

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

N619160900

FACILITY: Muskegon Operating Company LLC - Bass Lake		SRN / ID: N6191
LOCATION: T29 N R2W SEC 3, CHESTER TWP		DISTRICT: Gaylord
CITY: CHESTER TWP		COUNTY: OTSEGO
CONTACT: Bennett Myler ,		ACTIVITY DATE: 10/12/2021
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY 2022 scheduled site inspection and evaluation of Facility records for FCE. sgl		
RESOLVED COMPLAINTS:		

On Tuesday, October 12, 2021, AQD District Staff mobilized to the Muskegon Development Bass Lake Facility (N6191), located in Chester Twp, Otsego County, Michigan to conduct a scheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 745-96. A records request was made electronically on November 4, 2021 and received on November 23, 2021.

Previous site inspection activities were conducted on April 22, 2014 and October 12, 2017. No compliance issues were identified with respect to the facility at that time.

#### FACILITY

The referenced facility is a fenced and unmanned CPF station operated by the Muskegon Development Company and is located in Section 3, T29N R2W. The station is reported to service 20 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 reach the facility Staff traveled north from the intersection of Old State Road and Turtle Lake Road approximately 3.5 – 4 miles to Bass Lake Trail, then east to Bass Lake Landing Road where a right turn (south) was made. Immediately after the first curve runs a road to the SE along the power line. Take the powerline road approximately 1 ¼ miles and the station will be to the left (north). Alternately from aerials it appears that the facility can be reached by taking Turtle Lake Rd south from M-32 until you reach Bass Lake Trail.

#### REGULATORY

Permitting -The referenced facility operates under Permit to Install (PTI) No. 745-96, which was issued to the Facility in 1996. The PTI was issued as an opt-out permit, but not a Rule 201 permit and 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.

At the time of permitting the facility consisted of one NG-fired compressor and one glycol dehydration unit and was reported to have the potential to emit over 100 tons of NOx. The referenced permit limits the emissions to 89 tons per year for NOx, CO and VOCs.

Review of District Files identified the following requests to void the above referenced permit:

- February 28, 2007, and
- January 8, 2015

The initial request indicated that inherent limits such as a lower than design gas supply resulted in a lower potential to emit for a number of facilities. The later request indicated that equipment presently onsite were exempt under Rule 285(g) (Caterpillar G3408LE) and Rule 290 (glycol dehydrator). File information indicated that the requests were rescinded September 21, 2010 and March 24, 2015, respectively.

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. Note however, that compliance with these subparts has not been determined as part of this inspection.

**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 EUENGINE01, the Caterpillar G3408LE would not be subject to NSPS Subparts IIII and JJJJ for Compression Ignition (CI) RICE and Spark Ignition (SI) RICE, respectively. 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. However, the facility reports that it is not subject to the subpart because it's average throughput is less than 85K cubic meters/day (3 MMscf/day). 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 has been delegated authority to implement and enforce the subpart. However, at this time compliance determinations for Federal requirements under Subpart ZZZZ for Area Sources have not been made

## EQUIPMENT

At the time of the October 12, 2021, site visit AQD Staff identified two compressors with RICE, one glycol dehydrator and one brine tank with lined-secondary containment were present onsite. Each of the referenced pieces of equipment are housed separately. No visible emissions were noted from any of the stacks associated with the facility, due to overcast skies, no heat waves were noted from any of the stacks.

