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

N165261652

FACILITY: West Branch Production Gathering & Compressor Stat		**SRN / ID:** N1652
LOCATION: 2251 SIMMONS RD, WEST BRANCH		**DISTRICT:** Bay City
CITY: WEST BRANCH		**COUNTY:** OGEMAW
CONTACT: Jim Clark , Facility Compliance Coordinator		**ACTIVITY DATE:** 01/27/2022
STAFF: Nathanael Gentle	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: Scheduled On-Site Inspection		
RESOLVED COMPLAINTS:		

On January 27, 2022, AQD staff conducted a scheduled onsite inspection at the Cobra Oil and Gas Corporation, West Branch Production Gathering & Compressor Station, SRN N1652. Staff arrived onsite at 1:53 PM and departed at 3:54 PM. 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. 184-14B. EGLE staff were assisted onsite by Mr. Jim Clark, and Mr. Sam Matthews. Records were provided by Mr. Jim Clark. At the time of inspection, the facility was found to be in compliance.

Facility Description and History

The Cobra West Branch Production Gathering and Compressor Station is located at 2251 Simmons Rd, West Branch, MI. The facility gathers, compresses, dehydrates, and processes natural gas from multiple sweet wells with varying pressures before the gas is sent to production pipelines. The facility operates 24-hours a day, seven days a week. The station is manned daily, as necessary to monitor equipment and perform maintenance. Personnel are always available on-call.

Natural gas enters the facility via three pipelines: one low pressure (LP) and two high pressure (HP). All three gas streams entering the facility are passed through inlet separators to remove liquids (condensates, natural gas liquids (NGLs), and water) from the gas streams. Gas from the LP stream is passed through a compressor, EUENGINE1, to raise the pressure of the gas stream. From there, the gas from the LP stream is sent to a triethylene glycol (TEG) dehydrator, EUDEHY1. After passing through EUDEHY1, gas from the LP stream is joined with the HP stream.

The combined gas streams move through the facilities Joule-Thompson (JT) gas processing equipment. The JT unit lowers the pressure of the gas stream, which causes the stream to cool. The cooling effect condenses NGLs out of the gas stream, thereby lowering the gas streams BTU rating to meet pipeline standards. An ethylene glycol (EG) dehydrator is used to inhibit hydrates from forming during the JT processing equipment. NGLs removed in the JT gas processing equipment are stabilized in the de-ethanizing tower, by flashing off the lighter ethane hydrocarbons. The remaining NGLs are routed to onsite NGL storage tanks. Ethane gas from the de-ethanizing tower is either routed back to be used as facility fuel or sent to the onsite combustor (enclosed flare) for destruction. Liquids removed from the gas stream are sent to either onsite slop/condensate storage tanks or NGL storage tanks. Once liquids have been extracted from the gas stream, the gas is compressed by EUENGINE2 and EUENGINE3 to increase

pressure in the gas line to send it to the production pipelines. Equipment onsite is fueled with natural gas processed at the facility, cycled back to fuel the facility processes.

The Cobra West Branch Production Gathering and Compressor Station is a synthetic minor source of NOx, CO and VOCs and a minor source of HAPs and SOx. The facility is required to complete emission reporting to MAERS. These reports have historically been submitted timely and complete. No complaints are on record for the facility. The Cobra West Branch Production Gathering and Compressor Station was last inspected on December 3, 2018. At the time of the December 2018 inspection, the facility was found to be in compliance.

Compliance Evaluation

FGDEHYS

FGDEHYS is comprised of two emission units, one triethylene glycol (TEG) dehydrator (EUDEHY1) and an ethylene glycol (EG) dehydrator (EUDEHY2). Emissions from both units are controlled by regeneration; vapors are routed to the glycol reboiler burners for combustion. Stripping gas is not used in either of the units, S.C. II. 1. EUDEHY1 is used to remove water from the LP stream. EUDEHY2 is used to inhibit the formation of hydrates within the JT processing equipment.

Both units are equipped with devices to monitor and record the natural gas flow rate through each of the units, S.C. VI. 1. The facility complies with the exemption criteria in 40 CFR 63.764(e)(1)(ii) with actual average benzene emissions less than 0.90 megagram per year, S.C. VI. 2. Benzene emissions are calculated using the tracked natural gas flow rates inputted into GRI-GLYCalc™. Records of actual average benzene emissions (in terms of benzene emissions per year) for the past 24 months for each dehydrator were requested and received, S.C. VI. 4. Records were provided for the period of January 2019 to December 2021 for both units. Benzene emissions for both units are calculated on a 12-month rolling time period in tons per year. Special Condition I. 1. limits benzene emissions from each dehydrator in FGDEHYS to 0.9 megagrams per 12-month rolling time period; 0.9 megagrams is equivalent to 0.99208 tons. During the period of records reviewed for EUDEHY1, the lowest 12-month rolling benzene emissions were 0.0036 tpy. The highest 12-month rolling benzene emissions were 0.0162 tpy, well below the permitted limit. During the period of records reviewed for EUDEHY2, the lowest 12-month rolling benzene emissions were 0.0072 tpy. The highest 12-month rolling benzene emissions were 0.0250 tpy, well below the permitted limit.

