DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
**ACTIVITY REPORT: On-site Inspection**

N683863978

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| **FACILITY:** Vector Pipeline L.P., Highland Compressor Station | | **SRN / ID:** N6838 |
| **LOCATION:** 2282 South Duck Lake Road, HIGHLAND | | **DISTRICT:** Warren |
| **CITY:** HIGHLAND | | **COUNTY:** OAKLAND |
| **CONTACT:** Matt DiPaola , Pipeline Operations Coordinator | | **ACTIVITY DATE:** 08/10/2022 |
| **STAFF:** Kaitlyn Leffert | **COMPLIANCE STATUS:** Compliance | **SOURCE CLASS:** MAJOR |
| **SUBJECT:** FY2022 Inspection | | |
| **RESOLVED COMPLAINTS:** | | |

On August 10th, 2022, I, Kaitlyn Leffert, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) staff, conducted a scheduled inspection of Vector Pipeline, located at 2282 Duck Lake Road, Highland, Michigan. The facility is identified by the Source Registration Number (SRN) of N6838. The purpose of this inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); AQD administrative rules; and Renewable Operating Permit Number MI-ROP-N6838-2019.

I arrived at the facility at 10:00 am on August 10th. I met with Matt DiPaola, Operations Coordinator, Enbridge. We first did a safety briefing on the site, then met to discuss the facility and go over the requested records. Vector Pipeline is a joint venture between DTE and Enbridge Pipeline. The entire pipeline is approximately 350 miles in length, with five compressor stations, spanning from Illinois to Sarnia, Canada.

The facility collects all raw data each month for the two turbines and the supplemental power unit, reviews it for errors, and then compiles it into an Access database. From that database, they can query reports by month that summarize the raw data. While on-site, Matt DiPaola went over the facility's recordkeeping system and identified copies of all requested records. I requested that copies of these records be emailed to me for closer review following the inspection.

Following our initial review of the records, Matt DiPaola led me on a walk-through of the facility. First, we observed the supplemental power unit (SPU), which is in the same building as the main office space and control room. The SPU is an emergency generator, used to provide power in the case of power outages. It was not operating at the time of my inspection. EU-SPU3 is equipped with a non-resettable hours meters, as required by 40 CFR, Part 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The non-resettable hours meter for the SPU read 1,403.1 hours, which matched the records that I had reviewed earlier in the inspection.

Next, we walked through of the facility yard, where I observed the above-ground portion of the pipeline. The facility has a safe fail system, where in the case of malfunction, the facility would fail safely. This system involves several vents across the plant yard, which in the case of system failure would be used to release all-natural gas from the plant. I also observed the control valves, which are used to control direction of gas flow. For the most part, gas flows from west to east, especially in the busier summer months. In the winter months, the gas may free flow, or the direction of gas flow may be changed.

Next, we went to the building where two turbines are housed. Only one was operating on the day of the inspection. The turbines are equipped with SoLoNOx, which is a low emissions technology that allows for the turbine to combust at a lower temperature, resulting in lower NOx emissions. According to the hours meters for the turbines, Turbine 1 has operated 26,300 hours and Turbine 2 has operated 10,743 hours.

**Records Review**

On August 12th, 2022, I was provided copies of all requested recordkeeping for the Vector Pipeline – Highland Compressor Station facility. Records were provided for January 2021 through June 2022.

*Source-Wide*

Source-wide emissions of carbon monoxide (CO) emissions are limited to 224 tons per year (tpy), as determined on a 12-month rolling basis (Source-Wide, S.C. I.1). The provided records included 12-month rolling CO emissions calculations. At the end of June 2022, 12-month rolling CO emissions were recorded to be 7.63 tpy. The highest 12-month rolling emissions were 8.18 tpy, which was recorded in April and February of 2022.

Vector Pipeline is required to monitor and record natural gas usage in both turbines and the standby power unit (Source-Wide, S.C. VI.1). The facility monitors fuel usage and maintains copies of these records. I was provided copies of fuel usage for all units.

The ROP includes a condition that the facility must comply with Consent Agreement and Final Order (CAFO), CAA Docket No. CAA-05-2005 0014, filed on February 11, 2005 (S.C. IX.1). During the previous inspection in February 2020, EGLE Staff Adam Bognar determined that the consent order had been resolved and that this condition can be removed in the next ROP renewal.

*EUSPU3*

EU-SPU3 is subject to 40 CFR, Part 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Vector Pipeline is an area source of HAPs and EU-SPU3 must meet all requirements for an existing stationary RICE at an area source of HAP emissions, which correspond to many of the special conditions the ROP for EU-SPU3.

