

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

N619246682

FACILITY: Muskegon Development, Mitchel Lake II		SRN / ID: N6192
LOCATION: T29 N R2E SEC 20, ALBERT TWP		DISTRICT: Gaylord
CITY: ALBERT TWP		COUNTY: MONTMORENCY
CONTACT: MICHAEL MESBERGEN, ENGINEER		ACTIVITY DATE: 10/17/2018
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: unannounced, scheduled site inspection of synthetic minor CPF in Montmorency county for Fiscal Year 2019. sgl		
RESOLVED COMPLAINTS:		

On October 17, 2018, AQD District Staff mobilized to the Muskegon Development Mitchell Lake II CPF Facility (N6192), located in Albert Township, Montmorency County, Michigan to conduct an unscheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 746-96A. A records request was made electronically on October 3, 2018. Records were received on November 1 and 19, 2018.

Previous site inspection activities were conducted on March 11, 2014. 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 NW ¼ SW ¼ of Section 20, T29N R2E. 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 traveled approximately 3-miles east of the 4-Way stop/Flashing light in Lewiston on County Road 612. At the intersection with Ann Arbor Road, make a left (north) and travel approximately 1/3-mile. The Facility drive is on the right-hand side of the road (east).

A review of aerial photos readily available on the internet indicate that the location was an active oil and gas facility as early as April 1998. Aerials for 1994 show the property as undeveloped.

Immediately adjacent properties appear to be partially developed parcels for residential or other uses. To the north of the CPF were property of State of Michigan and appears to be undeveloped, forested lands with leased oil and gas wells.

Weather conditions at the time of the site inspection included mostly cloudy skies, winds of 5-10 mph from the W-NW, temps of 33 degrees Fahrenheit and snow flurries.

**REGULATORY**

Permitting -The referenced facility operates under Permit to Install (PTI) No. 746-96A, which was issued to the Facility on July 17, 2009. The PTI was issued as an opt-out permit based on the ability to swap out permitted engine(s) onsite. The permit modification was applied to cover installation of a non-permitted engine onsite. The facility is considered an area source of HAPs.

Previously the Facility had been permitted under 746-96 which was issued around the same time as other Michigan Oil and Gas Association (MOGA) permits that did not undergo 201 reviews. The PTI conditions were generic and refer to the stationary source as a whole rather than conditions that address individual pieces of equipment. In addition, emission calculations to show compliance with the referenced permit were made using Emission Factors (EFs) in Appendix A of the permit. Muskegon Development Company requested changing to EFs based on manufacturer data for the

engines in correspondence dated May 25, 2007. This method is consistent with methods in the 2009 permit modification.

At the time of the 2009 permitting. The Facility was reported to have one glycol dehydrator with reboiler, two compressor engines, and three above ground storage tanks (brine) (with load out). 746-96A included conditions for both engines, the dehydrator and "FGFACILITY".

The engines include the following:

Emission Unit	Description	Control	Install Date	Removal Date
Engine1	CAT 3516 CTA Lean Burn 1150 HP	Air to Fuel Ratio Control (AFRC)	1998	NA
Engine2	CAT 3406 TA Rich Burn 325 HP	No	2008	NA

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 that based on install dates that EUENGINE1, the Caterpillar 3516 CTA would not be subject to NSPS Subparts IIII for Compression Ignition (CI) RICE. District staff requested clarification regarding applicability of RICE NESHAP for both engines. But the requested information was not provided during report preparation.

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 is not applicable at this time but that future changes may be subject to the referenced subpart.

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 is believed to be the dehy unit. The facility reports that it is not subject to the subpart because it's average throughput is less than 3.0 million cubic feet/day (MMcfd). In addition, the 2017 MAERS report submitted by the Facility reported total VOC emissions for the dehy of 61.64 lbs/year which would verify the average benzene emissions at less than 0.9 Mg/yr. 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.

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.

At the issuance of 746-96A, it was believed that the engines associated with the Facility would not be subject to the RICE MACT or NSPS due to their date of installation, or because they were lean burn or because they were located in area source of HAPs.

