

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

N092446942

FACILITY: MUSKEGON DEVELOPMENT--HEADQUARTERS--Sour Zone CPF		SRN / ID: N0924
LOCATION: SE SE Section 29, T21N, R3W, HOUGHTON LAKE		DISTRICT: Gaylord
CITY: HOUGHTON LAKE		COUNTY: ROSCOMMON
CONTACT: Mike Mesbergen		ACTIVITY DATE: 11/14/2018
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: unannounced, scheduled site inspection for major source, fiscal year 2019. sg		
RESOLVED COMPLAINTS:		

INTRODUCTION

On November 14, 2018, AQD District Staff conducted a scheduled site inspection of the Muskegon Development Company (MDC) Headquarters Field Sour Zone – Central Production Facility (CPF). The referenced Facility is located in the SE ¼, SE ¼ Section 29, Township 21 N, R 3 W, Houghton Lake, Roscommon County, Michigan and is assigned State Registration Number (SRN) N0924.

The referenced facility operates under Renewable Operating Permit (ROP) MI-ROP-N0924-2014, issued on June 25, 2014. A request for records was sent electronically on November 12, 2018. Records were received from the Facility on January 3, 2019.

The most recent site inspection was conducted on November 18, 2016. No compliance issues were noted at the time of the inspection.

Weather conditions at the time of the inspection were cold (28 degrees Fahrenheit) and sunny, with scattered clouds. Winds were light and variable with wind noted from the W-SW and reversed within the next half hour. Mr. Dave Bell, of MDC met District Staff onsite to answer questions regarding the Facility operations.

FACILITY

The referenced Facility is an unmanned, fenced and gated CPF located within the Au Sable State Forest in the southeast portion of Roscommon Township, Roscommon County. Adjacent properties consist of leased oil and gas activities in undeveloped State forest. The facility was purchased by MDC in 1995. Previous owners include:

- Active Investor Management Inc. (AIME)
- Tamarack Petroleum Company, Inc.
- Farmers Crude Production Co.

Communications with MDC in 1999 indicated that the wells had been in existence since the 1950's. MDC Staff assigned to the Facility are out of the Mt. Pleasant, Michigan Office.

The Facility collects a mixture of gas, crude oil, condensate and brine from flow lines from oil wells (three at present) in the surrounding area. The wells are reported to be "Detroit River Sour Wells". An inline "heater treater" is used to heat the mixture and allow the various components to separate from the incoming mixture. At the time of the site inspection the heater treater was reported to only be operated in the winter when temperatures required it. The crude oil, condensate and brine are stored in tanks onsite, with the crude oil and condensate trucked offsite. The brine is re-injected into deep rock formations via a disposal well.

Natural Gas (NG) produced contains hydrogen sulfide at concentrations defined as "sour gas". The NG is directed to an elevated flare onsite, where it is burned converting the hydrogen sulfide to sulfur dioxide which is less dangerous and less odiferous than hydrogen sulfide. The flare is equipped with safety systems to ensure that it operates properly whenever sour gas is being produced. No gas produced onsite is processed for sale.

Note that due to the nature of hydrogen sulfide Staff should be vigilant, wear a hydrogen sulfide meter and implement appropriate safety practices when visiting the site such as avoiding standing and parking downwind of the flare.

Directions -To get to the Facility, Take Interstate 127 (I-127) south to exit 194A (M-55 East) to the east. From there two optional routes include:

- 1) Travel east on M-55 to the intersection with Reserve Road. (Note at the time of the site inspection, Arby's and Little Caesars Pizza are located at the NE corner of the intersection) Take Reserve Road south (right) for approximately 8.75-9 miles, the road will angle east (left), but stay on the smaller two-track for another ¼ - 1/2 -mile. The Facility will be visible on the left (east). Note that this route is recommended by MDC staff.
- 2) Travel east on M-55 to the intersection with M-18. (Note that at this intersection is a Walgreens to the east, and Kramers Pharmacy to the north) Take M-18 (Gladwin Road) south (right) for approximately 10 ¼ miles, then make a right (west) onto Clarosky Road. Travel approximately 3-miles on Clarosky to Parrent Drive. Make a right on Parrent Drive, and travel north-northwest approximately 2-miles to Calhoun, then make a left. In approximately ¼-mile you will see the Facility on your left. This route is more challenging, as road signs are non-existent in this part of Roscommon County.

