

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Self Initiated Inspection**

N816222562

FACILITY: Clayton Unit		SRN / ID: N8162
LOCATION: CLAYTON UNIT FACILITY, MELITA		DISTRICT: Saginaw Bay
CITY: MELITA		COUNTY: ARENAC
CONTACT:		ACTIVITY DATE: 08/29/2013
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR SM OPTO
SUBJECT: Minor source compliance inspection. PTI 303-08A issued in 2010.		
RESOLVED COMPLAINTS:		

On Thursday, August 29, 2013, Sharon LeBlanc conducted a scheduled site inspection at the Whiting Oil & Gas Corporation (Whiting Oil) Clayton Unit Facility (SRN N8162), located in the N ½ of the NW ¼ of Section 10, Township 20 North, Range 4 East, Sterling, Arenac County, Michigan. One Permit to Install (PTI) No. 303-08A is of record for the facility. The referenced permit was initially issued on March 13, 2009 and was modified on May 17, 2010. The facility is reported to be a processing facility for produced natural gas and natural gas liquids (condensate).

The gas processing facility was operating upon arrival, AQD staff conducted site inspection activities with Mr. Mark Keyes of Whiting Oil and Mr. Brian Osborne of Osborne Production Services. Copies of supplemental information provided by Facility Staff may be found in the file.

**FACILITY DESCRIPTION**

Based on available plat maps, the Clayton Facility is located on an approximately 77 acre parcel previously owned by Amoco Production Company, Marathon Oil Company and RSEC,LLC. The parcel is one of multiple that make up the Clayton Unit. The facility is located approximately 1-mile north and ½-mile east of the intersection of Dobler and Maple Ridge Roads. Adjacent properties include commercial (Maple Ridge Hardwood, Inc.), recreational (Hunt Club), oil and gas production fields (Whiting Oil and Summit Petroleum Corp) and a limited number of residential properties.

The Clayton facility has been in operation for a number of years, but based on installation of new wells and a subsequent increase in production, the facility was updated and expanded. 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.

**Emission Units**

Emission Units (EUs) permitted for the site include :

- EUENG-1 through 3,

Emission Unit	Make/Model	Installation Date	Horse Power	MMBTU/Hr Heat Rating	Other	Controls
EUENG-1	Caterpillar 398	December 2005	700	5.5 MMBtu/hr	4-cycle rich burn	3-way catalyst &

EUENG-2	Caterpillar 398	February 2003	700	5.5 MMBtu/hr	4-cycle rich burn	AFR 3-way catalyst & AFR
EUENG-3	Caterpillar 399	May 2010	930	7.13 MMBtu/hr	4-cycle rich burn	3-way catalyst & AFR

These emission units represent three natural gas fired reciprocating engines. They also make up the flexible group FGENGINES, and are part of the flexible group FGFACILITY. Whiting Oil Staff indicated that only one of the two smaller RICE is operated, and the third RICE (EUENG3) is a "lift engine" used for re-injecting compressed gas into older wells. The re-injection assists in lifting the produced liquids from the wells. All three engines are reported to have an Air to Fuel Ratio (AFR) controller and catalytic reduction pollution control devices (AKA catalysts) installed. Each engine has a digital meter to record operational hours. Engines onsite are leased, and the leasing company provides the maintenance and repair services for the units.

- EUGEN-1,

This unit is a 232 HP Caterpillar 3306, diesel fired emergency generator engine reported to have been installed in 2006 (permitted in 2009). The unit is reported to have been manufactured in the 1970's and has no rebuild of record. The facility reports that this unit is operated for approximately one hour per week to keep the unit operational. There are no reported pollution controls associated with the emission unit.

- EUTANK-1 through 8,

These units were permitted as approximately 400-barrel condensate storage tanks with a vapor recovery system, and are part of FGTANKS and FGFACILITY. At the time of permitting it was anticipated that up to eight tanks would be installed at the facility. Whiting Staff reported that a total of seven 400-barrel tanks exist onsite, four of which are used for oil, two are used for water and the seventh is used in conjunction with an oil skimmer for disposal water prior to injection into disposal well. In addition, the facility is reported to have a 210-barrel pit tank to divert flow to while working on lines.