## EQUIPMENT

At the time of the October 17, 2018, site visit AQD Staff identified two compressors with RICE (EUENGINE1 and EUENGINE2), one glycol dehydrator (EUDEHY) and the three above ground tanks with lined-secondary containment were present onsite. The two RICE are housed in connected buildings, and no emissions or heat waves were noted from the stacks. EUENGINE1 reported to be a CAT 3516 CTA sat on a skid labeled "GCS1209", the skid showed that oil leaks are associated with the unit, as fully saturated absorbents were noted on the skid, with additional oil accumulated. EUENGINE1 was equipped with an AFR meter, reading 1.7, and a note that indicated the analyzer was calibrated on July 31, 2018.

EUENGINE2 reported to be a CAT 3406 TA, 325 Hp engine has not been in operations since October 2015. This is consistent with monthly emissions records submitted by the Facility to show compliance with their permit. However, MAERS emission reports submitted for the Facility indicated that the unit was operational for the calendar years of 2016 and 2017.

The dehy and reboiler (installed 2/1/1996) are housed in the smaller building to the south of the engine building onsite. Intermittent puffs of visible emissions were noted from the dehy stack. The white plume disseminated very quickly, and no odors were noted.

Review of District Files and annual emissions reports submitted by the facility indicate that in 1996, a single compressor and glycol dehydrator (with reboiler) existed onsite. Installation of a second compressor engine resulted in re-permitting of the Facility in 2009. As previously indicated the facility is reported to process only Antrim gas. The referenced equipment is reported to have had a throughput of less than 3.0 MMcfd for the entire reporting period.

## COMPLIANCE

At the time of the October 17, 2018 site visit, visible emissions were noted to be limited to intermittent puffs out of the dehy stack which disseminated very quickly. A certain volume of liquids had collected in the secondary containment of the brine tanks.

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 two RICE (EUENGINE01 and EUENGINE02) and one glycol dehydrator (EUGLYDEHY) onsite. Reporting appears to be complete and submitted in a timely manner. The most recent reporting for calendar year 2017 was submitted on February 8, 2018. Reported emissions are summarized later in the report.

### Malfunction Abatement Plan

A Malfunction Abatement Plan (MAP) dated January 28, 2016, is of record for the Facility and its associated RICE. The referenced document was submitted to meet special condition III.1 (SC III.1) of permit 746-96A. District files contain copies of the following MAP documents:

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MACES- Activity Report

MAP DATE	RECEIVED	APPROVED
June 30, 2009	September 17, 2009	No Record
August 31, 2010	August 31, 2010	September 1, 2010
December 1, 2014	December 23, 2014	January 28, 2016

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 3516) indicated that with respect to the referenced activities, 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. However, the documents did not consistently record the engine hours at the time of the maintenance activities, so verification that the activities were conducted within the hours of operation specified in the MAP was not able to be completed. Evaluation based on calendar days, appeared to indicate that activities are at greater periods of time than every 6 weeks. Dates and reported activity types are summarized below:

Engine Maintenance and Service Visits	Other Service Visits*
March 2, 2016	December 2, 2016
May 20, 2016	
August 11, 2016	
November 10, 2016	
January 31, 2017	
April 26, 2017	April 20, 2017
July 25, 2017	
September 25, 2017	September 20, 2017
October 27, 2017	November 3 & 14, 2017
	December 4, 2017
January 25, 2018	
April 24, 2018	
July 24, 2018	

\* Dates reflect events in which the contractor was "called in" due to issues with unit. NGCS staff may or may not have conducted regular maintenance activities as part of visit. In addition, Facility staff indicated that supplemental site visits were conducted but did not involve physical changes (ex. replacement of spark plugs). And that for those visits maintenance records were not provided for review.

Compressor daily log sheets were not found onsite by engine controls as is the case with many other facilities.

Engine operational data observed as part of the October 12, 2017, site visit was consistent with operational data documented on daily operational logs and spreadsheets. Operational data was also noted to be consistent between those reported in maintenance records and the company's operational spreadsheets.