FGENGINES

FGENGINES is comprised of three units, EUENGINE1, EUENGINE2, and EUENGINE 3. EUENGINE1 is a CAT 398. EUENGINE3 is a Waukesha F1197G rated at 208 HP. Both EUENGINE1 and EUENGINE3 are rich burn engines equipped with Non-Selective Reduction (NSCR) and Air-Fuel Ratio Controller (AFRC). EUENGINE2 is a 200 HP VFD electric motor and is not a source of air pollution. No units in FGENGINES have been replaced since the facility was last inspected in December 2018, S.C. VII. 1.

EUENGINE1 and EUENGINE3 are both fueled with only sweet natural gas, S.C. II. 1. Both natural gas fired units are equipped with catalysts for add on control devices, S.C. III. 2. Pressure drops across the catalysts are monitored to ensure the catalysts are working properly, S.C. IV. 1. Facility personnel report the units are not operated for more than 200 hours per engine per year without

the control device, as required by S.C. III. 2. The hours in which the units operate without a control device are tracked and recorded in the facilities maintenance records. An example of a situation that would require the units to be operated without the catalysts would be initial startups after a head change is completed on the engines. Records were provided for the period of January 2019 to December 2021. During the reviewed period, there were no instances where EUENGINE1 or EUENGINE3 were operated without controls.

EUENGINE1 and EUEINGINE3 are both equipped with a device to monitor and record natural gas usage for each engine, S.C. IV. 2. Records of monthly fuel usage for the period of January 2019 to December 2021 were provided, S.C. VI. 6. During the reviewed period, the lowest monthly fuel usage in EUENGINE1 occurred in April 2019 with 1642.9 Mscf/mo fuel used. The highest monthly fuel usage in EUENGINE1 occurred in January 2021 with 2310.0 Mscf/mo fuel used. The lowest monthly fuel usage in EUENIGNE3 occurred in March 2019 with 517.9 Mscf/mo of fuel used. The highest monthly fuel usage in EUENGINE3 occurred in December 2021 with 1056.0 Mscf/mo of fuel used. EUENGINE2 did not use any fuel, as the unit is an electric motor. The fuel usage data is multiplied with emission factors from vendor data to determine NOx and CO emissions from the units. Testing to verify NOx and CO emission factors used to calculate emissions from one or more engines in FGENGINES shall be completed upon request by the AQD District Supervisor, S.C. V. 1. At this time no testing has been requested by the AQD.

Records of monthly and 12-month rolling time period NOx emission calculations were reviewed for the period of January 2019 to December 2021, S.C. VI. 4. During the reviewed period, the lowest monthly NOx emissions for EUENGINE1 were 0.451 tons/month. The highest monthly emissions calculated were 0.502 tons/month. Monthly NOx emissions are used to calculate emissions on a 12-month rolling time period. During the reviewed period the lowest 12-month rolling NOx emissions for EUENGINE1 were 5.70 tpy. The highest 12-month rolling NOx emissions were 5.89 tpy, below the units permitted limit of 6 tpy, S.C. I. 1.

During the reviewed period, the lowest monthly NOx emissions for EUENGINE3 were 0.183 tons/month. The highest monthly emissions calculated were 0.206 tons/month. Monthly NOx emissions are used to calculate emissions on a 12-month rolling time period. During the reviewed period the lowest 12-month rolling NOx emissions for EUENGINE3 were 1.31 tpy. The highest 12-month rolling NOx emissions were 2.41 tpy, below the units permitted limit of 5 tpy, S.C. I. 5.

Records of monthly and 12-month rolling time period CO emission calculations were reviewed for the period of January 2019 to December 2021, S.C. VI. 5. During the reviewed period, the lowest monthly CO emissions for EUENGINE1 were 0.98 tons/month. The highest monthly emissions calculated were 1.10 tons/month. Monthly CO emissions are used to calculate emissions on a 12-month rolling time period. During the reviewed period the lowest 12-month rolling CO emissions for EUENGINE1 were 12.45 tpy. The highest 12-month rolling CO emissions were 12.87 tpy, below the units permitted limit of 13 tpy, S.C. I. 2.