- EUTEG-1,

The TEG dehydration system was reported to have been installed by Amoco in 1993. The system has a throughput/ compression capacity of approximately 2 MMscf/day. Emissions are controlled with a condenser and routed to the reboiler as a secondary fuel. This emission unit is also part of flexible group FGFACILITY.

- EULOADOUT,

EULOADOUT is the condensate truck load out and is part of FGFACILITY. Emissions are controlled by vapor balance to the storage tanks.

A review of the 2011 and 2012 Michigan Annual Emissions Reporting (MAERs) identified the following additional emission units: EURBLR and EUTRTRS. EURBLR is a 0.75 MMBtu/hr reboiler associated with the TEG dehydration unit and reported to have been installed by Amoco in 1993. The reboiler is used to regenerate lean glycol for reuse.

EUTRTRS includes up to six existing fired wellhead treaters, each of which were active in 2009 and are rated at 1 MMBTU/hr. These units are considered exempt by the facility.

#### Federal Applicability –

The PTI Eval form for indicates that the facility is a synthetic minor having accepted conditions

(emission limits and controls) that restricted HAPs to less than major source levels. In addition, the catalysts on the compressor engines, keep the facility from becoming a major PSD source for NOx.

The TEG dehydration unit is identified as being subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 63, Subparts A & HH, for Oil and Natural Gas Production Facilities.

The Reciprocating Internal Combustion Engines (RICE) (FGENGINES and EUGEN-1) are subject to the NESHAP, 40 CFR Part 63, Subpart ZZZZ (RICE MACT) for area sources.

The facility appears to be exempt 40 CFR Part 60 Subpart JJJJ Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (FGENGINES) and Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (EUGEN-1) based on reported manufacture dates.

#### Compliance History –

A review of District Files indicated that no complaints or violation notices are of record in District Files.

The annual MAERs submittal is of record as having been submitted in a timely fashion since as early as 2007. The facility is not of record as having previously been inspected.

#### COMPLIANCE EVALUATION

A compliance evaluation was prepared based on conditions outlined in Permit No. 303-08A.

Operational Status/Limits – At the time of the site inspection, the plant was operating. Equipment onsite was reported to have been installed and operating as permitted with the appropriate control devices. The units and their control devices appear to have been installed, maintained and operated properly.

Operational limits outlined in Permit No. 303-08A include an operational limit for EUGEN-1 of 500 hours per 12-month rolling time period, as determined at the end of each calendar month. As noted previously, the unit is a backup generator and is normally run for an hour a week to confirm it is operational. Facility representatives reported that there was a power outage in April 2013, and the operations for that month totaled 29 hours. A review of records for the last three years confirmed that report, and compliance with the operational limit.

FGENGINES special condition (S.C.) III.1 requires the facility to submit for approval a preventative maintenance/malfunction abatement plan (PM/MAP) within 60-days of the issuance of the permit.(May 17, 2010) Though no copy of the original submittal was found in the district files, the facility reported initially submitting the document on May 11, 2010, in compliance with the condition. The facility submitted a revised PM/MAP electronically on August 23, 2013. The revised document appears to meet the document requirements outlined in S.C. III.1(a) –(e). S.C. III.2 limits the operation of any engine without it's add-on control device to 200-hours. This same limit has been incorporated by the company into its PM/MAP.

Material Limits – Special conditions with respect to material limits are limited to the following:

- EUTEG-1 is restricted from the use of stripping gas. (II.1)
- EUGEN-1 is restricted to only burning diesel fuel. (II.1) and
- FG-Facility is restricted from burning any sour natural gas. (FGFACILITY II.1)

At the time of the inspection the facility was in compliance with all three of the referenced conditions.

**Emission Points** – Potential emission points associated with the facility include fugitive dust associated with vehicular traffic on the unpaved road, fugitive VOCs associated with the various process valves and fittings which are monitored per any applicable federal requirements. A review of the permit appears to indicate that most equipment associated with the facility have appropriate emission control devices or are captured by the vapor recovery unit/system associated with the facility. In addition, the facility has an emergency flare, should it be required. EUGEN-1, the diesel fired emergency generator for the facility is reported to not have any associated pollution control devices.

Special Conditions VI.2, 3 & 5 for EUTEG-1, outline the requirements for use of the model GRI-GLYCalc™ to calculate monthly emission of actual benzene and VOCs and maintain records of the calculations. Based on data provided and historical emission data submitted for 2010-2012 it appears the facility is in compliance with the requirements.

