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

N731045170

FACILITY: SAVOY ENERGY LP		**SRN / ID:** N7310
LOCATION: SECTION 28, WOODVILLE		**DISTRICT:** Grand Rapids
CITY: WOODVILLE		**COUNTY:** NEWAYGO
CONTACT: Dylan Foglesong , Production Engineer		**ACTIVITY DATE:** 07/11/2018
STAFF: Chris Robinson	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MINOR
SUBJECT: FY '18 on-site inspection to determine the facility's compliance status with PTI No. 283-03A and other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

AQD staff, Chris Robinson (CR) conducted a scheduled announced on-site, inspection of the Savoy Energy LP Norwich 28 Facility (Norwich) on July 11, 2018, to determine compliance with Permit to Install (PTI) No. 283-03A and other applicable air rules and regulations. This facility is typically unmanned, therefore requiring inspections to be scheduled. Norwich is located at 6766 East Polk Street in Newaygo County, Michigan. CR met with Mr. Dylan Foglesong, Production Engineer at approximately 9:30 am, presenting proper AQD credentials and announcing AQD's intent to conduct an inspection of the facility.

Weather Conditions were sunny with a temperature of approximately 70°F and east north-east winds with a speed of approximately 5mph. No odors or visible emissions were observed during this inspection.

Facility Description

Norwich is a natural gas production facility that extracts sweet natural gas from two nearby wells (St. Norwich 228 & Altman). Oil is first removed from the extracted gas by two Production Packs, also known as heated 2-phase Separators. The natural gas is then sent to a compressor engine for compressing the gas to pipeline standards for off-site transport via pipeline. Prior to entering the pipeline any water in the gas is removed through a tri-ethylene glycol dehydration system. Gas processed at this facility contains a very minimal amount of water and oil. However, any oil and water removed is stored separately in the four (4) 400-gallon above ground storage tanks located on site. Water is eventually trucked offsite for disposal and the oil is sold and also eventually trucked offsite.

General Process:

2-Production Wells (Sweet Gas/Water/Oil) >> Production Packs (Removes Oil) >> Compressor Engine (Gas/Water Compressed to Pipeline Standards) >> Glycol Dehydrator (Removes Water) >> Pipeline (Natural Gas only)

Compliance Evaluation

PTI no. 283-03A

This PTI covers the facility's tri-ethylene glycol dehydration system. The dehydrator (dehy) is subject to a VOC limit of 2.5 tons per year (tpy), a benzene limit of 0.23 tpy and a daily material limit of 400,000 cubic feet per day (ft3/day). Based on records provided by the facility, which are included in **Attachment A**, the maximum calculated emissions were 0.767 tpy of VOC's (July 2017), and 0.039 tpy benzene (June 2018), per 12-month rolling time period. The maximum material throughput in June 2018 was 86,000 ft3/day.

Per Mr. Fogleson, no stripping gas is used at this location as prohibited in Special Condition (SC) II.2 of the PTI. The dehy unit is equipped with a condenser and flash tank, which appeared to be maintained and operated in a satisfactory manner. Exhaust from the flash tank is routed back to the fuel system for emissions control. Discussions with Mr. Foglesong initially indicated that records are maintained for at least five years and the gas stream is analyzed annually for nitrogen, CO2, hydrogen sulfide, C1 through C6 series hydrocarbons, benzene, toluene, xylene, ethylbenzene, and heptanes plus. However, follow-up email correspondence (**Attachment B**) with Mr. Foglesong confirmed that prior to 2018 the last gas composition analysis was conducted on July 31, 2008 with a most recent analysis occurring on June 16, 2018, shortly proceeding this inspection. Laboratory reports have been provided and are included in **Attachment C**. A violation notice will be issued for not analyzing the gas composition annually as required in SC V.1.

The facility is subject to the National emission standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63, Subpart HH for Oil and Natural Gas Production Facilities. SC III.1 of the PTI requires compliance with all

provisions of this federal standard. Per 63.764(d)(2) the following is required unless the facility is considered exempt under 63.764(e)(i-ii):

- Determination of the optimum glycol circulation rate
- Operate the TEG in a manner that does not exceed the calculated optimum circulation rate
- Maintain records

Savoy may be considered exempt from these requirements per 63.764(e)(i-ii) and PTI SC VI.3. This exempts sources that have an actual annual average flowrate of natural gas to the glycol dehydration unit of less than 85,000 m3/day and actual average benzene emissions from the process vent of less than 0.90 megagrams/year.

