

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N783251158

FACILITY: MUSKEGON DEVELOPMENT, Pigeon River Facility		SRN / ID: N7832
LOCATION: SW 1/4 NW 1/4 SE 1/4 SEC 17, DOVER TWP		DISTRICT: Gaylord
CITY: DOVER TWP		COUNTY: OTSEGO
CONTACT: Bennett Myler		ACTIVITY DATE: 10/15/2019
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: self initiated site inspection for fiscal year 2020. Facility reported to have been shut in as of November 2018. sgl		
RESOLVED COMPLAINTS:		

On October 15, 2019, AQD District Staff mobilized to the Muskegon Development Pigeon River Facility (N7832), located in Dover Township, Otsego County, Michigan to conduct an unscheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 226-07. A records request was made electronically on August 29, 2019. Records were received on October 7, 2019. Information provided indicated that the Facility has been shut in since November 2018.

Previous site inspection activities were conducted on November 3, 2016. No compliance issues were identified with respect to the facility at that time.

FACILITY

The referenced facility is a fenced, gated and unmanned CPF station operated by the Muskegon Development Company and is located in the SW ¼ NW ¼ of SE 1/4 of Section 17, T31N R2W. The station is reported to service Antrim Formation wells in the area. Activities onsite include separation of gas and brine from the incoming Natural Gas (NG) stream and compression of the gas in the lines to aid in transport.

To reach the facility Staff drove east on M-32 from the Gaylord District Office, until reaching the eastern side of Gaylord. Just before the MDOT offices on M-32, Staff made a left turn at the intersection and continued 3.5 +5miles east on F-44 (Wilkinson Road). A left-hand turn was also made at Marquardt Road, and Staff traveled 3 miles to the intersection of Marquardt and Seymore Roads. The entrance drive for the Facility is located another ¼ mile to the north on the right-hand side of the road and is approximately ¼-mile off Marquardt Road.

A review of aerial photos readily available on the internet indicate that the location was an active oil and gas facility as early as 1993. A total of three buildings were present in the 1993 aerial, two smaller on the north end of the Facility, the western one disappearing in the August 2005 aerial, and the eastern one (skid mounted dehy unit) was gone in the 2016 aerial. In addition, the largest building (present compressor building) was expanded to it's present size between 1993 and 1999.

Immediately adjacent properties appear to be undeveloped, forested lands with leased oil and gas wells. Agricultural land and some partially developed residential properties are also located within a half-mile radius of the site.

Weather conditions at the time of the site inspection included mostly cloudy skies and temps below 50 degrees Fahrenheit.

REGULATORY

Permitting -The referenced facility operates under Permit to Install (PTI) No. 226-07, which was issued to the Facility on November 8, 2007. The PTI was issued as an opt-out permit based on acceptance of a material limit of 40 million BTUs per year [Special Condition (SC) 2.2] limit in the permit which will limit NOx emissions to less than 89 tons/year. The facility is considered an area source of HAPs.

At the time of permitting, the Facility was reported to have one glycol dehydrator (EUDEHY) with 125,000 BTU/hr reboiler, one compressor engine (EUENGINE1). The equipment onsite was reported to have been installed in 1992. 226-07 included conditions for EUDEHY, EUENGINE1 and "FGFACILITY".

The engines include the following:

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Emission Unit	Description	Control	Install Date	Removal Date
EUENGINE1	CAT G398TAHCR Rich Burn 700 HP	No	1992	3/6/2015
EUENGINE2 (MAERS ID)	CAT 3406 TA Skid No. NGCS 211 Rich Burn 325 HP	No	3/6/2015*	NA

* District files contain copies of correspondence dated March 11, 2015, notifying of an engine change out that occurred at the Facility on March 6, 2015.

Though not identified in the permit, the facility may be subject to Federal Regulation. Subparts frequently associated with oil and gas facilities are identified below.

