

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

FCE Summary Report

Facility : MUSKEGON DEVELOPMENT, Lower Chub Lake/Viking Lake	SRN : N6189
Location : T29 N R2W SEC 18	District : Gaylord
	County : OTSEGO
City : CHESTER TWP State: MI Zip Code : 49751	Compliance Status : Compliance
Source Class : SM OPT OUT	Staff : Sharon LeBlanc
FCE Begin Date : 10/12/2016	FCE Completion Date : 10/12/2017
Comments : 2018 scheduled site inspection, site inspection, record request, submittal and review completed thru the period of 10/12/2017 - 11/22/2017.	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
10/12/2017	Scheduled Inspection	Compliance	scheduled site inspection for 2018 fiscal year- Site visit conducted 10/12/2017. Records received and reviewed November 2017. H2S verification not received at time of report preparation, and will be evaluated independently.
02/09/2017	MAERS	Compliance	See MAERS for further details.

Name: Sharon LeBlanc **Date:** 11/27/17 **Supervisor:** SN

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

N618942069

FACILITY: MUSKEGON DEVELOPMENT, Lower Chub Lake/Viking Lake		SRN / ID: N6189
LOCATION: T29 N R2W SEC 18, CHESTER TWP		DISTRICT: Gaylord
CITY: CHESTER TWP		COUNTY: OTSEGO
CONTACT: MICHAEL MESBERGEN, ENGINEER		ACTIVITY DATE: 10/12/2017
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: scheduled site inspection for 2018 fiscal year- Site visit conducted 10/12/2017. Records received and reviewed November 2017. H2S verification not received at time of report preparation, and will be evaluated independently.		
RESOLVED COMPLAINTS:		

On Thursday, October 12, 2017, AQD District Staff mobilized to the Muskegon Development Lower Chub/Viking Lake Facility (N6189), located in Chester Twp, Otsego County, Michigan to conduct an unscheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 743-96. A records request was made electronically on October 11, 2017.

The most recent inspection for the facility was conducted on April 22, 2014. The facility was reported to be in non-compliance at that time based on failure to submit a revised Malfunction Abatement Plan (MAP) reflecting engine changes onsite, and reported annual emissions in MAERS above permit limits.

FACILITY

The referenced facility consists of two adjacent unmanned CPF stations in a fenced yard and operated by the Muskegon Development Company. The facility is located in Section 18, T29N R2W. The facility is reported to service approximately 19 Antrim Formation wells in the area. Activities onsite include separation of gas and brine from the incoming gas stream and compression of the gas in the lines. The northern CPF is the Lower Chubb Lake CPF and the southern is the Viking Lake CPF. At the time of the inspection, the Viking Lake compressor was reported to have been down for about 6 months.

Further clarification provided by Muskegon Development Company Staff indicated that the Viking Lake Gas production has been combined with the Lower Chub production and that the all the gas is presently compressed in the two lower chub compressors. The Viking lake compressor was shut in in early December 2016, and has not been used since, though it is operational and will be maintained as a standby unit. Gas production from each project is metered, and the gas sales allocated based on inlet meter volumes. The change in operations is reflected in an increase in Lower Chub fuel gas volumes beginning in April 2017 due to the added throughput.

To reach the facility Staff traveled south from the intersection of Old State Road and Lower Chub Lake Road approximately 3/4 miles the facility is located to the right (west) and is visible thru the trees.

REGULATORY

Permitting -The referenced facility operates under Permit to Install (PTI) No. 743-96, 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 three NG-fired compressors, two “reboiler-glycol” and two glycol dehydration units 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.

On May 25, 2007, Muskegon Development submitted a request that manufacturer emission factors be used rather than those provided in Appendix A of the PTI for emissions.

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 3512 LE TA 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 existing glycol dehydrator units. However, the facility reports that it is not subject to the subpart because it's average throughput is less than 85K cubic meters/day and the average benzene emissions are 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.

EQUIPMENT

At the time of the October 12, 2017, site visit AQD Staff identified three compressor engines, two glycol dehydrators and one brine tank with lined-secondary containment were present onsite. Equipment associated with the sites are housed separately.

Review of District Files and annual emissions reports submitted by the facility indicate the following compressor engine history;

Location	Engine	Install Date	Dismantle Date
Lower Chub	Cat 3512 LE TA (860 HP) (aka LC Engine #1)	10/1/1999	
	Cat 3406 TA (aka LC Engine #2)	11/1/2008	
	Cat 398 TA V12	In place in 2006 per report, but no longer present per most recent MAP or in MAERS for calendar year 2016	
Viking Lake	Cat 398 TA with catalyst	8/1/1991	6/30/2011
	Cat 3406 TA with Catalyst	7/1/2011	Reported shut-in mid-December 2016
unknown	Cat G3516 LCTA	Identified in 2010 MAP, but not in most recent MAP revision or in MAERS for calendar year 2016	

It should be noted that based on installation dates in MAERS, that the Malfunction Abatement Plan (MAP) for the compressor engines presently on file at the District Office (Revised February 18, 2010)

needed to be updated to reflect the compressor engines existing onsite. The facility was notified electronically of the need for an update/revision electronically October 17, 2017. The revised document was received on November 2, 2017, reviewed on November 9, 2017, and an approval letter issued for the referenced document.