The permit requires records to be maintained of 12-month rolling NOx and CO emissions (EU-SPU3, S.C. VI.1). I was provided a monthly summary table for the Standby Power Unit (SPU), which included 12-month rolling CO emissions and NOx emissions. Annual NOx emissions from EU-SPU3 are limited to 9.85 tpy, as determined on a 12-month rolling basis (S.C. I.2). The recorded 12-month rolling emissions at the end of June 2022 were 1.148 tpy. The highest annual emissions of NOx were recorded in December 2021, at 1.633 tpy. The provided records indicate compliance with the annual NOx emissions limits for EU-SPU3.

Hourly NOx emissions from EU-SPU3 are limited to 39.4 pounds per hour (S.C. I.1) and hourly CO emissions from EU-SPU3 are limited to 3.06 pounds per hours (S.C. I.3). The facility is not required to maintain hourly emission calculations for EU-SPU3. Based on the provided fuel usage, operational hours records, and monthly emissions records provided, it appears that Vector Pipeline is operating in compliance with the hourly emission rates.

I was provided copies of the monthly and 12-month rolling log of operating hours, as well as the tracking log where the hours from the non-resettable hours meter are recorded every day that the SPU operates, as required by S.C. VI.2 and VI.5. The ROP limits operation of the unit to 500 hours per calendar year (S.C. III.2). In addition, the requirements of 40 CFR Part 63 Subpart ZZZZ dictate that the unit may be operated for up to 100 hours for maintenance checks and readiness testing and up to 50 hours for non-emergency situations per calendar year (S.C. III.7 and III.8). Total operating hours at the end of 2021 were 82.9 hours, including 62.8 hours of emergency operation and 26.4 hours of non-emergency operation. As of the date of the inspection, the unit has operated for a total of 6.8 hours so far in 2022, including 0.5 hours of emergency operation and 6.3 hours of non-emergency operation.

EU-SPU3, S.C. VI.3 requires records to be maintained that demonstrate compliance with work and management practices outlined in Subpart ZZZZ and S.C. III.9. Vector Pipeline operates the pipeline in a manner that minimizes emissions and has a preventative maintenance plan, which satisfies the requirements of Subpart ZZZZ and S.C. III.9.

Vector Pipeline maintains records of all maintenance activities performed on EU-SPU3, as required by S.C. VI.4. I reviewed the Emergency Generator Maintenance Log while on site and determined that the facility was operating in compliance with the requirements of 40 CFR Part 63 Subpart ZZZZ, Table 2d, as well as S.C. III. 3.

*FG-TURBINES*

All permitted emission limits for FG-TURBINES are combined for both turbines. Emissions limits for each individual turbine is half of the hourly and 12-month emission limits for NOx, CO, and SO2 (S.C. IV.1).

I was provided copies of the hourly emission data for each turbine for the month of June 2022, which included records of Natural Gas Producer Speed (%NGP) on an hourly basis, indication of whether or not each turbine was operating in SoloNox mode, as well as hourly CO and NOx emission rates, which satisfies the requirements of S.C. VI.1 (a) through (c). The records indicate that Turbine 1 was operated continuously for nearly the entire month of June, apart from one 11-hour long break in operation spanning June 14 – 15. On the other hand, Turbine 2 operated much less frequently over the course of the month.

As previously mentioned, SoloNox mode is a low emission setting that produces reduced NOx emissions during turbine operation. According to the provided records, the turbines operated in SoloNOx mode for nearly the entire time that the turbines were operating. The only exception to this was a few one-hour periods during start up or shut down of the turbines, where SoloNox mode is recorded as off while the turbine was starting up or coming out of operation.

Hourly emissions of NOx are limited to 37.9 lbs/hr (S.C. I.1). Emissions of NOx ranged from 5.4 to 15.3 lbs/hour from Turbine 1 and from 2.5 to 14.1 lbs/hr for Turbine 2. Based on these records, Vector Pipeline appears to be operating in compliance with the hourly NOx emission limit for each turbine individually and combined.

The facility also maintains records of monthly and 12-month rolling NOx and CO emissions from each turbine individually and combined, as required by S.C. VI.1(d). Annual emissions of NOx are limited to 126.7 tpy, on a 12-month rolling basis (S.C. I.2). NOx emissions information for each turbine individually and combined is summarized in the table below. The provided records indicate that Vector Pipeline is operating in compliance with the permitted NOx emission limits.

