

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

N683829324

FACILITY: Vector Pipeline L.P., Highland Compressor Station		SRN / ID: N6838
LOCATION: 2282 South Duck Lake Road, HIGHLAND		DISTRICT: Southeast Michigan
CITY: HIGHLAND		COUNTY: OAKLAND
CONTACT: Matt DiPaola, Technical Supervisor		ACTIVITY DATE: 05/01/2015
STAFF: Sebastian Kallumkal	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Onsite Inspection		
RESOLVED COMPLAINTS:		

On Friday, May 1, 2015, I conducted a targeted annual inspection at the Vector Pipeline L. P. – Highland Compressor Station located at 2282 South Duck Lake Road, Highland, 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, United States Environmental Protection Agency (USEPA) Consent Agreement and Final Order (CAFO)-Docket No. CAA-05-2005-0014, and with the requirements of the Renewable Operating Permit No.: MI-ROP-N6838-2014.

I arrived at the facility about 9:30 AM. I met with Mr. Matt DiPaola, Technical Supervisor, Enbridge (U.S.) Inc. I introduced myself and stated the purpose of the inspection. This facility is usually unmanned, but Mr. John Wojcik, I & O Technician (cell: 248 245 3447) and Mr. Terry Barchholts, I & O Technician (248 245 9676), would be available upon request. AQD may also contact Matt Di Paola (Cell: 219 218 4807) for assistance.

During the pre-inspection meeting, we discussed the facility operations and reviewed various records including Preventive Maintenance Plan (PMP) for the emergency generator, and the turbines. Facility is keeping records of the blow downs (BLOWDOWN TRACKER) and emergency generator operating hours. The facility has installed BAM system to the control panel to detect and report the condition of the burner. The facility had also installed an electronic fuel system for both turbines which reduced the shutdown incidents of the turbines tremendously. They had installed a "MAXIMO" recordkeeping system which would keep all records (maintenance, performance, etc.) of any equipment at the facility. He stated that they did not have any other process change at the facility since the last annual inspection.

Terry showed me how the monthly data (array) for each turbine is uploaded to the system for cooperate review and to make necessary reports. Before uploading he reviews the data (NGP, Fuel usage, Hours of operation, blowdowns, SoloNOx on/off, etc.) for compliance, especially NGP to determine the turbines were operated outside the range established during most recent stack tests. The ESD testing is done annually. If the turbines operate below the SoloNOx mode audible and visual alarms are generated in control room in Houston, Texas.

The facility is a true minor for HAP emissions and hence not subject to the National Emission Standard for Hazardous Air Pollutant (NESHAP) for turbines. Based on the annual emissions reporting (MAERS) the facility's 2014 VOC emissions were 1.17 tons per year. The facility-wide potential to emit for HAP emissions was 2.454 TPY per Permit to Install Application for PTI 166-00A.

Prior to the inspection Terry provided me the safety inspection. At the time of myEUTURBINE1 (Unit 100) was rebuilt (engine swap) on November 17, 2010 and EUTURBINE2 (Unit 200) was rebuilt on May 5, 2011.

Highland Compressor Station aids in the transportation of natural gas in the pipeline system from Joliet, Illinois to Dawn Township, Ontario, Canada. This facility is operated 24 hours and all year around. It operates two Solar Turbines Incorporated (Solar) Mars 100S natural gas fired turbines. These turbines are operated in parallel and operate independent to each other. Each turbine is rated at 15,000 Horse Power with a maximum heat input rate of 112.35 MMBTU/hr. These turbines are designed with nitrogen oxides (NOx) emission control referred to as dry low NOx (DLN) or SoLoNOx. The facility also has one natural gas-fired internal combustion engine, 9.654 MMBTU/hr, emergency generator. The turbine

limit.

The 12 month rolling CO emissions were 0.106 tons as of March 2015. The permit limits the hourly CO emissions to 3.06 pounds. The hourly emissions calculated based on monthly emissions from 12-month rolling period emissions and monthly hours of operation appears to be in compliance with the emission limit.

Under the quality of gas section in the Tariff (posted in Vector-Pipeline.com), the sulfur content is limited to 20 grains per 100 cubic feet (1/4 grain H₂S per 100 cubic feet of gas) which is in compliance with 40 CFR Part 72.2 which defines that natural gas contains 20.0 grains or less of total sulfur per 100 standard cubic feet. The Vector Gas Quality Report from the Vector-Pipeline.com shows that the sulfur content is "NULL" as of 4/30/2015.

The records show that the emergency generator was operated 1067 hours since installation and 70.4 hours in the calendar year 2014 and 69.4 hours based on a 12-month rolling time period as of March 2015. Facility is keeping daily hours of operation for emergency and non-emergency purposes. The permit limits the operating hours to 500 hours per calendar year.