Changes - Since the November 18, 2016 site inspection, no new processes, process changes or equipment replacement has occurred onsite. It should be noted that the heater treater and it's associated stack was replaced in 2013.

PERMITTING

The Facility is a major source based on a potential to emit sulfur dioxide at >100 tons per year and operates under MI-ROP-N0924-2014. The referenced ROP expires on June 25, 2019. The Renewal Application is due no later than December 26, 2018. AQD District Staff were contacted on August 2, 2018 regarding the due date and indicated that they anticipated submittal of the document in November 2018. With reference to Hazardous Air Pollutants (HAPs) the facility is a minor/area source of HAPs based on the potential to emit less than 10 tons of any single HAP and less than 25 tons of all HAPs.

The AQD Permit Database (Permit Cards) references multiple Permits To Install (PTI) having been issued to Farmers Crude Production for the SRN on March 1, 1985. The referenced Permits were for flares at various locations and voided when incorporated into the ROP and include:

PERMIT NO.	APPROVED	LOCATION	COMMENT
1011-84	March 1, 1985	NW1/4 SW1/4 Sec 19	AKA F.B. CPF
1012-84	March 1, 1985	SE1/4 SE1/4 Sec 29	Permit identified in ROP, and location reported in ROP
1013-84	March 1, 1985	NW1/4 NE1/4 Sec 33	AKA Chapman CPF.
1014-84	March 1, 1985	NE1/4 NW1/4 Sec 10	AKA Straub CPF

MDC correspondence dated February 28, 2007, requested the removal of the Chapman, Straub and FB CPFs from the ROP for the Sour Zone CPF in Section 29. Permit applications were submitted, and separate SRNs were issued for the other sites. Permit engineer notes indicated the following:

"The application is for an existing oil production facility. The source was part of a Renewable Operating Permit (ROP) that contained 4 such central production facilities (CPF's) - the Straub, FB, Sour Zone, and Chapman CPF's..... The 4 CPF's are being split from the ROP based on the January 12, 2007 memorandum from EPA addressing oil and gas industry sources. the Straub and FB CPF's will get new minor source opt-out permits, the Sour Zone CPF will retain the ROP, and the Chapman CPF has been shut-down."

The resulting SRNs and permits included:

FACILITY	NEW SRN	NEW PERMIT	ACTIVE or VOIDED
FB CPF	N7790	136-07	Active as of 2017
STRAUB CPF	N7791	137-07	Reported Dismantled 7/6/2016
CHAPMAN CPF	None assigned	None	Dismantled prior to SRN assignment and permitting
Sour Zone CPF	N0924	MI-ROP-N0924- 2014	Expires June 25, 2014

REGULATORY

- classifications based on Potential to Emit (PTE) and other significant comments:

PARAMETER	CLASSIFICATION	COMMENT
NOx	Minor	EUHEATERTREATER
SO2	Major	EUFLARESYSTEM and EUHEATERTREATER (under PTI 194-18)
CO	Minor	
Pb	Minor	
PM	Minor	
VOC	Minor	EUTANKBATTERY (exempt)
HAPs	Area	

Applicable Federal Requirements:

EMISSION UNIT	40 CFR SUBPART	TITLE
Source	Part 70	State Operating Permit Program

Note that the Facility reports that the tanks associated with the Facility (EUTANKBATTERY) are “prior to custody transfer” and exempt from 40 CFR Part 60, Subpart KB (New Source Performance Standards, Volatile Organic Liquid Storage Vessels) (40 CFR 60.110(d)(4)).

EQUIPMENT

As indicated in the Facility description, only a limited amount of equipment is associated with the Facility. Permitted Emission Units (EUs) are limited to:

- EUFLARESYSTEM –

Installed in March 1985, the EU is designed to burn source gas from the heater treater and vapors from all emergency relief valves/vents and blowdown associated with the oil and brine storage tanks. The unit is equipped with a continuous flare, and an emergency shutdown for incoming gas from the wells should the flare be extinguished. There is no pollution control equipment associated with the EU. At present should the flare go out, and emergency shut down occur MDC staff are mobilized out to relight the flare. The Facility has indicated their intent to install an automatic ignitor for the flare in the future.

The flare is contained within a chain linked area with warning signs visible.