Federal Regulations - The referenced facility does not process or store petroleum liquids, nor store them onsite and is therefore appears to not be subject to 40 CFR Part 60 (New Source Performance Standards AKA NSPS) Subparts;

- K, Ka or Kb (Storage vessels for Petroleum Liquids);
- KKK (Equipment Leaks of VOC from onshore NG Processing Plants);
- VV (Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry);

With regards to the existing engine(s) it appears at the time of permitting that based on install dates that EUENGINE1, the Caterpillar 3406 TA would not District staff requested clarification regarding applicability of RICE NSPS Subparts IIII for Compression Ignition (CI) or JJJJ for Spark Ignition (SI) RICE But the requested information was not provided during report preparation.

At the issuance of 226-07, it was believed that the engine associated with the Facility would not be subject to the RICE MACT or NSPS due to it's date of installation. However, with the 2015 installation of the CAT 3406TA. That issue may have changed. AQD has not at the time of report preparation received delegation with respect to the RICE MACT or NSPS, and no determination of compliance with the subparts has been made.

Subpart OOOO would apply to onshore affected facilities that are constructed, modified or reconstructed after August 23, 2011. Based on available information it appears that the referenced subpart may be applicable but no confirmation was received from the Facility at the time of report preparation.

With respect to 40 CFR Part 63 (Maximum Achievable Control Technology Standards A.K.A. MACT) the following Subparts may apply:

- Subpart HH (HAPS from Oil and NG Production Facilities)
- Subpart ZZZZ (Reciprocating Internal Combustion Engine aka RICE)

With respect to Subpart HH, the affected unit was the EUDEHY, but the skid mounted unit was reported to be replaced by a desiccant style model, which has no emissions and would be exempt from the referenced subpart.

With respect to Subpart ZZZZ, the company at the time of report preparation has provided no information indicating that the existing RICE would not be subject to the referenced subpart. A compliance determination has not been made with respect to this subpart, and at the time of report preparation AQD does not have authority to enforce the subpart.

EQUIPMENT

At the time of the November 3, 2016, site visit AQD Staff identified one Cat Model 3406TA compressor with RICE (EUENGINE1), one desiccant dehydrator(exempt) and above ground tanks with lined-secondary containment were present onsite. The RICE is housed in the single building remaining onsite. No activity was ongoing, per Muskegon Development staff, the Facility has been shut in since November 2018. Limited activity was reported during engine work conducted on April 29, 2019.

EUENGINE1 reported to be a CAT 3406TA with no control device. No engine swings or change outs have been reported for the period of January 2018-August 2019. A review of information provided indicated that for the referenced period, EUENGINE1 only operated for six months (January, June, July, August, September and October) in 2018.

As previously indicated at the time of permitting, EUENGINE1 was limited to a maximum heat input of 40 billion BTUs/year (SC 2.2). However, the CAT 3406TA has a maximum heat input of 21.15 Billion BTUs/year. Well below the permit limits. The March 11, 2015, engine change-out submittal indicated that the Potential to Emit for the referenced engine is 63.7 ton NOx/year and 3.8 ton CO/year.

The dessicant dehydrator (installed between 2013 and 2016) is located to the north of the engine building onsite. A review of annual MAERS submittals for the calendar years of 2016, 2017 and 2018 indicated that the Facility was reporting the permitted 1992 dehydrator (EUDEHY) as being operational onsite. The Facility was notified electronically of the detail in electronic correspondence on September 25, 2019, and the Facility requested to correct the reporting error in future submittals. Monthly emissions reported by the Facility included emissions for the dehy reboiler. The error will be brought to the facility's attention.

As previously indicated the facility is reported to process only Antrim gas. The referenced equipment is reported to have had an average daily throughput of less than 123 Mcfd for 2018.

COMPLIANCE

At the time of the October 15, 2019 site visit the Facility was shut-in. Compliance is based on information provided as part of a August 29, 2019 records request for the period of January 2018 through August 2019.

