

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

N816244006

FACILITY: CLAYTON UNIT CPF		SRN / ID: N8162
LOCATION: Cobra - Clayton Facility, MELITA		DISTRICT: Saginaw Bay
CITY: MELITA		COUNTY: ARENAC
CONTACT: JIM CLARK , SAFETY & FACILITY COMPLIANCE COORDINATOR		ACTIVITY DATE: 03/09/2018
STAFF: Meg Sheehan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: Minor source compliance inspection for PTI 303-08C, issued August 22, 2017.		
RESOLVED COMPLAINTS:		

On Friday, March 9, 2018, Meg Sheehan and Amy Rivest with OGMD conducted a scheduled site inspection at the Cobra Oil and Gas Corporation Clayton Unit Facility, located in the N ½ of the NW ¼ of Section 10, T20N, R4E, Sterling, Arenac County, Michigan. One active Permit to Install (PTI) No. 303-08C is associated with the facility. The referenced permit was initially issued on March 13, 2009, and has been modified three times, on May 17, 2010, March 23, 2015, and August 22, 2017. The facility operates under opt-out limits for aggregate and individual hazardous air pollutants, nitrogen oxides, carbon monoxide, and volatile organic compounds. Clayton Unit is reported to be a processing facility for produced natural gas and natural gas liquids (condensate).

The facility was operating upon arrival, AQD and OGMD staff conducted site inspection activities with Mr. Jim Clark of Cobra Oil & Gas. Copies of materials provided by Mr. Clark can be found in the district file.

FACILITY DESCRIPTION

Based on available plat maps, the Clayton Facility is located on an approximately 77-acre parcel previously owned by Whiting Oil and Gas Corporation, Amoco Production Company, Marathon Oil Company and RSEC, LLC. The facility is fenced and operates 24-hours a day, seven days a week. However, it is only manned daily as necessary to observe and document operating conditions, as well as perform necessary maintenance and related tasks.

Gas and condensate fluids are extracted from wells drilled into producing Prairie Du Chien reservoirs located in nearby properties/oil fields. The saturated gas is routed through a "slug catcher" before being compressed by one of two compressor engines. The compressed gas is then routed through a TriEthylene Glycol (TEG) dehydration unit to remove water vapor from the gas stream. The dehydrated gas is routed to a sales pipeline. Condensate/oil produced from the well heads is routed to atmospheric stock tanks for periodic loadout. Tank vapors are captured by a vapor recovery unit and routed back to the inlet compression and into the sales gas pipeline.

PERMIT MODIFICATIONS

At the time of last site inspection on August 29, 2013, PTI No. 303-08A was active. Since then, two modifications have been made, which are outlined below.

PTI No. 303-08B – issued March 23, 2015

- Removed EUENG-1 from the facility; it was no longer in use.
- Removed EUTANK-1 through EUTANK-8 from the permit; some were never installed but they were all exempt.
- Added EUEMULSBREAKERTK and EUCORRINHIBITTK1 and K2 under FGFACILITY; both are small tanks 300 gallons and under, but their contents cause them to be subject to R 225.
- Obtained federally enforceable natural gas throughput limit for EUTEG-1 from 40 CFR Part 63, Subpart HH (NESHAP for Oil & Natural Gas Production) of 2.9 MMSCFD to meet certain exemptions.

PTI No. 303-08C – issued August 22, 2017

- EUENG-2 and EUENG-3 which were previously rich burn engines, were replaced with spark ignition, four stroke lean burn engines. Lean burn engines have lower emission rates, so they were not required to be equipped with a catalyst for pollution control like the rich burn engines were.
- Addition of 40 CFR Part 60, Subpart OOOOa (NSPS for Crude Oil and Natural Gas Facilities)

requirement. OOOOa applies to affected facilities that were constructed, modified or reconstructed after September 18, 2015.

COMPLIANCE HISTORY

No complaints are associated with the facility. The 2017 MAERS report was submitted on time, but the 2016 and 2010 MAERS reports were submitted late. ERAU sent a violation notice for the late 2016 report.

EMISSION UNIT & POLLUTION CONTROL EQUIPMENT DESCRIPTIONS

EUTEG-1: Compressed gas is routed through EUTEG-1 to remove condensate and water molecules from the stream. The dehydrated gas is routed to a sales pipeline, and the water and condensate is routed to storage tanks for loadout. The glycol is recycled and reused. Control equipment includes a condenser. Reported to have been installed in 1993 by Amoco with a throughput of approximately 2 MMSCFD.

EUGEN-1: 232 HP diesel fired emergency generator engine. It was not operating during the inspection and is not required to have a control device. Reported to have been installed in 2006, permitted in 2009, and manufactured in the 1970s with no rebuild of record.

