

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

B648124822

FACILITY: MID MICHIGAN GAS STORAGE CO - CAPAC		SRN / ID: B6481
LOCATION: 4876 KETTLEHUT RD., CAPAC		DISTRICT: Southeast Michigan
CITY: CAPAC		COUNTY: SAINT CLAIR
CONTACT: MARK L. OGDEN , OPERATIONS TECHNICIAN		ACTIVITY DATE: 04/03/2014
STAFF: Sebastian Kallumkal	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Onsite Inspection		
RESOLVED COMPLAINTS:		

On April 3, 2014, at about 11:20 AM, Michigan Department of Environmental Quality-Air Quality Division Staff Sebastian Kallumkal and Samuel Liveson conducted a targeted inspection at Mid Michigan Gas Storage Co.- Capac Compressor Station located at 4876 Kettlehut, Capac, Michigan. The facility is owned by Trans Canada Company. 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 the Renewable Operating Permit (ROP) No.: MI-ROP-B6481-2011. At the facility we met Mr. Mark Ogden, Operations Technician. We introduced ourselves, presented our credentials and stated the purpose of our inspection. We also provided him the DEQ Environmental Inspections: Rights and Responsibilities Brochure.

The facility has operators during the usual work hours, but during after-hours it is remotely controlled by the Woolfolk Station in Big Rapids, Michigan.

During the pre-inspection meeting, he explained the operations of the facility. The facility currently withdraws virgin natural gas or a mixture of the base gas (natural gas stored in the field at the beginning of the storing operations) and virgin natural gas. The gas injection was ceased since 2004. The withdrawal is performed year around. He stated that they currently withdraw about 3MMCF natural gas per day. They estimate that the gas withdrawal could continue for a few more years.

The facility is currently not using the two natural gas fired reciprocating internal combustion engines (RICE). These engines are disconnected from the field pipe lines and the fuel gas line.

In March 2007, the facility installed an electric motor driven reciprocating compressor (700 HP) to compress the gas. It also replaced the contact tower in the glycol dehydration unit. It now uses a 15 MMCF per day capacity contact tower instead of the 300 MCFD contact tower. The dehy system is used continuously during the withdrawal process. He stated that they did not have any modifications to the plant since last targeted inspection in 2013. The facility has a diesel fired emergency generator.

He informed us that the monthly reports which contain glycol dehy operating hours, RTO Temp, natural gas processed, VOC and HAP emissions, etc. are kept electronically at the corporate office. After the meeting, he accompanied us for the facility inspection.

Inspection:

This facility withdraws and distributes natural gas to the pipeline. Previously two 4830 HP, natural gas-fired internal combustion engines (EUCP001 and EUCP004) were used to drive compressors which pump natural gas out of underground storage field. The facility currently uses a 700 HP electric motor driver compressor to compress the gas prior to the dehydration system. The facility also has eleven (11) storage tanks, one (1) boiler, two (2) furnaces; one (1) diesel fired emergency generator, one glycol dehydrator system, and twenty nine (29) natural gas-fired heaters.

He informed us that the facility is not using the heaters because the produced gas doesn't need to be heated. He explained that when natural gas is withdrawn from a high pressure field, the pressure is very high and had to lower the pressure to match the pipe pressure. Lowering the pressure causes the natural gas to expand and cool down. So the natural gas had to be heated prior to transferring to pipeline for transportation. Currently the field gas is at lower pressure compared to the pipe line pressure, so it does not have to adjust the pressure. Some of the heaters are disconnected from fuel line.

The facility has no part cleaner on site now. The facility is currently using hot water/soap cleaning.

EUCP003 (Glycol Dehydration System)

This facility has one glycol dehydration unit (EUCP003) to remove moisture from natural gas during withdrawal. Currently the dehydrator is used continuously during gas withdrawal. It currently uses a 15 million cubic feet per day capacity contact tower instead of the previous 300 MCFD tower. At the time of my inspection the dehydrator and the control equipment (Thermal Oxidizer and Condenser) were operating.