SC FGTANKS IV.1 requires a vapor recovery unit or flare be installed, as previously noted the facility does have both a vapor recovery unit and flare for the tanks onsite.

Emission reporting requirements appear to be met in the annual submission of the MAERS .

**Monitoring, Testing and Record Keeping** – Daily records are collected by staff and submitted to corporate office. Hard copies of most records are maintained at the Whiting Oil West Branch Compressor Station, maintained by the company for the minimum 5 year periods required under the referenced permit. Record keeping practices appear to be consistent with general business practices for the industry and acceptable to the District.

No stack testing is required under permit 303-08A unless requested by the AQD. No requests for testing or test results are of record for the facility. However, annual testing/analysis of the EUTEG-1 inlet wet gas stream is required under permit 303-08A under S.C. V.1. Whiting representatives reported that the testing is conducted every fall and provided a copy of the most recent testing results November 27, 2012. Special Condition VI.4 requires the analytical data to be maintained on file by the facility. Inlet gas analysis reported that sulfur content of less than 1 ppm. This data would appear to meet to validate that FGFACILITY does not burn sour gas (limit of 10 grains or 165 ppm) (SC II.1).

S.C. VI.3 for FGENGINES requires that a log of all maintenance conducted according to the PM/MAP be maintained. Whiting Oil representatives report that their contractor completes field tickets for work completed, and tracks maintenance. Records are accessible, and monitored by Facility staff. All records are backed up and maintained for a minimum of 5 years in compliance with the permit.

SCs outlined in permit 303-08A require that the owner or operator of the facility monitor, record and maintain records of monthly and 12-month rolling totals for:

- Fuel use for FGFACILITY (VI.4)
- The hours of operation for EUGEN-1 (VI.1)
- NOx emissions for each engine included in FGENGINES (VI.6)
- NOx emissions for FGFACILITY (VI.2)
- CO emissions for each engine included in FGENGINES (VI.7)
- CO emissions for FGFACILITY (VI.2)
- VOC emissions for FGFACILITY (VI.2)
- Individual and aggregate HAP emissions for FGFACILITY (VI.3)

The referenced records were provided upon request, and were determined to be in compliance with applicable permit limits.

In addition, FGENGINES VI.4 requires the continuous monitoring and that the facility maintains records of the hours of operation with and without a control device for each engine within the flexible group. The required information is maintained by the facility, and the data reported below reflects the range reported for 2013 at the time of the inspection.

Emission Unit in FGENGINES	Monthly Hours of Operation (VI.2 & 5)	Monthly Hours of operation without Control Device (VI.4)
EUENG-1	666-741 hr/month	0-48
EUENG-2	14-740 hr/month	0-3
EUENG-3	14-740 hr/month	0-8

Please note that FGENGINES S.C. III.2 limits the hours of operation for each engine to 200 hour per year. The facility reports total hours of operation without a control device for the three engines as 66 hours, 4 hours and 12 hours, respectively. Based on the reported information, the facility appears to be in compliance with the referenced condition.

The permittee is also required to keep the following records for each engine in FGENGINES (VI.8):

Emission Unit	Make/Model	Manufacture Date	Date of Installation	Date of Rebuild
EUENG-1	Caterpillar 398	1970's	December 2005	None of Record
EUENG-2	Caterpillar 398	1970's	December 2003	None of Record
EUENG-3	Caterpillar 399	1969	May 2010	None of Record

The above referenced information was provided by Whiting Petroleum staff upon request, and in compliance with the referenced permit.

**SUMMARY**

On Thursday, August 29, 2013, Sharon LeBlanc conducted a scheduled site inspection at the Whiting Oil & Gas Corporation (Whiting Oil) Clayton Unit Facility (SRN N8162), located in the N ½ of the NW ¼ of Section 10, Township 20 North, Range 4 East, Sterling, Arenac County, Michigan. One Permit to Install (PTI) No. 303-08A is of record for the facility. The referenced permit was initially issued on March 13, 2009 and was modified on May 17, 2010. The facility is reported to be a processing facility for produced natural gas and natural gas liquids (condensate).

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Based on the information obtained and evaluated as part of the inspection, the facility was determine to be in general compliance with their permit.

NAME Sharon LeBlanc DATE 9/25/2013 SUPERVISOR C. Hale