EULOADOUT: Condensate truck loadout, where the condensate lines are hooked up to the vapor recovery unit (VRU), so no venting occurs. Control equipment includes the VRU with a flare as backup which controls vapor balance to the storage tanks (*SC IV.1 – FGFACILITY*). If the VRU malfunctions, the vapors are rerouted to the flare for destruction.

FGENGINES: Two lean burn natural gas fired reciprocating internal combustion engines (EUENG-2 and EUENG-3) used to compress natural gas. No control equipment is required, and the source has not installed control equipment. The engine specifications are listed under Monitoring/Recordkeeping.

FGFACILITY: All process equipment source-wide. Includes EUEMULSBREAKERTK, a 300-gallon emulsion breaker storage tank; emulsion breaker is put into condensate which helps hydrocarbon and water molecules separate. EUCORRINHIBITTK1 and 2, two 165-gallon corrosion inhibitor tanks, are also covered by FGFACILITY. Corrosion inhibitor is used in the pipelines to help prevent corrosion. These two tanks are subject to R 225.

MATERIAL LIMITS

EUTEG-1: *Cannot use stripping gas (II.1).* Sweet natural gas processed by the facility is used for fuel.

EUGEN-1: *Can only burn diesel fuel (II.1).* The source reported only burning diesel fuel in EUGEN-1. A 500-gallon tank storing diesel fuel was hooked up to EUGEN-1.

FGFACILITY: *Cannot burn any sour natural gas (II.1).* Sweet natural gas processed by the facility is used for fuel.

PROCESS/OPERATIONAL RESTRICTIONS

EUTEG-1: See Federal Regulations.

EUGEN-1: *Cannot operate for more than 500 hours per 12-month rolling time-period (III.1, VI.1).* The source was below the permit limit for 2016 and 2017.

FGENGINES: *No later than 60 days after issuance of the permit, a revised PM / MAP must be submitted to the AQD Supervisor (III.1).* Cobra Oil & Gas submitted an adequate, revised PM / MAP in August 2017. *Cannot operate any engine with an add-on control device for more than 200 hours per engine change-out, reconstruction, or rebuild without that control device (III.2, IV.1, VI.4).* This condition does not apply, as both engines are now lower-emitting lean burn engines and do not require a control device to be installed.

FGFACILITY: *Cannot vent unsold natural gas to the atmosphere unless it is controlled with burning or equivalent control; cannot operate FGFACILITY unless the flare is installed, maintained, and operated in a satisfactory manner (III.2, III.4).* A flare is installed and maintained by the facility and used during instances of process upset to prevent venting of natural gas to the atmosphere. It has multiple back-up igniters in case the primary igniter fails. The pilot flame could be observed at the time of the inspection. *Cannot blowdown a compressor unless the requirements of R 336.1285(mm) are met (III.3).* The facility reported that no compressor blowdown events not meeting the requirements of 285(mm) have occurred.

DESIGN/EQUIPMENT PARAMETERS

EUTEG-1: *The condenser must be installed, maintained, and operated in a satisfactory manner (IV.1).* The condenser is routed to the dehydrator reboiler burner for combustion. The reboiler burner is rated at 0.125 MMBtu/hr and is exempt from permitting. It is also used to regenerate lean glycol for reuse. Staff reported that if the condenser is not operating properly, vapors would be observed coming out of the stack. No vapors were observed at the time of the inspection.

EULOADOUT: *The vapor recovery unit (VRU) and/or flare as backup must be installed, maintained, and operated in a satisfactory manner (IV.1).* Staff reported that the condensate and produced water tanks associated with EULOADOUT are vented to the VRU. The VRU is tied into the facility call-out system, which notifies staff immediately if a malfunction occurs.

FGENGINES: *A device must be installed, calibrated, maintained and operated in a satisfactory manner to record the hours of operation for each engine on a continuous basis (IV.2).* Both engines are equipped with an electronic display that continuously records the hours of operation.

FGFACILITY: See EULOADOUT description.

TESTING/SAMPLING

EUTEG-1: *At least once each year the inlet wet gas stream must be analyzed (V.1, VI.4).* Records provided by the facility indicate that the inlet wet gas stream was last tested on September 28, 2017, for nitrogen, carbon dioxide, hydrogen sulfide, C1 through C6 series hydrocarbons, benzene, toluene, xylene, ethylbenzene, hydrogen sulfide and heptanes plus.

FGENGINES: *Upon request by the AQD District Supervisor, the permittee shall verify NOx and CO emission factors used to calculate emissions from one or more engine(s) in FGENGINES (V.1).* District records indicate that engine testing was last conducted on October 28, 2015 for the two previous rich burn engines. No testing has been conducted on the new lean burn engines. According to the 2017 MAERS report for the facility, the emission factors used to calculate NOx and CO come from the engine manufacturer.