In the dehydration process the wet natural gas is contacted with Triethylene Glycol (TEG) in an absorber (glycol contractor or contact tower) to remove moisture. The dry gas is withdrawn to the pipeline for customers. The water rich glycol (wet glycol) flows through a three phase separator (flash tank) to remove heavy hydrocarbons (gravity separation). The overhead vapors are used as make up fuel (burned at about 385°F) in the natural gas-fired reboiler. Excess overhead, if high pressure, would go to the BTEX tank. The wet glycol is filtered through a carbon filter and passed through a reboiler (still column), heated at 400 °F, to drive off water in the glycol. Recovered glycol is stored in a glycol surge tank. The vapors from the still column are passed through either a finned tube condenser (more cooling, used in summer) or a straight pipe condenser (less cooling, used in winter). The condensed vapors from the condensers are stored in the BTEX tank. The exhaust from the BTEX tank is incinerated using a thermal oxidizer (TO). If the thermal oxidizer is not operating properly, the emissions from the BTEX tank is condensed and the exhaust gas is vented to the atmosphere. If the exhaust is directly vented to the atmosphere from the condenser, its temperature is monitored and recorded. The condenser is continuously monitored, but not recorded continuously. The ROP requires permittee to keep records of the TO malfunctions.

He explained that if the oxidizer shuts down (malfunction) while the dehydrator is operating, the exhaust gas will be vented through the condenser stack. The temperature of the condenser will be monitored and maintained below 140°F. Usually the condenser stack is closed, but opens when the condenser is used.

Section II, Condition 1

Section III, Conditions 1-3

Section IV, Conditions 1-3

The ROP requires the installation of a thermal oxidizer to control emissions from the reboiler still. The thermal oxidizer (TO) is installed and was operating along with the condenser. The condenser stack is normally closed, if TO be operating properly. I observed that the flame was on. The operating temperature for the thermal oxidizer was 1500°F at the time of our inspection. The RO permit requires a minimum 1400 °F. The alarm is set up at 1425°F.

The facility is not using any stripping gas through the glycol regenerator still. He explained that during stripping natural gas is used to agitate the liquid in the flash tank for a better release of its volatile contents. I did not observe any visible emissions from the thermal oxidizer stack.

He informed me that during 2013 TO did not have any malfunction. The dehy system is equipped with a flash tank (three phase separator).

Section V, Conditions 1-4

The ROP requires the facility conducts analysis of the natural gas once in five years for VOC and Benzene contents. It also recalculates the emission factor for GRI GLYCalc when new analytical results are obtained. I suggested to Mr. Ogden to have an analysis of the natural gas to verify the VOC and BTEX content because of the virgin gas production. I also inquired Mr. Bruce Bendes, Environmental Specialist for TransCanada, about this matter. He informed me that based on my previous request; they had collected a sample and had received the analysis. He is waiting for the GlyCalc report. He offered to send me the report when available.

Section I, Conditions 1-2

Section VI, Conditions 1-11

Section IX, Condition 1

Mr. Ogden informed me that both control equipment are equipped with temperature monitors as required by the RO permit. On a daily and monthly basis facility monitors and keeps records of temperature and operating hours, as required by EUCP003, Section VI, conditions 3 through 11. (See attached Monthly Dehydration System Monitoring Report and Dehydration System Rolling Total Monitoring Report). Facility records show that its monthly VOC emissions from May 2013 to April 2014 ranged from 2.06 pounds (February 2014) to 4.3 pounds (May 2013). The 12-monthly rolling time period emissions were about 41 pounds or 0.021 tons. These values are in compliance with EUCP003 emission limits of 45.5 pounds per day and 8.3 tons per 12-month rolling time period. The process appears to be in compliance with the permit requirements. The dehydrator along with the thermal oxidizer operated about 7,463 hours Since May 2013 to April 2, 2014.

The facility is subject to the Maximum Achievable Control Technology (MACT) Standards for Natural Gas Transmission and Storage promulgated in 40 CFR Part 63, Subparts A and HHH. The glycol dehydrator is the affected source at this facility. 40 CFR 63.1274(d)(2) exempts the permittee from the 40 CFR 63.1274(c) requirements such as control requirements for the glycol dehydration unit process vents, monitoring requirements, and recordkeeping and reporting requirements if the actual average emissions of benzene from the glycol dehydration unit process vent is less than 0.90 mega gram per year. The glycol dehydrator at this facility qualifies for this exemption because the benzene emissions do not exceed 0.90 megagrams (one ton) per year. The 12-month rolling benzene emissions as of December 2012 were 3.6 pounds.

Section VIII, Condition 1-2

The stack parameters were not verified, however, the facility appears to be in compliance with these requirements.

