

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

N579224992

FACILITY: Overisel Compressor Station		SRN / ID: N5792
LOCATION: 4131 138th Ave., HAMILTON		DISTRICT: Kalamazoo
CITY: HAMILTON		COUNTY: ALLEGAN
CONTACT: Les Bradshaw , Field Leader		ACTIVITY DATE: 04/21/2014
STAFF: Dale Turton	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Inspection and stack test observation.		
RESOLVED COMPLAINTS:		

This was a scheduled inspection of this natural gas compression, and storage station. This facility is operating under ROP # MI-ROP-N5792-2012. During the spring, summer, and fall periods, they run the gas fired reciprocating engines to compress and then inject the pipeline natural gas into rock formations below the earth's surface. This storage field covers approximately 15 square miles in area. During the winter months, they draw the gas out of the field, filter out the particles, dehydrate it of the water picked up from the earth, then put it into a distribution pipe.

EU-ENGINES 1, 2, 3, 4

These are all natural gas fired reciprocating engines, rated at 19 MMBTU/hr each. Because of them being installed pre 1967, they were exempt from needing PTI's.

Unit number 3 and 4 were being operated during the visit. There were no VE's observed from the exhaust stacks of either engine.

The rebuild of Unit #3 has just been completed and is now in the middle of a 100 hour test run. Unit #1 underwent a rebuild in 2010. Unit #2 underwent a rebuild in 2011. Unit #4 underwent a rebuild in 2012.

Records are kept of the gas usage, visible emissions, and hours run for each unit. The emissions for units #1 & #2 are reported together and units #3 & #4 are reported together since there are different emission factors for the two groupings. All of the engines are lean burn but units #3 & #4 have been retrofitted with clean burn technology.

Other than the source-wide condition to burn only natural gas at the facility and track the usage, there are no specific requirements in the ROP for these engines.

The 4 units are considered existing 2-stroke lean burn (2SLB) engines. This site is subject to 63 Subpart ZZZZ, but there are no emission limitations or operating limitations because the units are existing at a major source with a site rating of greater than 500 brake HP. The rebuilds on the units were considerably less than the 50% of the cost of new unit; therefore it would not be considered "reconstruction".

EUDEHYD01

There have not been any significant changes to the system since last inspection.

The Overisel field natural gas is brought into the station and sent through an initial scrubber if needed. The gas then goes through one of a set of field scrubbers, and on through one of a set of suction scrubbers. The Salem field gas only goes through one of a set of suction scrubbers. These scrubbers remove the relatively large entrained water droplets from the gas. The gas then goes through a filter to remove small entrained particles. The gas containing only water vapor then is sent to on of a set of 5 dehydration towers utilizing triethylene glycol (TEG). The clean and dry gas goes to the distribution system. The TEG circulates back to the TEG recovery operation.

In simplified terms, the TEG goes to a flash tank that separates light gases from the TEG/water mix. The liquids then go to the reboiler & still column to remove the water and BTEX. The gases go through the condenser to remove most of the BTEX etc. Gases from the condenser and the flash tank are sent to the inlet of the reboiler to be burned with the fuel.

Records of the condenser temperature and flash tank outlet pressure are being kept. A daily log sheet is kept and the values are recorded every 2 hours. The permit requires that the condenser temperature be operated at less than 150 deg F and the flash tank be operated within the 20-40 psi range. A daily log sheet is kept for a large list of operating parameters for the system including temperatures, pressures, tank levels, and flow rates.

Calculations of the HC, VOC, HAP, and BTEX emissions are being sent annually as an attachment to the MAERS report. They are using version 4 of GRI-GLY-Calc. Keeping these records and calculating emissions is in line with the requirements of Part 63 Subpart HHH.

EUDEGREASER1

The "ZEP" cold cleaner was meeting all of the requirements of Rule 707. The lid was down while not in use. The solvent being used is "DYNA 143, a light aliphatic naphtha with a vapor pressure of < 1.0 psi. The reported emissions for calendar year 2013 were 216 pounds.

EUEMERGENGINEGEN

A new emergency generator was installed in 2013. This is a Caterpillar G3516LE natural gas fired unit. It was installed under Permit No. 9-13. It is rated at 1462 hp (1.3 MW). It replaced the EUAUXGENERATOR listed in the ROP staff report. This new equipment has not yet been incorporated into the ROP.

Although the 16 cylinder engine is rated at 1300 KW, the attached generator is only capable of 1040 KW (1.04 MW).

A non-resettable hours meter is installed on the generator. It was reading at 21 hours at the beginning of the inspection. These hours will be recorded by the company as part of the usual plant recordkeeping.

The stack dimensions appeared to comply with the permit restrictions. A flapper lid is installed on the stack that will lift up when the engine is being operated.

This 4 stroke, spark ignition, RICE is subject to both Part 60, Subpart JJJJ New Source Performance Standard (NSPS) and the Part 63, Subpart ZZZZ MACT. The ZZZZ initial notification form has been received from the company.

A requirement of the permit and the NSPS is that stack testing be performed if the engine has not been certified by the manufacturer. This engine has not been certified, therefore testing is required. This testing was performed on the same day as this inspection.

Source-Wide

There is a requirement that only natural gas be burned in the generators and engines. This is being complied with.

There also is a requirement regarding the venting of field gas. They follow a plan to comply with the permit condition.

A boiler and several heaters are subject to the MACT for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR, Part 63, Subpart DDDDD. The requirements for this MACT have not been finalized.

Rule 214(4) Equipment

There are several exempt natural gas burning heaters and small boilers located throughout the facility. The complete listing is available in the ROP staff report. The company records the gas usage of these units for MAERS reporting purposes.

Stack Testing EUEMERGENGINEGEN

Stack testing was performed by Consumers Energy's own internal stack testing crew. Joe Mason, Brian Glendening, and Greg made up the testing staff. Milo from Caterpillar was on hand to assure the engine was operating properly and to set up the load bank to disperse the generated electricity. Nathan Hude from AQD (TPU) was present to monitor the performance of the test methods etc.

They tested for NOx, CO, and VOC. Testing was delayed and didn't commence until late in the afternoon. Nathan and I observed the first run and calibration afterwards. Preliminary results show they were passing after one run. We left the site after the first run.

Consumers Energy personnel were recording engine and generator operating data every 15 minutes. This will be included in the test report.

The electrical output during the run was at 1019 KW, which is more than 90% of the full load of 1040 KW. The natural gas burned during the run averaged 196.5 ft³/min. The BTU of the gas was assumed to be 1008 BTU/ft³. A gas sample was taken in a cylinder so that it can be sent off for lab testing.

A separate report on Nathan's observations is in the file.

NAME Dale Tinton

DATE 4/24/14

SUPERVISOR MR 4/25/2014