Review of District Files and annual emissions reports submitted by the facility indicate that at the time of permitting, a single compressor was permitted onsite. The original compressor/engine was reported by Muskegon Development Staff to have removed and replaced with two exempt engines in 2001. The replacement engines were reported to be Caterpillar G3408LE lean burn, 425 bhp engines (EUENGINE1 and EUENGINE2) with a maximum fuel input of 3.3 MMBTU/Hr and PTE of 4.1 tons per year NOx and 6.6 tons per year CO. Replacement of one of the Caterpillar G3408 LE engines (EUENGINE2) occurred in 2015. The replacement engine was reported to be a CAT 398 TA, with a maximum heat input of 5.495 MMBTU/Hr, and actual, uncontrolled emissions below thresholds

It should be noted that at the time of installation the CAT 398 TA (since it had a catalyst) should have went through the permitting process. However, based on information provided by the company, and discussions with the District Supervisor, it appears that the engine without catalyst meets the Rule 201 exemption. A review of District Files indicates the following engines associated with the site:

INSTALL DATE	MAERs ENGINE ID	TYPE	Dismantle Date	SOURCE
Pre-permit		CAT 3512 LCTA 860	2001	Facility correspondence
1/1/2001	EUENGINE01*	Caterpillar G3408LE (SN baz02419) 425 HP	NA	Facility correspondence
1/1/2001	EUENGINE02	Caterpillar G3408LE 425 HP	pre-2010	Facility correspondence
January 2010	EUENGINE02	425 HP Cat G3408 LE	Apx. 8/12/2015	MAERS
8/12/2015	EUENGINE03*	Caterpillar 398 TAHCR (SN 66b6500) with catalyst (700 HP)	NA	MAERS

\*The two referenced engines are also referred to in maintenance correspondence as Bass Lake #1 and Bass Lake #2).

A Malfunction Abatement Plan (MAP) was received by the District for the above referenced engines on November 9, 2017. On November 9, 2017, the document was reviewed and was determined to be complete and an approval letter was issued for the referenced document.

The glycol dehydrator associated with the site was reported to be installed on January 1, 1991. As previously indicated that 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. Information provided by the Facility indicated the following:

Date	Monthly throughput	Annual Throughput
2020	16,658 – 19,547 Mcf	214,073 Mcf
2021 to date*	13,058 – 18,694 Mcf	164,956 Mcf
Limit	NA	NA

\*To date is for the period of January 1 through October 31, 2021.

**COMPLIANCE**

At the time of the October 12, 2021, site visit, no visible emissions were noted to be coming from onsite stacks, liquids collected in the secondary containment of the brine tank were limited to those from the recent rains.

MAERS- Reporting of actual emissions for CO, NOx, VOCs and HAPs is required under special condition 18 of the permit. A review of the most recent MAERS submittal for the facility (received on March 9, 2021 for emissions associated with the calendar year 2020) included emissions for two engines and one glycol dehydrator onsite.

Except for NOx and CO emissions for the two engines, the emissions for the facility were calculated using MAERS emission factors. Total emissions reported for the year 2020 are presented below:

12-Month period ending	Total NOx emissions (TPY)	Total CO Emissions (TPY)	Total VOC Emissions (TPY)	Total Single HAP Emissions (TPY)*	Total combined HAP Emissions * (TPY)
December 2019	3.520	6.728	0.741	0.431	0.470

December 2020	2.91	6.14	0.36	0.230	0.330
September 2021	3.69	7.39	0.52	NR	NR
Limit (SC 13 & 14)	89	89	89	9	22.5

\*Note that Appendix A HAP emission factors indicate “nil” for Antrim wells. AQD Calculated for Formaldehyde as single highest HAP. Total single HAP and combined HAP are AQD calculated values.

Permit Conditions -Special conditions associated with Permit No. 745-96 are limited to record keeping, reporting and emission limits. Emission limits for the facility are defined in special conditions 13 and 14. These two conditions limit CO, VOC and NOx emissions to 89 tons/year for each referenced parameter as well as individual HAPs to below 9 tons/year and total HAPs to below 22.5 tons/year. The above table summarizes both the MAERS for the calendar years of 2019 and 2020, as well as the 12-month rolling time total as of October 2021. All reported emissions were below permit limits.