EUCPGENERATOR (Emergency Generator)

The diesel fuel burning electric generator is exempt from Rule 201 requirements pursuant to Rule 285(g). Pursuant to 40 CFR 63, Subpart ZZZZ (RICE MACT) finalized on August 20, 2012, EUCPGENERATOR (diesel fuel fired emergency, stationary RICE, 305 bhp, located at a major

source HAP emissions) is currently subject to specific requirements in the MACT. The compliance date for EUCPGENERATOR was May 3, 2013.

Specific conditions are included in the emission unit table, EUCPGENERATOR. The facility is monitoring the operating hours. The engine is equipped with a non-resettable timer. Mr. Ogden told us that the facility is in compliance with the operating in Table 2c (40 CFR 63.6602) and fuel requirements in 40 CFR 63.6604. The facility appears to be in compliance with the Subpart ZZZZ requirements.

FGCPREC (Two Reciprocating Combustion Engines)

The facility has two identical 4830 HP, four stroke, lean burn reciprocating combustion engines. Traditionally these drive compressors to inject or withdraw natural gas in or out of the storage fields. The facility is not planning to use these engines anymore and planning to keep them on site or sell them. The facility is currently using a 700 HP electric motor driven compressor to withdraw gas.

These engines were installed in 1978 when the internal combustion engines were exempt from permit to install (Rule 201) requirements. These engines are in the RO permit because of the opacity requirements. These engines are not subject to Prevention of Significant Deterioration (PSD) regulations because their constructions were completed before March 1, 1978 and no major modification was performed since initial installation.

On August 20, 2010 (Final Rule) USEPA finalized the Maximum Achievable Control Technology (MACT) Standards for Reciprocating Internal Combustion Engines (RICE) in 40 CFR 63, Subpart ZZZZ. The final rule for 40 CFR 63.6590(b)(3)(ii) states that:

40 CFR 63.6590(b)(3): The following stationary RICE do not have to meet the requirements of this subpart and of subpart A of this part, including initial notification requirements:

- (i) Existing spark ignition 2 stroke lean burn (2SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions;
- (ii) Existing spark ignition 4 stroke lean burn (4SLB) stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

For the subpart ZZZZ, stationary RICE is "existing" if construction or reconstruction of that RICE was commenced before December 19, 2002. The facility has two identical 4830 bhp, 4-stroke lean burn RICES. These RICES are subject to 40 CFR 63, subpart ZZZZ. However, pursuant to 40 CFR 63.6590(b)(3)(ii), they are not required to comply with any of the requirements of this subpart and subpart A including initial notification.

The requirements of FGCPREC were not evaluated because these engines have not been operated for many years.

At the time of my inspection, Engine 1 (EUCP001) and Engine 2 (EUCP004) were disconnected from fuel line and field gas line.

Storage Tanks

These include any existing, new (placed into operation after 7/1/1979) or modified storage tank that is exempt from permit to install requirements pursuant to R336.1284(c), R336.1284(d), R336.1284(e), R336.1284(i) and subject to 40 CFR 60.110b(a), (b) and 60.116b(b). Associated with the engines operations the facility has one waste oil tank (1,500 gallons), one lubricating

oil tank (11,300 gal), one maintenance oil tank (1200 gal), and one engine coolant tank containing Ambientrol (4200 gal). Associated with the glycol dehydrator operations facility has a triethylene glycol storage tank (8225 gal), a glycol maintenance storage tank (2200 gal), and a condensate storage tank (900 gal). In addition, the facility also has an above ground level fuel storage tank (1000 gal), two brine storage tanks (16500 gal each) and a methanol storage tank (8825 gal). The methanol is used to clear up "frozen" wellheads in winter months. All tanks containing petroleum liquids are less than 40,000 gallons, thus not subject to the NSPS, Subpart K, for petroleum liquid storage. The records for the tanks were not verified at the time of the inspection.

Exempt Equipment

Facility also has three 10 MMBTU natural gas powered heaters used to keep the pipeline from freezing during the withdrawal season. These heaters are exempt from permit to install requirements pursuant to Rule 282(b) (i). These heaters are currently not operated.

Other equipment at the facility include a 2 MMBTU/hr Natural gas boiler exempt under Rule 285 (b)(i),

Conclusion: From the information collected during the inspection and records review, the facility seems to be in compliance with the ROP requirements.

NAME Sebastian Palumbo DATE 4/17/2014 SUPERVISOR CJE