**EUENGINE1, CAT 3516 CTA with AFRC**

Date	Engine	RPM	Source
10/17/2018	CAT 3516	1173	On site observation
7/24/2018	CAT 3516	1142	NGCS Field Maintenance Report
11/4/2017	CAT 3516	1149	NGCS Field Maintenance Report
4/26/2017	CAT 3516	1190	NGCS Field Maintenance Report
11/10/2016	CAT 3516	1180	NGCS Field Maintenance Report

**EUENGINE2, CAT 3406 TA – Has not operated since October 2015.**

Permit Conditions -Special conditions associated with Permit No. 746-96A include conditions for both the engines (FGENGINES) and the Facility as a whole.

**EUDEHY** – Under this emission unit, the permittee is required to comply with all provisions of the National Emission Standards for Hazardous Pollutants, 40 CFR Part 63, Subpart HH, as they apply to EUDEHY (SC III.1 and FG FACILITY SC III.1). As previously identified, the Facility reports being exempt from the referenced subpart based on exemption criteria in:

- 40 CFR 63.764(e)(1)(i) which exempts glycol dehydrators with actual annual average flow rates of NG below than 85,000 cubic meters per day (SC VI.1 and VI.2) or
- 40 CFR 63.764(e)(1)(ii) which exempts glycol dehydrators with actual average benzene emissions less than 0.90 megagrams per year (SC VI.1 and VI.3).

Reporting requirements for EUDEHY includes submittal of all applicable notifications and reports by the due dates as required by 40 CFR 63.775 (SC VII.1).

Note emissions for EUDEHY have consistently reported to be <75 lb/year since 2014. Emissions are calculated based on MAERS EFs. However, if the total emissions were assumed to reflect benzene, reported emissions would be less than the 0.90 megagrams per year, and it appears the Facility exempt from the subpart and in compliance with the referenced subpart. No compliance evaluation has been made with reference to the subpart.

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

Permit 746-96A, FGENGINES includes a number of conditions that are specific to emission units with add on control devices. As previously noted neither permitted engine is equipped with a catalyst, and only EUENGINE01 is equipped with an AFRC. These permit conditions include:

- Installation, maintenance and operation of the control device in a satisfactory manner (SC IV.1).
- Limited operation of the emission unit to 200 hours or less without the control device within a 12-month rolling time period (SC III.2).
- Monthly records of total monthly and 12-month rolling total hours in which the emission unit operated without the control device. (SC VI.4)

With reference to SC IV.1, it was noted during the site inspection that a note/documentation onsite indicated that the “analyzer” for the AFRC was replaced on July 31, 2018. Documentation of hours of operation without the AFRC provided by the Facility for the period of January 2016 through September 2018 reported zero hours.

Under Permit 746-96A, FGENGINES the EUs both have NOx and CO limits. The following table summarizes both the MAERS for the calendar years of 2014 through 2017, as well as the 12-month rolling time total as of September 2018. All reported emissions were below permit limits.

**EUENGINE1, CAT 3516 CTA with AFRC**

CALENDAR YEAR	NOx (tons/year)	CO (tons/year)
Year to Date*	8.88	10.66
2017	7.596	9.115
2016	8.526	10.230
2015	8.169	9.803
2014	10.91	9.092
LIMIT	17 (SC I.1)	22 (SC I.2)

**EUENGINE2, CAT 3406 TA (Shut down in 2015)**

CALENDAR YEAR	NOx (tons/year)	CO (tons/year)
Year to Date*	0	0
2017**	28.433	1.681
2016**	31.867	1.884
2015	30.512	1.809
2014	33.976	2.009
LIMIT	64 (SC I.3)	10 (SC I.4)

\* reflects the 12-month rolling period ending September 30, 2018.

\*\* engine reported to have been shutdown for both calendar years, reporting error has been brought to the attention of the Facility.

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.

District files contain no copies of requests by District Staff for formal verification of NOx and CO emission factors by testing to be conducted for FGENGINES. Therefore, condition SC V.1 is not applicable at this time.

