

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

N797362944

FACILITY: Muskegon Operating Company, LLC -- Kelly		SRN / ID: N7973
LOCATION: BALSAM RD SEC 23 T19N R3W, HARRISON		DISTRICT: Bay City
CITY: HARRISON		COUNTY: CLARE
CONTACT: Dave Bell ,		ACTIVITY DATE: 05/17/2022
STAFF: Nathanael Gentle	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled On-site Inspection		
RESOLVED COMPLAINTS:		

On May 17, 2022, AQD staff conducted a scheduled onsite inspection at the Muskegon Operating Company – Kelly Facility, SRN N7973. AQD staff were accompanied by Mr. Coty Withorn of the Oil, Gas, and Minerals Division. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environment Great Lakes and Energy, Air Quality Division (AQD) Administrative Rules; and to evaluate compliance with the facilities Permit to Install, PTI No. 26-08. EGLE staff were assisted onsite by Mr. Dave Bell and Mr. John West. Requested records were provided by Mr. Bennett Myler. At the time of inspection, the facility was found to be in compliance.

Facility Description and History

The Muskegon Operating Company – Kelly Facility is an oil production facility located in Clare County Michigan. The facility is located at SEC 23, T19N, R3W on the south side of Balsam Rd, just west of N Hoover Ave. Coordinates for the facility are 44.024270, -84.638015. The facility processes sour gas. The AQD defines sour gas as that which contains greater than 1 grain of H₂S (16.5 ppm H₂S) per 100 cubic feet or greater than 10 grains of total sulfur per 100 cubic feet. Emission units onsite include EUHEATERTREATER, EUOILTANK, EUWATERTANK, and EUFLARESYSTEM. Condensate enters the facility from one well, Kelly 1-23. The well draws material from the Detroit River Sour Zone. Material is sent first to the onsite heater treater where oil, water, and gas are separated. Oil is sent to the onsite oil storage tank for storage until it is trucked out to sales. Water is sent to the onsite water storage tank. The sour gas is sent to the onsite flare where the H₂S is combusted, emitting SO₂ and water. Vapors from the onsite storage tanks are vented to the flare. At the time of inspection, the facility was shut in. Staff said the facility had been shut in for a few months due to a hole in the oil storage tank. A new tank was observed to be onsite, waiting to be installed. Staff said the new tank would likely be installed within the next few days. A vacuum truck was observed to be removing water off the tank pad so the old tank could be removed, and the new tank installed.

The Muskegon Operating Company – Kelly Facility is a minor source for all regulated air pollutants. One Permit to Install (PTI) is associated with the facility, PTI No. 26-08. The PTI was issued on May 2, 2008, to Northshore Petroleum LLC. Since issuance of the PTI, the Muskegon Operating Company has acquired control of the facility. The Muskegon Operating Company – Kelly Facility was last inspected by the AQD on 12/7/2016. At the time of the 2016 inspection the facility was found to be in compliance.

Compliance Evaluation

EUFLARESYSTEM

The Muskegon Operating Company – Kelly Facility is equipped with a flare system designed to burn the sour gas from the storage tanks and heater treater. Special Condition (S.C.) 1.1 limits the hydrogen sulfide burned in EUFLARESTSEM to 285.3 pounds per calendar day. Compliance with the H₂S emission limit is demonstrated through record keeping. The hydrogen sulfide concentration of gas going to the flare shall be determined using colorimetric detector tubes or their equivalent on a quarterly basis, S.C. 1.3. Facility staff report the hydrogen sulfide concentration of gas going to the flare is determined monthly using colorimetric tubes. Gas samples are collected at a quarter inch valve located at a point where gas exits the heater treater. Records were reviewed for the last 12 months, S.C. 1.3. During the period of records reviewed, measured H₂S concentrations ranged from 6.8% to 8% (68000 ppm to 80000 ppm).

The volumetric flow rate of gas going to the flare is determined by a gas flow meter. Records are maintained for the daily volumes of gas sent to the flare per each calendar month, S.C. 1.3. Records were provided and reviewed for the last 12 months. During the period of records reviewed the maximum amount of gas flared in one day was 44.49 MCFD on September 16, 2021. Records provided show the facility last operated on February 7, 2022.

The volumetric flow rate of gas going to the flare and the measured H₂S concentrations are used to calculate the amount of hydrogen sulfide burned in EUFLARESYSTEM. Records were provided and reviewed of hydrogen sulfide mass flow rate going to the flare each calendar day for the last 12 months, S.C. 1.3. During the period of records reviewed, the largest amount of H₂S burned in the flare in a calendar day was 271.1 lbs/day on September 16, 2021. This is below the facility limit of 285.3 lbs/day, S.C. 1.1. Daily volumes of hydrogen sulfide burned in the flare are calculated by facility staff at the end of each calendar month. Staff use their knowledge of the general H₂S concentration in the gas stream and how much gas can be burned in a day to ensure the emission limit is not exceeded. The Kelly 1-23 well is a free flowing well that staff open and close daily, allowing staff to limit the amount of material processed daily. Staff report the well is typically flowed into the facility for six hours a day.