*Table 1: Annual NOx Emissions Summary*
Limit: 126.7 tpy (turbines combined) or 63.35 tpy (each individual turbine)

| | 12-Month Rolling Emissions in June 2022 (tpy) | Highest 12-Month Rolling Emissions [Month] (tpy) |
|---|---|---|
| Turbine #1 | 14.74 | 15.31 [April 2022] |
| Turbine #2 | 4.26 | 10.67 [April 2021] |
| Turbines Combined | 19.00 | 22.35 [March 2021] |

The hourly CO emissions limit is based on the Natural Gas Producer Speed (%NGP) at the time of turbine operation. Hourly CO emissions when the turbines are operating in the range of 86 to 92% NGP are limited to 800 lbs/hr (S.C. I.6). When operating at greater than 92% NGP, emissions are limited to 25.14 lbs/hr (S.C. I.7). Both turbines operated above 92% NGP the entire time that they operated in June, except for one hour on June 29$^{th}$, where Turbine #2 operated at 91.4% NGP. When the turbines were operating, hourly CO emissions ranged from 0.5 to 4.5 lbs/hr for Turbine 1 and from 0.5 to 11.0 lbs/hr for Turbine 2. The provided records indicate that Vector Pipeline is operating in compliance with the hourly CO emission limits for each turbine individually and both turbines combined.

Hourly NOx and CO emission rates are also required to be verified every five years via stack testing (S.C. V.1 and V.2). The last stack test was completed on May 21, 2019. The test results from that test indicate compliance with the hourly emission rates. The test results are also used in the calculation of reportable emissions, as required by S.C. VI.4.

I was provided a copy of the Federal Energy Regulatory Commission Gas Tariff, which the facility is required to maintain a record of according to VI.1(e). The sulfur content of the fuel is not to exceed 0.8% by weight (S.C. III.3). The provided tariff identifies that the maximum sulfur content of the fuel is 20 grains of total sulfur per 100 cubic feet of gas. This limit is more stringent than the permit requirement of 0.8% of sulfur by weight.

Emissions of sulfur dioxide ($SO_2$) from FG-TURBINES are limited on an instantaneous, hourly, and 12 -month rolling basis (S.C. I.3, I.4, and I.5). Compliance with the instantaneous $SO_2$ emission limit of 150 ppm is based on compliance with the Custom Fuel Monitoring Plan (CFMP), contained in Appendix 3 of the ROP (S.C. VI.2 and VI.3). According to the requirements outlined in the CFMP, the facility does not have to conduct sulfur content monitoring as long as it maintains valid FERC tariffs indicating that sulfur content is less than 20 grains per 100 standard cubic feet of natural gas. The CFMP in Appendix 3 also outlines requirements for nitrogen content monitoring, which is not required as long as natural gas is the only fuel burned in the turbines. Since the facility meets both of these requirements, it does not conduct sulfur or nitrogen content monitoring of fuels.

The ROP contains an annual $SO_2$ emission limit of 59.21 tpy, on a 12-month rolling basis (S.C. I.5). Table 2 (below) summarizes annual $SO_2$ emissions from FG-TURBINES. In addition, hourly $SO_2$ emissions are limited to 13.52 lbs/hr (S.C. I.4). Based on the provided records, Vector Pipeline appears to be operating in compliance with the permitted $SO_2$ emissions limits.

*Table 2: Summary of Reported Annual $SO_2$ Emissions*
Limit: 59.21 tpy (turbines combined), or 29.605 tpy (individual turbines)

| | 12-Month Rolling Emissions in June 2022 (tpy) | Highest 12-Month Rolling Emissions [Month] (tpy) |
|---|---|---|
| Turbine #1 | 0.256 | 0.261 [April 2022] |
| Turbine #2 | 0.116 | 0.224 [April 2021] |
| Turbines Combined | 0.372 | 0.394 [January 2022] |

**Natural Gas Venting**
Per the requirements of FG-Rule285(2)(mm), Vector Pipeline is required to notify the AQD of any venting of natural gas that is over 1,000,000 standard cubic feet of gas. On September 8th, AQD was notified of a planned shutdown testing event on September 20th, which is an event with the potential to exceed 1 MMMSCF of natural gas. On September 19th, AQD was notified that the release event took place one day earlier than planned, on September 19th, and that a total of 1.07873 MMSCF of natural gas was vented to the atmosphere.

**Reporting Requirements**
The ROP requires Vector Pipeline to submit semi-annual reports of monitoring and deviations, as well as annual reports certifying compliance. The facility has been submitting all semi-annual and annual reports in a timely manner. The most recent semi-annual and annual reports indicate compliance with all permit conditions.

**Conclusion**
Based on my walk through of the facility, review of required recordkeeping and submitted reports, Vector Pipeline appears to be operating in compliance with all conditions of MI-ROP-N6838-2019 and all other applicable air quality rules and regulations.

NAME Kaitlyn Leffert DATE 10/07/2022 SUPERVISOR K. Kelly