**Monitoring and recordkeeping conditions for FGENGINES include:**

- Fuel usage for each engine on a continuous method, (SC IV.2, VI.2, VI.5 and IX.1)
- Maintain a log of all maintenance activities conducted according to the PM/MAP (VI.3)
- Monthly and 12-month rolling total NOx emission calculations (SC VI.6)
- Monthly and 12-month rolling total CO emissions (SC VI.7)

Upon request the facility provided copies of maintenance field reports for EUENGINE1 as required under the PM/MAP for FGENGINES. As indicated previously the records provided were limited to those visits in which something was physically changed. Based on those records it appears that FGENGINES maintenance events may not be within the 6-weeks or 8 weeks as indicated in the PM/MAP but are being conducted at least quarterly for EUENGINE1. The Facility has indicated electronically that other maintenance visits were made, that would reflect the 6-8 week time period. EUENGINE2 as previously indicated has been reported to not be operated since October 2015, so no logs are available for the requested time period.

With reference to continuous monitoring and recordkeeping of fuel usage for FGENGINES, 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 746-96A (SC VII.1) 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. Records provided indicate that no engine swap has been made of EUENGINE1.

EUENGINE2 has not operated since October 2015 and remains in place. District Staff noted that despite the reported shut down of EUENGINE2 in October 2015, emissions were reported for the engines for the calendar years of 2016 and 2017. This discrepancy has been reported to the Facility.

Stack requirements for FGENGINES include the following:

ENGINE	EUENGINE1 (CAT 3516)	EUENGINE2 (CAT 3406)
Reported Exhaust Diameter (inches)	12	6
Maximum Exhaust Diameter (inches)	12 (SC VIII.1)	6 (SC VIII.2)
Reported Height (ft above land surface)	34	34
Minimum Height (ft above land surface)	30 (SC VIII.1)	30 (SC VIII.2)

SC IX.2 requires the stack heights for the two engine stacks 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 site inspection.

**FGFACILITY** – Conditions under this flexible group are limited to use as fuel of natural gas with hydrogen sulfide contents of less than 1 grain or a maximum of 10 grains of total sulfur per 100 standard cubic feet (SC II.1). Verification is required upon request of H<sub>2</sub>S or sulfur contents by the Facility (SC V.1). District Staff requested verification as part of the September 24, 2018, records request. Verification was provided using dragger tubes indicating 0 ppm hydrogen sulfide on the influent gas stream.

In addition, the permit contains a high-level citation with respect to 40 CFR Subpart HH as applicable to the site. (SC III.1). As previously indicated, the Facility appears to be exempt from the requirements of the referenced Subpart.

**SUMMARY**

On October 17, 2018, AQD District Staff mobilized to the Muskegon Development Mitchell Lake II CPF Facility (N6192), located in Albert Township, Montmorency County, Michigan to conduct an unscheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 746-96A. A records request was made electronically on October 3, 2018. Records were provided in part on both November 1, 2018 and 19, 2018.

**Previous site inspection activities were conducted on March 11, 2014. No compliance issues were identified with respect to the facility at that time.**

**Based on observations made, and information provided and reviewed, it appears the facility in most respects is operating in general compliance with their permit. However, based on the provided NGCS field maintenance records, it appears that FGENGINES maintenance events are not being conducted within the 6-weeks or 8 weeks as indicated in the PM/MAP, but are being conducted at least quarterly. The Facility reports that the PM/MAP schedule is maintained, but that not all events require parts replacements, and only those event for parts replacements were provided for review.**

**In addition, EUENGINE2 has not operated since October 2015 and remains in place. District Staff noted that despite the reported shut down of EUENGINE2 in October 2015, emissions were reported for the engine in annual emissions reporting activities (MAERS) for the calendar years of 2016 and 2017. These emissions are not reflected in the monthly totals, and it is unclear if it was a preparer error or other error. This discrepancy has been reported to the Facility.**

NAME Sharon J. Blome

DATE 12/18/2018

SUPERVISOR SN