FGFACILITY: *Verification of H2S and/or sulfur content of the natural gas burned in FGFACILITY may be required (V.1).* Per the results from the analysis conducted of the inlet wet gas stream for EUTEG-1, the H2S content of the natural gas burned by the facility is non-detect.

MONITORING/RECORDKEEPING

EUTEG-1: *benzene and VOC emissions; wet gas composition analysis.* The source was below permit limits for benzene and VOC emissions for 2016 and 2017.

EUGEN-1: See Process/Operational Restrictions.

FGENGINES: *monthly and yearly hours of operation; maintenance activities conducted; NOx and CO emissions; make, model, horsepower rating, date of manufacture, date of last rebuild and date of installation.* Both engines operated close to 24 hours a day, seven days a week in 2016 and 2017. The engines were also under permit limits for NOx and CO emissions both years. A log of maintenance activities was provided by the source and can be found in the district file. Typical maintenance activities reported by the source include routine oil changes and rod packing replacement.

	Make	Model	HP rating	Manufacture date	Last rebuild	Install date
EUENG-2	Caterpillar	G3512 LE	860	12/1/93	11/7/14	8/28/17
EUENG-3	Caterpillar	G3512 LE	860	12/8/97	12/1/08	9/11/17

FGFACILITY: *NOx, CO, VOC, and individual and aggregate HAP emissions; fuel use; compressor blow down events and amount of natural gas blown down.* The source was under permit limits for all emissions in 2016 and 2017. The facility used between 63,000 and 82,000 SCF of sweet natural gas in 2016 and 2017. EUENG-2 was blown down 9 times in 2016 and 19 times in 2017. EUENG-3 was blown down 8 times in 2016 and 13 times in 2017. Based on calculations provided by the facility, approximately 640 SCF of natural gas is blown down during each blow down event.

REPORTING

EUTEG-1: See Federal Regulations.

FGENGINES: *Must notify the AQD District Supervisor if any engine is replaced with an equivalent-emitting or lower-emitting engine (VII.1).* Staff reported that neither of the engines have been replaced since their installation in 2017.

STACK/VENT RESTRICTIONS

All stacks referenced in PTI 303-08C appeared to be of appropriate height and dimension. No visible emissions were observed from any of the stacks during the inspection.

FEDERAL REGULATIONS

EUTEG-1 and FGFACILITY must comply with all provisions of 40 CFR Part 63, Subpart HH – NESHAP for Oil & Natural Gas Production, including submitting all applicable and required reports for EUTEG-1. Records of benzene emissions for EUTEG-1 must be kept to meet the exemption criteria in 40 CFR 63.764(e)(1)(ii). The facility is required to keep benzene emissions under Special Conditions VI. 3 and 5. Currently, MDEQ does not have delegation of Subpart HH for area sources.

FGENGINES must comply with all provisions of 40 CFR Part 60, Subparts A – General Provisions, and Subpart JJJJ – NSPS for Stationary Spark Ignition Internal Combustion Engines. The engines appear to be exempt from Subpart JJJJ based reported manufacture dates (before June 12, 2006).

FGENGINES must comply with all provisions of 40 CFR Part 60, Subpart OOOOa – NSPS for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015. Mr. Clark reported that the facility conducts leak surveys on a six-month schedule and replaces rod packings on a three-year schedule to comply with OOOOa.

FGENGINES must comply with all provisions of 40 CFR Part 63, Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines. Currently, MDEQ does not have delegation of this NESHAP for area sources.

EXEMPT EQUIPMENT

According to the permit evaluation for PTI No. 303-08C, exempt equipment onsite includes the following:

- HTR-1: 0.125 MMBtu/hr reboiler burner (see EUTEG-1)
- HTR-2 through HTR-9: <1.5 MMBtu/hr gas processing units
- HTR-15 and HTR-16: 1 MMBtu/hr heater treaters

According to the permit evaluation for PTI No. 303-08B, exempt tanks onsite include the following:

- Four 400 bbl condensate storage tanks
- Three 400 bbl produced water tanks
- One 200 bbl line flushing tank
- Four 300-gal methanol storage tanks
- One 55-gal methanol storage tank
- One 500-gal diesel storage tank
- One 300-gal glycol storage tank

COMPLIANCE EVALUATION

Based on information gathered at the site inspection, as well as information from records provided by the facility, Cobra's Clayton Unit appears to be in compliance with PTI No. 303-08C.

NAME Meg Sheehan DATE 4/9/18 SUPERVISOR C. Hase