Special Condition 1.3 allows the facility to calculate the volumetric flow rate of gas going to the flare using the gas-to-oil ratio. As previously discussed, the facility uses a gas flow meter. This is a more accurate method than using the gas-to-oil ratio. The facility is able to determine the gas-to-oil ratio using the metered gas rate and the gauged daily oil production. Records of gas-to-oil ratio were provided for the last 12 months. During the reviewed period, the highest gas-to-oil ratio calculated was 3.41. The average gas-to-oil ratio during the reviewed period was 1.85.

FGTANKS

FGTANKS is comprised of two emission units, EUOILTANK and EUWATERTANK. Both emission units were visually confirmed to be vented to the onsite flare, S.C. 2.1. The tank loadout system is equipped with a vapor return system, S.C. 2.2. Vapors recovered are sent to the flare. Signage is in place at the load out station instructing trucks to hook up to the vapor return system.

FGFACILITY

One well is processed at the facility, the Kelly 1-23 well, S.C. 3.2. The Kelly 1-23 well is a free flowing well that draws material from the Detroit River Sour Zone. The well is only opened during the daytime. Facility staff approximate the well is operated for 6 hours a day, during normal operation. Should the permittee want to use FGFACILITY to process any additional wells, prior approval shall be obtained from the AQD District Supervisor, S.C. 3.2.

The storage tank vapors, and process gas separated in the onsite heater treater are sent to an onsite flare for combustion, S.C. 3.4. The burner of the heater treater is not used at the facility. Heater treater burners are used to heat the material to accelerate the separation. Facility staff report it was determined there was enough separation without the burner operating. All gas separated is sent to the onsite flare.

The flare pilot flame is propane fueled. The pilot is equipped with a thermocouple and automatic shut in. In the event the pilot flame was to be extinguished, the lower thermocouple temperature would cause a solenoid valve to automatically shut, preventing material from the wellhead from entering the heater treater and being processed at the facility, S.C. 3.5. Once the valve is shut, it must be manually opened by staff before material processing can resume at the facility.

Routine maintenance is conducted at the facility. Equipment onsite is inspected and tested monthly. Records of monthly maintenance were provided for the months of February 2021, May 2021, August 2021, and October 2021. A maintenance log is used to record the date maintenance occurred and what maintenance was completed. Monthly maintenance activities conducted include inspecting gas meters, inspecting the heater treater burner, testing the heater treater pilot guard, inspecting the flare and flare pilot, testing the flare flame out detector, and testing the facility inlet shut-in valve. During the period of records reviewed, maintenance records indicate equipment was found to be in good condition and working properly during each of the monthly maintenance checks.

The permittee shall perform visible emission observations of the flare at least once each calendar day that FGFACILITY is operating, S.C. 3.7. Records of per calendar day visible emissions observations are maintained, S.C. 3.8. Records were provided, as requested, for the months of February 2021, May 2021, August 2021, and October 2021. Operators utilize an observation table in which the following information is recorded daily, observation of whether the flare opacity is over or under 20%, the time the observation was made, the direction from which the observation was made, whether the flare pilot was lit or not, whether the treater pilot was lit or not, and the flare gas meter past 24-hour measurement. Opacity observations are typically taken SE of the flare. During the period of records reviewed, no instances of flare opacity exceeding 20% were recorded. Additionally, the flare pilot status was lit for each observation. Facility staff report that if visible emissions were to be observed, evaluation of the cause of the opacity and work towards correction are completed.

Special Condition 3.1 limits the emissions of SO₂ to 98 tpy on a 12-month rolling time period as determined at the end of each calendar month. The permittee shall calculate the SO₂ emission rates from EUFLARESYSTEM for each calendar month and 12-month rolling time period, S.C. 3.9. Records of SO₂ emission calculations were provided and reviewed for the past 12 months. During the period of records reviewed, the highest monthly emissions of SO₂ occurred in July 2021 with

2.43 tons of SO₂ emitted during the month. During the period of records reviewed, the highest 12 month rolling emissions of SO₂ occurred at the end of July 2021 with 19.10 tpy of SO₂. This is well below the permitted limit of 98 tpy, S.C. 3.1.

Summary

The Muskegon Operating Company – Kelly Facility is an oil production facility located in Clare County Michigan. One well is processed at the facility, the Kelly 1-23 well. The well is a free flowing well that draws material from the Detroit River Sour Zone. Material is sent first to the onsite heater treater where oil, water, and gas are separated. Oil is sent to the onsite oil storage tank for storage until it is trucked out to sales. Water is sent to the onsite water storage tank. The sour gas is sent to the onsite flare where the H₂S is combusted, emitting SO₂ and water. The Muskegon Operating Company – Kelly Facility is a minor source for all regulated air pollutants. One Permit to Install (PTI) is associated with the facility, PTI No. 26-08. At the time of inspection, the facility was found to be in compliance.



NAME

DATE 5/23/2022



SUPERVISOR