Calculation of actual emissions on a monthly and 12-month rolling total for CO, NOx, VOC and HAPS are required under special condition 15. The PTI specifies that emissions will be determined using emission actors from Appendix A. In correspondence dated May 25, 2007, Muskegon Development requested permission to use manufacturer’s engine specific emission factors. It should also be noted that the company reported using MAERS EFs for calculation of emission totals for the glycol dehydrator. A review of the EF indicated that the EF is in fact from Appendix A of the permit, and is in compliance with the permit conditions. Emissions for the two RICE associated with the site are summarized below:

Month ending 12-month rolling time period	Engine	NOx Emissions (TPY)	CO Emissions (TPY)	VOC Emissions (TPY)
December 2020	EUENGINE1	0	0	0
	EUENGINE3	2.95	6.21	0.33
September 2021	EUENGINE1*	0.79	1.27	0.16
	EUENGINE3	2.91	6.13	0.33

\*EUENGINE1 was reported to not have been operated for all of 2020 through April of 2021.

**Special condition No. 16, 17 require Monthly records of:**

- Fuel consumption, in million cubic feet (MMcf)
- Crude/condensate throughput to the tank in barrels (bbls)
- Hydrocarbon liquid trucked offsite (bbls), and
- Oil and gas processed onsite

It should be noted as no oil is processed onsite, neither monthly oil processing or hydrocarbon liquid totals are associated with the facility. The other requested monthly records were submitted as requested. Monthly gas production records provided were consistent with those that would verify the less than 3.0 MMcfd for the glycol dehydrator and were previously presented for 2020 and 2021 to date.

Special condition 19 requires the owner or operator of the source to conduct all necessary maintenance and make all necessary attempt to keep all components of the process equipment in proper working order and maintain a log of significant maintenance activities and all repairs made to the equipment. Muskegon Development provided upon request field maintenance reports completed by their subcontractor (Natural Gas Compression Systems) for both compressors/engines onsite in compliance with permit requirements. Activities summarized in the documents were sufficient to determine compliance with the Facilities preventative maintenance plan (AKA MAP) and appeared to meet general compliance with maintenance activities required under the RICE MACT though no compliance determination has been made at this time.

The above referenced documents indicated that the catalyst associated with EUENGINE3 was replaced December 3, 2020, and that subsequent testing verified the 90% NO<sub>x</sub> and 80% CO control efficiencies for the catalyst.

Special condition 20 applies to crude oil or condensate storage tanks greater than or equal to 952 barrels, and the liquid having a true vapor pressure of greater than 1.5 psia. This condition is not applicable as the facility does not store crude or condensate onsite.

Special condition 21 applies to malfunction of a pollution control device and limits bypass of the control device for a period not to exceed 48 hours per event nor a total of 144 hours per calendar year. Prior to installation of the Caterpillar 398 TA HCR (AKA EUENGINE3 or Bass Lake #2) engine in August 2015, there was no control device associated with the facility. Records provided indicate that the referenced engine did not operate without a catalyst for 2020 or 2021 to date.

Special condition 22 requires the owner or operator of an oil-gas facility constructed on or after January 20, 1984 to determine if they are subject to Federal standards in 40 CFR, Part 60, Subpart KKK. No hydrocarbon liquids are reported to be produced at the facility, so the facility is reported not to be subject to the referenced Subpart.

Special condition 23 refers to requirements associated with verification stack testing for CO, VOC, NO<sub>x</sub> or HAP. No request for verification testing was found in District Files, so the condition is not applicable at the time of the report preparation.

Special condition 24 requires the facility to only process sweet gas as defined in Rule 119. The Facility was sampled using stain tubes in November 29, 2021, and information provided that the

wet gas contained 0 ppm hydrogen sulfide, which would confirm that the gas stream is in compliance with the referenced special condition.

**SUMMARY**

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Based on observations made, and information provided and reviewed, it appears the facility is operating in general compliance with their permit.

Sharon LeBlanc,  
Environmental Quality  
NAME \_\_\_\_\_  
Digitally signed by Sharon LeBlanc,  
Environmental Quality Analyst  
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