MAERS- The Facility reports annual emissions as part of the Michigan Air Emission Reporting System (MAERS). A review of records indicate that annual emissions reported included emissions for one RICE (EUENGINE01) and one dehydrator onsite. Reporting appears to be complete and submitted in a timely manner, though as previously noted it appears that the preparer for the Facility failed to report the removal of the 1992 dehydrator, resulting in reporting of non-existent VOC emissions of approximately 60 lbs per year for the 1992 dehydrator.

The most recent reporting for calendar year 2018 was submitted on February 21, 2019. Reported emissions are summarized later in the report.

Malfunction Abatement Plan

A Malfunction Abatement Plan (MAP) dated December 17, 2007 was initially submitted for the Facility and it's associated RICE. The referenced document was revised on March 6, 2015, to reflect the swap out of the previous RICE with the existing CAT 3406TA. The referenced document was submitted to meet EUENGINE1 SC 2.3 of permit 226-07.

Per the Facility MAP, a daily pumper log is completed documenting operational data for the compressors and their associated RICE. In order to address engine maintenance and service, every 6 weeks or 1000 hours the Facility reports their engine/compressor service contractor will conduct specific maintenance activities including:

- Oil and filter change
- Oil sample collection for analysis
- Check air filter
- Check fuel pressure
- Check ignition timing
- Check, clean and change (if appropriate) spark plugs
- Test shut down system.

In addition to the above activities, the engine/compressor service contractor is reported to conduct every 12 weeks or 2000 hours a valve adjustment and compression check.

A review of the maintenance records provided for EUENGINE1 (Cat 3406) indicated that Natural Gas Compression Systems (AKA NGCS) had been contracted to conduct maintenance activities. The field maintenance reports clearly identified the engine model and serial number, as well as the date and location of the work and appropriate operating data for the unit. Documents provided appeared to indicate that maintenance activities required under the PM/MAP were being conducted. However, other engine issues were resulting in additional repairs outside of the PM/MAP scope, and resulted in the facility being shut-in.

During the October 15, 2019, site visit, compressor daily log sheets were not found onsite by engine controls as is the case with many other facilities.

Permit Conditions -Special conditions associated with Permit No. 226-07 include conditions for the previously existing glycol dehydrator (EUDEHY), the RICE (EUENGINE1) and the Facility as a whole.

EUDEHY – This emission unit no longer exists onsite, having been removed in 2013. Therefore, no compliance conditions are applicable.

EUENGINE1 -Conditions include testing, design/equipment parameters, operational restrictions, record keeping, reporting and emission limits.

Permit 226-07, EUENGINE1 includes a number of conditions that are specific to emission units with add on control devices. As previously noted the permitted engine is not equipped with a catalyst or AFRC and as a result the conditions do not apply. These permit conditions include:

- Installation, maintenance and operation of the control device in a satisfactory manner (SC 2.5).
- Limited operation of the emission unit to 200 hours or less without the control device within a 12-month rolling time period (SC 2.4).
- Monthly records of total monthly and 12-month rolling total hours in which the emission unit operated without the control device. (SC 2.11)

Under Permit 226-07, EUENGINE1 is limited to 80 tpy NOx (SC 2.1). The following table summarizes both the MAERS for the calendar years of 2016 through 2018. All reported emissions were below permit limits.

EUENGINE1, CAT 3406TA

CALENDAR YEAR	NOx (tons/year)
2018	23.855
2017	56.053
2016	51.113
LIMIT	80 (SC 2.1)

Calculation of actual emissions on a monthly and 12-month rolling total for CO and NOx are based on engine manufacturer specs for each engine in compliance with conditions VI.1, VI.6, VI.7 and Appendix A of the permit. Records provided indicated compliance with permit conditions.

Verification testing of NOx emission factors is required upon request of the AQD District Supervisor (SC 2.6). A review of District Files failed to find a written request for verification testing, therefore this condition is not applicable at this time.