In addition to the above referenced EU, the Facility includes the following devices determined to be exempt from Rule 201 permitting:

- EUTANKBATTERY –

Also installed in March 1986, this EU includes storage tanks for oil and brine and at the time of the ROP Renewal were identified as two 400-barrel stock tanks which would be identified as exempt from Rule 201 permitting under Rule 284(f) (AKA Rule 284 (2)(f)) at the time of ROP Renewal.

More recent site inspection indicates that a total of three tanks exist onsite with vapor recovery. Two 400-barrel (16,800 gallon) oil tanks with loadout, and one 200-barrel (8,400 gallon) brine tank. The referenced rule exempts sour crude or sour condensate storage vessels with a capacity of less than 40 thousand gallons if vapor recovery or its equivalent is used to prevent emission of vapors to the atmosphere. Loadout is located on the north side of the bermed containment for the tanks. The area is not fenced, but warning signs were noted.

· EUHEATERTREATER –

This EU is the heater for treating produced oil and has a rating of 350,000 BTU/Hour. As previously noted, this EU was replaced in 2013. The unit is approximately 20 feet tall with a 40-foot stack (8-inches in diameter) and is located in a bermed area on the west end of the facility. The area is fenced with a two-strand wire to prevent persons from walking straight up to the equipment. Warning signs were noted.

The referenced device at the time of the inspection was reported to be exempt under Rule 282(b)(i) (AKA Rule 282(2)(b)(i)) from Rule 201 permitting. The referenced exemption exempts sweet natural gas, synthetic gas, liquefied petroleum or a combination thereof with the equipment having a rated heat input capacity of not more than 50,000,000 Btu/Hr used for oil and gas production or processing.

It should be noted that per discussions with MDC Staff during the site inspection, it was indicated that the heater treater has not been operated due to costs associated with its operation. Operation of the heater treater was reported to be more critical in production activities in the winter when the temps are colder.

In a telephone discussion on August 2, 2018, AQD District Staff was notified of the intent of the Facility to submit a permit application to allow the use of sour NG as a fuel. The permit application (194-18) was received the week of November 26, 2018 and was approved on December 26, 2018 and will be rolled into the ROP renewal process.

COMPLIANCE

Since the November 8, 2016, Compliance evaluation/site inspection, District Files indicate that one VN was issued (September 27, 2017) for late submittal of the 2017 Semi 1 Certification forms for the facility. The violation was resolved on April 23, 2018.

Two Consent Orders (34-2009 and 10-2013) are of record for the Facility. At the time of the report preparation consent order no. 10-2013 was still active, and per discussions with AQD Enforcement cannot be terminated until August 12, 2019. Consent order 34-2009 has been terminated.

Underlying Applicable Requirements (UARs) which include one or more of the referenced consent orders were identified in the existing ROP for the subject site. However, either Rule 403 and/or Rule 213 UARs are also referenced, which would appear to negate Special Condition (SC) IX.2 which voids any permit conditions which only reference one or both consent orders as UARS, once the referenced consent orders are terminated.

Compliance status for the facility had been based on information provided during the November 14, 2018, site inspection, as well as on supplemental data and reports submitted upon request or to meet permit requirements identified in MI-ROP-2014-N0924.

EUFLARESYSTEM

As previously indicated, only the flare onsite is permitted, and is addressed by Special Conditions (SC) in the ROP. No source wide conditions are identified in the ROP.

DESIGN/EQUIPMENT PARAMETERS - As previously indicated, source gases from the heater treater, vapors from emergency relief valves, blowdown from oil and brine storage tanks and vapors from loadout vapor return systems are vented to EUFLARESYSTEM, in compliance with SC IV.1. The Facility

has equipped and maintains a device to measure volumetric flow rate for gases going to the flare (SC IV.2).

Emissions are required to be exhausted from a stack a maximum of 4-inches in diameter and 50 feet above land surface (SC VIII.1) At the time of the site inspection it was determined that the stack requirements are being met.

MATERIAL LIMITS – No Material limits are outlined in the ROP, though process and operational restrictions for EUFLARESYSTEM limit fuel to the flare pilot to only sweet natural gas or propane. At the time of the November 14, 2018 site inspection, the Facility was using propane to fuel the flare’s pilot.

EMISSION LIMITS – Emission limits for EUFLARESYSTEM are limited to 28.78 lb SO₂/hour based on a 24-hour average (SC I.1) and are required per consent order 10-2013 and Rules 205(3) and 403(4). Records provided on a monthly basis include the total lbs of SO₂/day. Daily totals reported for the previous 2 years have been well below the 690.72 lbs of SO₂/day allowable based on the 28.78 lb SO₂/hr average limit and shows compliance with the limit.