In order to demonstrate compliance with this exemption, the following is required:

- Install and operate a monitoring instrument that directly measures natural gas flowrate to the glycol dehydration unit with an accuracy of at least 2% or document, to the administrator satisfaction, the actual annual average natural gas flowrate to the glycol dehydration unit.
- Determine actual average benzene or BTEX emissions using the model GRI-GLYCalc version 3.0 or higher.

The facility's daily processing rate is restricted to 400,000 ft3/day (~11,326 m3/day), per SC II.2 of the PTI, which is less than the 85,000 m3/day limit allowed and SC VI(4) requires the facility to use GRI-GLYCalc to calculate benzene emissions, which is being done. The facility is subject to a benzene emission limit of 0.23 tpy (~0.21 megagrams/year) per SC I(2) of the PTI. Therefore, it appears that as long as the facility complies with PTI no. 215-16, they appear to be exempt from the NESHAP requirements listed above.

Emissions of VOC's and Benzene must be calculated using the GRI-GLYCalc model as required in SC VI.4, which Mr. Foglesong confirmed was the current methodology. If using version 3.0 or higher, which they are, *"inputs to the model shall be representative of current operating conditions of EUDEHY and shall include the most recent gas analysis data".* As discussed above, prior to 2018 the last gas composition analysis was conducted on July 31, 2008, not annually as required. Therefore inputs may not be representative of current operating conditions. Gas composition records are being kept as required by SC V.1.

Stack vent dimensions were not explicitly measured but appeared to meet the requirements specified in SC VIII (1) of the PTI (Max Diameter of 10-inches and a minimum height of 12-feet). Exhausted gas appears to be discharged unobstructed vertically upwards as required.

Special Condition IX(1) prohibits the permittee from using EUDEHY to process wells other than those specified in the application for PTI no. 283-03A without approval. During the inspection Mr. Foglesong indicated that a third well has been installed but is temporarily abandoned. Per July 18, 2018 email correspondence, Mr. Foglesong further indicated that this new well, (Bulmer 1-33) *"never produced but Savoy has applied for and received a permit to re-drill this well"*. CR informed Mr. Foglesong that a permit modification may be required if additional wells are to be processed through EUDEHY.

Exemptions

- Production Packs

The production packs remove oil from the gas through a heating process. Savoy operates two (2) of these units, one unit per production well. Based on the unit's nameplate information, these are both rated at approximately 15,000,000 Btu's per hour, which appear exempt under Rule 201 permitting requirements under Rule 282(2)(b)(i) for oil and gas production equipment burning sweet natural gas with a rated heat input capacity of not more than 50,000,000 Btu/hr. Due to the dry nature of the gas being extracted, these units seldom operate. Separated oil is stored in two (2) of the four (4) 400-gallon above ground storage tanks discussed earlier.

- Flare

A small candlestick style flare is located on-site. Per Mr. Foglesong the flare is only used for emergencies caused by high pressure situations. Flares used for oil and gas processing that burn only sweet gas are exempt from permitting requirements under Rule 288(2)(c). The Norwich flare appears to meet these requirements.

- Compressor Engine

The facility operates a natural gas fired Caterpillar model 333 127hp compressor engine that is used to process sweet natural gas from two active production wells. Based on the 127hp rating this engine has an approximate heat rating of 323,088 Btu/hr.

Assuming 1hp = 2,544 Btu/hr
127hp x 2,544 Btu/hr = 323,088 Btu/hr

Therefore, this engine appears to be exempt from Rule 201 permitting requirements under Rule 282(2)(b)(i) for oil and gas production equipment burning sweet natural gas with a rated heat input capacity of not more than 50,000,000 Btu/hr.

June 12, 2006 represents the date at which existing "modified" or "reconstructed" engines would become subject to the requirements of New Source Performance Standards 40 CFR Part 60 Subpart JJJJ for "Stationary Spark Ignition Internal Combustion Engines". Per discussions with Mr. Foglesong, this engine was installed in August 2005 and does not appear to have been "modified" or "reconstructed", therefore not subject to NSPS Subpart JJJJ requirements at this time. However, the existing compressor engine does appear to be subject to National Emission Standards for Hazardous Air Pollutants 40CFR Part 63 Subpart ZZZZ for "Stationary Reciprocating Internal Combustion Engines" (RICE MACT). Although Savoy must comply with these requirements, at this time, the AQD does not have delegation of authority for this Area Source Standard.

Compliance Determination
Based on the observations made at the time of this inspection and a subsequent review of records, the Savoy Energy LP Norwich 28 Facility does not appear to be in compliance with the testing requirement of PTI 283-03A. A violation notice will be issued.

Attachments
A - Process Rates and Emission Records
B - Email Correspondence
C - Laboratory Reports

NAME _____ DATE 8/1/2018 SUPERVISOR _____