facility is keeping hours of operation of the emergency engine. Compliance with other requirements was not verified during inspection.

CONCLUSION

Based on the field inspection and the records provided, ANR Pipeline- Muttonville Compressor Station appears to be in compliance with the conditions of their ROP and all other applicable air regulations. Records from May 2013 through April 2014 demonstrating compliance with the EUGLYCDEHYDE (the glycol dehydration system) and FGCOMPENGINES (reciprocating internal combustion engines) sections of the ROP are attached to this report. The natural gas chemical composition analysis and the VOC and benzene emission factor calculations approximated through the use of the GRI-GLYCalc computer modeling program are also attached to this report.

Copies of "List If RICE" and "Work Practice Standards Recordkeeping for NESHAP Subpart ZZZZ" are attached sent to facility for reference. Facility is required to keep records to show compliance with work practice standards as specified in Table 2c of 40 CFR 63, Subpart ZZZZ and maintain the engine according the Management Plan developed based on Table 6 of Subpart ZZZZ.

NAME Sebastian Kallumkal DATE 5/14/14 SUPERVISOR CJE