The permittee keeps records for each calendar month and based on 12-month rolling time period the hours of engine operation, fuel usage, and also calculates NO_x and CO emissions in tons as required. The 12-month rolling fuel consumption as of March 2015 was 282.1 MCF (283.8 MCF in 2014).. The stack dimensions of the SPU were not verified.

Facility is maintaining a preventive maintenance plan (PMP) per Section IX, Condition 1. I reviewed PMP records during the inspection.

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Nitrogen oxides (NO_x) emissions are limited to 37.9 pounds per hour and 126.7 tons per year based on a 12-month rolling time period. The 2013, 2014 and as March 2015, the records show that hourly NO_x emissions are less than the permit limit. The 12-month rolling NO_x emissions, as of March 2015 were 25.08 tons for both engines combined.

The Carbon monoxide emissions are limited to 800 pounds per hour while the natural gas producer speed (NGP) is between 86 to 92% and 25.14 pounds per hour while operating above 92%. The facility is calculating and keeping hourly emissions data for each engine on a monthly basis and the annual emissions on a 12-month rolling time period basis. At the facility I reviewed the 2013, 2014 and March 2015 data. The records show that the turbines did not run below 92% during these times except for startup and shutdown. The facility appears to be in compliance with these emission limits. From the submitted records for December 2013, December 2014 and March 2015 and from the records reviewed at the facility, the turbines were run in SoloNO_x Mode "ENABLED". The NO_x emissions were less than 12 pounds per hour and CO emissions were less than 5 pounds per hour while the SoloNO_x is enabled.

He informed me that the hourly emissions which are calculated based on stack results and the NGP for that hour.

Sulfur dioxide emissions are limited to an instantaneous concentration of 150 ppm by volume at 15% oxygen and dry gas basis and 100% load, 13.52 pounds per hour and 59.21 tons per year based on 12-month rolling time period. The facility is limited to burn only natural gas with sulfur content of 20 grains per CCF and the gas analysis shows that the H₂S content was below detectable (NULL). As of March 2015 the SO₂ emissions for both turbines were 0.19 Tons based on a 12-month rolling time period. The records show that the total SO₂ emissions from EUTURBINE1 were 0.10 tons and EUTURBINE2 was 0.09. Based on these emissions the facility is expected to be in compliance with the emission limits.

Section III, Condition 1 prohibits the facility to operate the turbines at loads less than 86% NGP, except during start up and shut down. Based on the records review, the facility did not operate the turbines below 86% NGP except for shut down/start up. Facility keeps operational records by hour. The facility is in compliance with this condition.

Section III, Condition 2 and Condition 3 require the facility to burn natural gas, defined in 40 CFR Part 72.2 and limits the sulfur content to 0.8 per cent by weight. Facility uses the natural gas they transport as fuel in the turbines. The approved Custom Fuel Monitoring Program (CFMP) allows the facility exempt from sulfur content monitoring required by 40 CFR Part 60, Subpart GG if the facility maintains a valid tariff in place with the Federal Energy Regulatory Commission (FERC) that limits the sulfur content of natural gas combusted in the turbines to not more than 20 grains of total sulfur per 100 standard cubic feet of natural gas. 40 CFR 72.2 specifies that natural gas contains 20.0 grains or less of total sulfur per 100 standard cubic feet. Facility's tariff (under Quality of Gas) requires that the gas to be received by the facility (Transporter) shall conform to the following specifications:

"Shall contain no more than 1/4 grain of hydrogen sulfide per 100 cubic feet of Gas nor more than 20 grains of total sulfur per 100 cubic feet of Gas". The natural gas analysis results detailed in company's website shows that sulfur content is 0.03 grains per CCF.

Facility records show that the turbines operated at all times in compliance with the NOx and CO emission limits. AQD has not requested emission testing recently (Section V).

Permittee conducted tests to verify NOx and CO emissions from the EUTURBINE1 and EUTURBINE2 on July 1 & 2, 2014. The testing complied with the requirements of Section V, Conditions 1-6. The report showed that the engine emissions were in compliance with the emission limits.

Facility is keeping records specified in Section VI, Condition 1 (hourly % NGP, SoloNox Indicator, CO & NOx hourly and annual emission calculations, and the Tariff). Facility appears be in compliance with the 40 CFR 60, Subpart GG requirements.

The stack dimensions were not verified. Facility keeps records of the start up/shut down/malfunction operations and maintains and implements a Preventive Maintenance Plan (PMP). Copies of data received during inspection are attached for review.

Conclusion: From the facility inspection, records and reports review, this facility appears to be in compliance with the applicable requirements. Records are attached for review.

NAME Sebastian Gallembal

DATE 5/7/2015

SUPERVISOR CJE