Annual emissions are reported in a timely manner by the Facility as part of MAERs. EUs with reported emissions include the flare system (SO₂) and the three storage tanks (VOC). Emissions reported for the past two calendar years are summarized below:

CALENDAR YEAR	SUBMITTAL DATE	TOTAL SO ₂ EMISSIONS (Tons/Yr)	Total VOC EMISSIONS (Tons/Yr)
2016	1/27/1017	16.19	0.05
2017	2/6/2018	22.39	0.05
2018 to Nov. 2018	NA	12.15	—
Limit	NA	126.06*	NA

* Total emissions based on continuous operation at the permit limit of 28.78 lb/hr .

PROCESS/OPERATIONAL LIMITS – In addition to the present limitation of only sweet gas or propane fuel for the flare pilot, the Facility is required the following with respect to the flare:

- The permittee cannot operate any wells served by EUFLARESYSTEM unless the flare is installed and operating properly (SC III.3)
- Continuously burning pilot flame at the flare (SC III.2)
- In the event the pilot flame is extinguished a control valve at the facility inlet shall automatically commence closure within 1 second and isolate all wells feeding the Facility. (SC III.2)

With respect to the above referenced conditions for EUFLARESYSTEM, at the time of the November 14, 2018, site inspection, the flare was in continuous operation (SC III.2). Showing a bright orange flame, and minimal opacity. The required fail safes all appeared to be installed, and records indicate that they are operating properly. (SC III.3)

A review of MDC records indicate that the flare was blown out on four events for 2017 and 2018, and was manually relit. The shut-in valve was reported to have operated properly. The documented events occurred on January 20, 2018, January 29, 2018, February 15, 2018, April 4, 2018 and May 26, 2018.

- Operation of equipment is prohibited prior to installation of a vapor return system in the load-out of all brine and condensate storage tanks. (SC III.5)

Vapor return systems for brine and condensate loadouts for the existing tanks were confirmed at the time of the site inspection.

- The permittee is required to maintain an AQD approved Operation and Maintenance Plan, which shall be reviewed and updated (if necessary) on a yearly basis. (SC III.6)

District Files contain a copy of a Preventative Maintenance/ Malfunction Abatement Plan (PM/MAP) (SC III.6) with a revision date of October 31, 2008 (received on November 14, 2008). The referenced document was approved by District Staff on September 1, 2010. Under the referenced document, the permittee has indicated that preventative maintenance activities for EUFLARESYSTEM include the following activities annually or whenever the device does not operate satisfactorily:

- Inspection of flare pilot for corrosion or other defects, recondition or replace as necessary
- Inspection and testing of flare flame out detector
- Inspection and testing of inlet safety shutdown valve
- Inspect Flare gas meter
- Inspect wellhead pressure switches

Daily checklist includes flare opacity and flare status (lit or not). In addition the Facility conducts monthly inspection and/or testing of the flare pilot, flare, flare flame out detector, facility inlet shutdown valve, wellhead pressure switches and the flare gas meter.

The permittee's required to notify the AQD in advance of the names of any wells in operation, and DEQ Office of Geology the numbers of any wells prior to operation of EUFLARESYSTEM and any associated tanks. (SC III.4) MDC reports that the following producing wells and pumping schedule is in place:

WELL PERMIT NO.	PUMP SCHEDULE	HOUR PER DAY
19773	7 Days per Week	4.5 Hours
9487	5 Days per Week	8 Hours
17005	5 Days per Week	8 Hours

TESTING ACTIVITIES – Testing requirements associated with EUFLARESYSTEM includes daily non-certified visible emission observations when the process is operating. Should emissions be visible, Facility staff are to note the color of the emissions, the cause of the emissions, the duration of the incident and corrective actions taken. (SCV.1) Upon request MDC staff provided copies of daily logs for the period of December 2016 through November 2018, which confirmed compliance with the visible emission requirements. The data indicated that with the exception of two days in October 2018, the VE observations are conducted daily.

District Staff conducted formal Method 9 VE observations for a 15-minute period. The highest single VE reading was a 15% opacity, with the highest 6-minute opacity reading recorded for the period was 8.125%. A copy of the readings may be found in the District Files.