In addition, SC 2.2 limits the heat input for EUENGINE1 to a not to exceed of 40 billion BTU's per year, based on a 12-month rolling time period as determined at the end of each calendar month for equipment with out add on controls. SC 2.8 requires monitoring of the heat content of the natural gas in BTU per cubic feet on a quarterly basis. The March 11, 2015, MAP submittal indicated that the maximum heat input rate for the engine was 2.4 million BTU/hour and 21.15 Billion BTU/year. Well below permit limits.

Monitoring and recordkeeping conditions for EUENGINE1 include:

- Monthly Fuel usage for EUENGINE1 on a continuous method, (SC 2.7 and 2.12)
- Quarterly heat content of NG fuel for EUENGINE1, (SC 2.8 and 2.12)

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- Maintain a log of all maintenance activities conducted according to the PM/MAP (SC 2.10)
- Monthly and 12-month rolling total NOx emission calculations (SC 2.13)

The above referenced monthly monitoring and recordkeeping was provided by the company, and reviewed as part of the October 7, 2019, submittal. Records provided reported heat values (BTU/scf) for each month of operation in 2018-2019. Values reported ranged from 803 to 818 BTU/scf. Heat input values for the 12-month rolling total range from 2.230 MMBTU to 16.677 MMBTU. Well under the 40 billion BTUs allowed per year.

With reference to continuous monitoring and recordkeeping of fuel usage for EUENGINE1 the Facility has provided appropriate daily and monthly records for both engines. This data is used to determine total emissions for the Facility on a monthly and 12-month rolling average. 12-month rolling totals are reported annually as part of the MAERS reporting process and are summarized earlier in this report. Data reported appears consistent with emission records provided.

Reporting requirements under Permit 226-07 (SC 2.10) include notification (except as provided in Rule 285) of replacement of any engine with an equivalent or lower emitting engine. The notification is required to include acceptable emissions data to show that the alternate engine meets the equivalent or lower emissions. District file records provided indicate that the March 2015 engine swap was in compliance with the referenced condition. NOx potential to emit for the CAT 3406TA were estimated (with inherent limits) to be 63.7 tpy NOx. The potential NOx emissions from the previous engine were reported to be 102.7 tpy. No engine swap out or swings have occurred since the 2015 swap reported.

Stack requirements for EUENGINE1 (SC 2.14) include the following:

ENGINE	EUENGINE1 (CAT 3406TA)
Reported Exhaust Diameter (inches)	6
Maximum Exhaust Diameter (inches)	12 (SC 2.14)
Reported Height (ft above land surface)	37
Minimum Height (ft above land surface)	37 (SC 2.14)

It should be noted that the stack height did not appear to be high enough at the time of the 2016 site inspection. Muskegon Development staff indicated that the stack height was increased to meet permit requirements.

SC 2.15 requires the stack heights for EUENGINE1 meet requirements within 60 days of the permit issuance. As indicated in the above table, stack dimensions were in compliance with permit conditions at the time of the November 2015 site inspection.

FGFACILITY – Conditions under this flexible group are limited to NOx emissions of 89.9 tons per year, based on a 12-month rolling time period to be determined at the end of each month (SC 3.1). Totals for FGFACILITY provided by the Facility reported NOx emissions well below the limit for the period of January 2018 through August 2019. The following table presents a random selection of data for 2018 and 2019:

DATE	12-MONTH ROLLING TOTAL NOx (TPY)
January 2018	48.02
April 2018	37.32
July 2018	32.26
February 2019	18.38
July 2019	10.73
LIMIT	89.9 TPY

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The required calculations (SC 3.2) and records (SC 3.3) were made available upon request in compliance with permit conditions.

Use as fuel of natural gas with hydrogen sulfide contents of less than 1 grain (16.5 ppm) or a maximum of 10 grains of total sulfur per 100 standard cubic feet (SC II.1). Verification is required upon request of H₂S or sulfur contents by the Facility (SC V.1). Verification has historically been provided by using dragger tubes on the influent gas stream. With the Facility being presently shut-in. Verification is not able to be conducted at this time.

SUMMARY

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NAME Shaunette Stone DATE 10/31/2019 SUPERVISOR SON