Operational data for the engines associated with the Lower Chub (LC) at the time of the site visit, and from reviewed data is summarized below.

LC Engine#1. Cat 3512 LE TA 7nj00824

Date	Engine	RPMS	Source
10/12/2017	Cat 3512	1075	Inspector/Onsite Daily Log
9/10/2017	Cat 3512	1070	Maintenance Contractor Field Sheets
8/31/2017	Cat 3512	1130	Maintenance Contractor Field Sheets
5/4/2017	Cat 3512	1057	Maintenance Contractor Field Sheets

LC Engine #2, Cat 3406 TA 4ed03254

Date	Engine	RPMS	Source
10/12/2017	Cat 3406	1650	Inspector/Onsite Daily Log
9/6/2017	Cat 3406	1638	Maintenance Contractor Field Sheets
6/1/2017	Cat 3406	1653	Maintenance Contractor Field Sheets
3/16/2017	Cat 3406	1362	Maintenance Contractor Field Sheets

Per MAERS the existing glycol dehydrators (two) were installed in 1989 and 1991 for Lower Chubb and Viking Lake CPF, respectively. Neither unit appears to have a condenser associated with it. Dehy throughput was reported to be less than 3.0 mmcf/d for the January through September 2017 reporting period. Circulation rates for each of the units was reported to be 0.670 gpm for January-September 2017.

COMPLIANCE

At the time of the October 12, 2017, site visit, no visible emissions were noted to be coming from onsite stacks, nor were there any liquids collected in the secondary containment area for the brine tank.

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 February 7, 2017 for emissions associated with the calendar year 2016) included emissions for three engines and two glycol dehydrators onsite.

Except for NOx and CO emissions for the three engines, the annually reported emissions for the facility were calculated using MAERS emission factors.

Permit Conditions -Special conditions associated with Permit No. 743-96 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.

Reporting Period	NOX (12-Month Rolling) (tpy)	CO (12-Month Rolling) (tpy)	VOC (12-Month Rolling) (tpy)	Single Haps (12-Month Rolling) (tpy)	Combined HAPS (12-Month Rolling) (tpy)
2013	102.27	15.0	2.8	1.34**	
2014	95.01	13.79	2.57	1.23**	
2015	86.76	12.69	2.37	1.13 **	
2016	86.78	12.44	2.31	1.1 **	
Sept 2017	51.21	11.92	1.6	0 *	0 *
Limit	89	89	89	9	22.5

- *Note that Appendix A HAP emission factors indicate “nil” for Antrim wells.
- ** AQD Calculated for Formaldehyde, source MAERS

The 2014 FCE reports indicates that the facility was notified of the emissions discrepancy. However no resolution of the issue could be found within the permit files.

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 factors from Appendix A. In correspondence dated May 25, 2007, Muskegon Development requested permission to use manufacturer’s engine specific emission factors. EFs from Appendix A to be used for compliance purposes were limited to emissions from the glycol dehydrators. A review of the EFs from Appendix A, and those used by the company for MAERS purposes indicate that for the compliance submittal the EFs used were from Appendix A in compliance with the permit condition. For MAERS purposes, the company uses the MAERS EFs for the glycol dehydrators.

Emissions reported for the 2015 and 2016 calendar years as well as for the 12-month rolling total documented for September 2017, are in compliance with the permit conditions.

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

Upon request the company provided copies of monthly records of fuel consumption and gas production for both the Lower Chub Lake and Viking Lake CPFs for the period of January thru September 2017. It should be noted that no hydrocarbon liquids are trucked offsite, nor is any oil processed onsite.

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. Copies of the field maintenance reports are maintained at the companies Johannesburg Office and were reviewed by District Staff on November 22, 2016. Records made available went as far back as 2011.

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 3406 TA engine (Viking Lake) in July 2011, there was no control device associated with the facility.

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, NOx 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 (less than 1 grain of hydrogen sulfide per scf). Information provided by the facility on November 22, 2017, indicated that stain tubes collected in November 2017, reported 3.5 ppm H₂S (equivalent to 0.21 grain H₂S/100 scf). Based on the information provided it appears that the facility is in compliance with the permit condition.

SUMMARY

On Thursday, October 12, 2017, AQD District Staff mobilized to the Muskegon Development Lower Chub/Viking Lake Facility (N6189), located in Chester Twp, Otsego County, Michigan to conduct an unscheduled compliance inspection of the facility. The referenced facility presently operates under Permit to Install No. 743-96.

A records request was made electronically on October 11, 2017. Records were made available to District Staff for review, in compliance with the referenced permit.

The previous site inspection for the facility was conducted on April 22, 2014. At the time he facility was reported to be in non-compliance at that time based on failure to submit a revised Malfunction Abatement Plan (MAP) reflecting engine changes onsite, and reported annual emissions through the MAERs program above permit limits.

With respect to the previous compliance issues, the facility once again was found to not have a revised MAP submitted to the District. This issue was corrected prior to completion of the site inspection report. Annual emissions reported for the calendar years 2015 and 2016, as well as for the 12 month rolling time period ending September 2017, emissions were reported in compliance with permit limits.

Based on observations made at the time of the site inspection, as well as information provided and reviewed for the facility it would appear that the facility is operating in general compliance with their permit.

NAME *Sharon Y. LeBlanc*

DATE *10/27/2017*

SUPERVISOR *SN*