During the reviewed period, the lowest monthly CO emissions for EUENGINE3 were 0.46 tons/month. The highest monthly emissions calculated were 0.52 tons/month. Monthly CO emissions are used to calculate emissions on a 12-month rolling time period. During the reviewed period the lowest 12-month rolling CO emissions for EUENGINE3 were 3.30 tpy. The highest 12-month rolling CO emissions were 6.08 tpy, below the units permitted limit of 11 tpy, S.C. I. 6.

Routine maintenance is conducted on units in FGENGINES. Records of maintenance activities conducted on each engine in FGENGINES for the past 12 months were requested and provided, S.C. VI. 3. Records of maintenance activities conducted on each unit in FGENGINES are maintained. Information including the date maintenance was completed, who it was completed by, and comments on the maintenance activity are maintained. The provided records demonstrate routine maintenance is completed, including regular lube, oil, filter changes on the gas-powered units.

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Equipment onsite at the facility is fueled with natural gas processed at the facility, cycled back to fuel the facility processes. Only sweet gas is processed at the facility and used to fuel onsite equipment, S.C. III. 1. Verification that gas entering the facility remains sweet is determined by annual gas analysis. The facility is limited to processing no more than 9.5 million standard cubic feet of field gas per day, S.C. III. 2. Currently the facility processes around 2.0 MCF per day, well below the limit. Facility staff say they will likely never come near the facility's limit. Wells produce the highest gas volumes when they are first drilled. Over time as the formations become depleted, gas flow rates will decline. The facility tracks the amount of gas processed each day using meters.

A flare with a continuously burning pilot flame is located onsite, S.C. III. 3. An infrared camera is used to ensure the pilot flame remains lit. In the event the pilot flame was to go out, an alarm will sound signaling on-call staff. Staff would then come to the site to address the issue. Operating time periods during flare down time is logged by facility personnel.

The facility utilizes Four 400 bbl storage tanks for condensate/slop/ water storage. Emissions from the storage tanks and oil/gas separators are vented to a vapor recovery unit (VRU), S.C. IV. 1. Vapors captured by the VRU are routed back through EUENGINE1 with the L.P. gas stream. In the event the VRU were to go down, the flare is used as backup. In addition, on call staff are automatically notified should the VRU malfunction.

Onsite staff report compressor blowdowns are performed after an engine has been shut down, prior to starting the unit back up. The volumes of natural gas blown down is the same amount for each blowdown event. The volumes were calculated as part of the permit application for PTI No. 184-14B. Blown down gas is routed to the onsite flare. Records of compressor blowdown events for the period of January 2021 to December 2021 were provided and reviewed. During the 12-month period reviewed, 11 blowdown events were performed on EUENGINE1. During each month of the 12-month period, 0-2 blowdown events occurred for EUENGINE1. During the 12-month period reviewed, 11 blowdown events were performed on EUENGINE3. During the 12-month period 0-2 blowdown events occurred each month for EUENGINE3.

Additional Equipment Onsite

A variety of equipment onsite at the facility operates as exempt from needing a PTI. The JT process equipment is a closed system. Ethane from the de-ethanizing tower associated with the JT processing equipment is either used for facility fuel or sent to the onsite combustor (enclosed flare) for destruction. The combustor appears to meet exemption R 336.1288(2)(c). A 300-gallon methanol storage tank appears to meet the criteria for exemption R 336.1284 (2)(n). Methanol is

added to the pipeline, primarily during the winter months, to reduce the freezing point of water during oil and gas transportation. Propane fuel is used for the flare pilot flame. The propane is obtained from an onsite 500-gallon propane storage tank. The storage tank appears to meet exemption R 336.1284(2)(b).

The West Branch Production and Gathering Facility has permanently out of service equipment onsite. Much of the permanently out of service equipment is left over from previous operations and ownership of the facility. Equipment onsite that is permanently out of service includes: two pressurized NGL storage tanks, a 500 bbl water tank, a 240 bbl slop tank, a 3,000 bbl condensate storage tank, a 20,000 bbl condensate storage tank, a condensate heater, a salt bath heater, and several buildings. Additional information on out of service equipment at the facility can be found in the permit application for PTI 184-14.

Summary

The Cobra West Branch Production Gathering and Compressor Station is located at 2251 Simmons Rd, West Branch, MI. The facility operates 24 hours a day, 7 days a week, gathering, compressing, dehydrating, and processing natural gas from multiple sweet wells with varying pressures before the gas is sent to production pipelines. The facility is a synthetic minor source of NOx, CO and VOCs and a minor source of HAPs and SOx. Based on the records reviewed and the observed activities onsite, the facility appears to be operating in accordance with the requirements of PTI No. 184-14B. At this time, the facility appears to be in compliance.

Nathanael Gentz DATE 2/11/2022 SUPERVISOR Chris Hare

NAME