In addition, the permittee is required to determine the representative hydrogen sulfide content of gas burned in the flare at least once per month (SC V.2) The measurements are reported to be made using colimetric tubes ranging from 2-20 % (20,000 – 200,000 ppm). With respect to fluctuations in hydrogen sulfide content of the gas with respect to pumping schedules, hydrogen sulfide contents for the past 6 months has been reported to be fairly consistently at 40,000 - 45,000 ppm. A concentration high of 50,000 ppm was reported for January 2018.

MONITORING/RECORDKEEPING –The permittee is required on a daily basis to:

- Record the volume of gas burned in the flare each calendar day (SC VI.1)
- Calculate and record the mass flow rate of hydrogen sulfide to the flare (SC VI.2) based on the representative hydrogen sulfide content (SC V.2) and the volume of gas burned at the flare. (SC VI.1)
- Calculate and record the sulfur dioxide emissions (SC VI.3) from the flare based on the mass flow rate of hydrogen sulfide going to the flare (SC VI.2)

The above referenced data is reported monthly as part of their required monthly report submittals discussed below.

REPORTING - Under the ROP, the Facility is required to promptly report deviations pursuant to General Conditions 21 and 22 of the ROP, as well as report semi-annually and annually certification of compliance. A review of District Files indicates that with the exception of the 2017 violation, that

reporting is conducted in a timely manner. In addition, the Facility reports on a monthly basis the following in compliance with SC VII.4:

- Daily volumetric flow rate of sour gas to flare
- Daily mass flow rate of H2S
- Representative H2S content of incoming gas
- Daily SO2 emissions from the facility.

The data reported has been determined to be complete, and below permit limits. Select data submitted within the last year includes the following:

Month	Volumetric Flow Rate to Flare (MCF/Month)	Mass Flow Rate of H2S (Lb/24-hour Period)	H2S Content of Incoming Gas Stream (ppm)	SO2 Emissions (lb/Month)	12-month Rolling Total SO2 Emissions (Tons)
August 2018	712.17	38.0 -142.0	45,000	5,399.28	11.21
June 2018	49.17	0 – 58.8	40,000	331.4	11.14
March 2018	87.26	0 – 35.9	45,000	661.6	14.56
January 2018	264.13	17.4 - 62.4	50,000	2,225.0	16.38
November 2017	240.21	3.7 – 60.4	45,000	1,889.4	17.40
LIMIT	NA	NA	NA	20,721.6*	126.06*

* Note limits are based on continuous operation at established limit of 28.78 lb of SO2/hour (based on 24-hour average).

OTHER REQUIREMENTS- The permittee is required to install and maintain fencing, warning signs and/or other measures as necessary to prevent unauthorized individuals from entering the plant property (SC IX.1). District Staff noted that 2 strand fencing was in place around the heater treater, and chain link fencing was present around EUFLARESYSTEM. Both of which are consistent with previous site inspections and were determined to be in compliance with permit conditions at the time of those inspections. Warning for poisonous gas as well as hydrogen sulfide were visible onsite for both areas as well as the above ground tanks. A sign identifying the Facility with a phone number to call was also present onsite.

SUMMARY

On November 14, 2018, AQD District Staff conducted a scheduled site inspection of the Muskegon Development Company (MDC) Headquarters Field Sour Zone – Central Production Facility (CPF). The referenced Facility is located in the SE ¼, SE ¼ Section 29, Township 21 N, R 3 W, Houghton Lake, Roscommon County, Michigan and is assigned State Registration Number (SRN) N0924.

The referenced facility operates under Renewable Operating Permit (ROP) MI-ROP-N0924-2014, issued on June 25, 2014. An application for renewal of the ROP was due on or before December 26, 2018. A renewal application was received on December 7, 2018. A permit application (194-18) for a change in fuel source for EUHEATERTREATER was approved on December 26, 2018, and will be rolled into the ROP during the renewal process..

A request for records was sent electronically on November 12, 2018. Records were received from the Facility on January 3, 2019.

The most recent site inspection was conducted on November 18, 2016. No compliance issues were noted at the time of the inspection.

MACES- Activity Report

Weather conditions at the time of the inspection were cold (28 degrees Fahrenheit) and sunny, with scattered clouds. Winds were light and variable with wind noted from the W-SW and reversed within the next half hour. Mr. Dave Bell, of MDC met District Staff onsite to answer questions regarding the Facility operations.

NAME Sharon Wilton

DATE 1/31/2019

SUPERVISOR DN