

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

B429239913

FACILITY: MERIT ENERGY CO. - KALKASKA GAS PLANT		SRN / ID: B4292
LOCATION: 1510 Thomas Road SW, KALKASKA		DISTRICT: Cadillac
CITY: KALKASKA		COUNTY: KALKASKA
CONTACT: SEAN CRAVEN , REGULATORY ANALYST		ACTIVITY DATE: 05/17/2017
STAFF: Kurt Childs	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: 2017 FCE.		
RESOLVED COMPLAINTS:		

2017 Full Compliance Evaluation

I conducted a Full Compliance Evaluation (FCE) including site inspection and records review to determine the facility's compliance with state and federal air pollution control regulations as well as Renewable Operating Permit (ROP) No. MI-ROP-B4292-2014. I met with Mr. Sean Craven and Mr. Bruce Vargo of Merit Energy who provided records and data, and accompanied me on the inspection.

The Kalkaska Gas Plant (KGP), comprised of the North Plant (EUKGPN) and the South Plant (EUKGPS), is an existing natural gas processing and fractionation plant located near the intersection of US-131 and Thomas Road, about four miles southwest of the Village of Kalkaska. The facility extracts ethane, propane and butane as well as heavier hydrocarbons (sold as crude oil) from natural gas using a cryogenic process located at the North Plant. The South Plant, which is currently idle, uses a lean oil absorption process to remove natural gas liquids from the natural gas. Natural gas is sent to the KGP by pipeline from central production facilities around Northern Michigan. The processed natural gas from KGP is sold to DTE and enters their pipeline. Other equipment at the facility includes several storage tanks, natural gas process heaters, emergency engines, and three natural gas fired turbines with supplemental waste heat recovery units with duct burners. Flares are used at each plant for emissions control and as safety relief devices.

On June 19, 2015, Permit to Install (PTI) No. 1-15 was issued to Merit Energy to allow operation of the idled South Plant. Restarting the plant is considered a physical and operational change which is subject to Prevention of Significant Deterioration (PSD) review and a PTI was a necessity. As a result of PSD applicability, the PTI went through the PTI/ROP public comment process. Merit Energy must notify the AQD within 30 days after completing the physical and operational changes pursuant to PTI No. 1-15 and request the AQD to incorporate the PTI into the ROP as an administrative amendment application no later than 12 months after the date of completion of the changes. Since the south plant has not operated the focus of this FCE is on the north plant and its process equipment.

The Process units at the plant are subject to various federal requirements including NSPS, NESHAP and a consent decree. The lean oil absorption process at the south plant and the slug catcher at the north plant are considered grandfathered and are not subject to these regulations. Inlet gas separation and treating, pre-boost compression, stabilizer system, cryogenic plant, propane refrigeration, and flare system are all subject to 40 CFR 60, Subpart KKK-Equipment leaks of VOC from Onshore Natural Gas Processing Plants. The Kalkaska Gas Plant is a minor source of HAP emissions therefore the process heaters are not subject to 40 CFR 63, Subpart DDDDD(Major source Boiler and Process Heater MACT) or 40 CFR 63, Subpart JJJJJJ (Area Source Boiler GACT – only applies to boilers not process heaters).

NGL storage and pumping at the south plant, dehydration, fractionation, and NGL storage and loading at the north plant are all subject to 40 CFR Part 63, Subpart OOOO-Crude Oil and Natural Gas Production, Transmission and Distribution.

All of the valves and pumps in Subpart KKK subject process units and the OOOO subject dehydration, fractionation, and NGL storage and loading process units are all covered by USEPA Consent Decree 1:15-cv-00455. The Consent Decree requires an "Enhanced LDAR Program" (ELP) that addresses monitoring, recordkeeping and reporting of leaks. The AQD receives copies of the ELP reports and reviews them as they are received.

There are also emergency generator engines and fire pump engines at both plants that are subject to 40 CFR 63 Subpart ZZZZ for Reciprocating Internal Combustion Engines.

A. SOURCEWIDE – Sourcewide terms and conditions that apply to this stationary source. There are currently no sourcewide terms and conditions contained in the ROP; therefore, this section is not applicable.

B. EUKGPN – Natural gas liquid extraction and fractionation plant subject to the requirements of 40 CFR 60 Subpart KKK and OOOO as they apply to Onshore Natural Gas Processing Plants.

1. Emission Limits – There are no emission limits associated with this emission unit; therefore, this section is not applicable.

2. Material Limits - There are no material limits associated with this emission unit; therefore, this section is not applicable.

3. Process/Operational Restrictions – A continuously burning pilot flame at the flare is monitored using a photoelectric eye. Plant personnel indicated the pilot flame has never been extinguished. No visible emissions were observed by AQD staff at the time of the inspection though tank trailers were being loaded and a flame was visible at the flare.

Any leaks detected are required to be repaired as soon as practicable but not later than 15 days after it is detected. In cases where the leak cannot be repaired without shutting down the entire plant, the facility is allowed to place the leaking equipment on the Delay of Repair (DOR) list and the leak will be repaired at that time. The most recent Subpart KKK and Subpart OOOO Semi-Annual Report listed six Subpart KKK components and Seven Subpart OOOO components on the Delay of Repair list.

Currently, there are five components that are designated for no detectable emissions and the applicable requirements pertaining to those components do not apply (see attached list).

None of the compressors are subject to the requirements of 40 CFR 60 Subpart KKK and OOOO. Two are on the no detectable emissions list and the remaining compressors are also driven by electric motors and are reciprocating wet gas compressors. The justification/records for non-applicability are maintained at the facility.

Records maintained at the facility and the semiannual reporting indicate there are no pressure relief devices which had a pressure release and were not returned to a condition of an instrument reading of less than 500 ppm above background.

4. Design/Equipment Parameters – The flare is required to comply with the heat content specifications and maximum tip velocity specifications in accordance with 40 CFR 60.18 as well as allowable visible emissions only up to 5 minutes during any 2 consecutive hours. Gas content and volume are continuously monitored and VE observations are conducted by contractor EMSI quarterly.

During the inspection, AQD staff observed open-ended valves and lines equipped with a second valve or cap as required by 40 CFR 60 Subparts KKK and OOOO, and the ROP. Each component was identified with an individual ID tag.

5. Testing/Sampling – Non-certified visible emissions are performed on a quarterly basis, as stated above, for a minimum of two hours. Records maintained at the facility indicate the observations are performed and no visible emissions were present.

Method 21 testing as required by the ROP and 40 CFR 60 Subparts KKK and OOOO are performed by a contractor (EMSI) hired by Merit Energy. The testing dates are scheduled in accordance with the federal regulations and the results are reported in the Semi-annual reports. Prior approval and submittal of a test plan and test results is not required by the ROP, just reporting of the number of leaks identified.

6. Monitoring/Recordkeeping – Records required by the ROP and federal regulation are maintained at the facility via a detailed electronic format including the use of Guideware brand software for LDAR requirements. A log of all equipment subject to the standards in 40 CFR 60 Subpart KKK and OOOO was available for AQD staff to review. The log included, but was not limited to, a list of all components subject to the federal regulations, leaking equipment, and Method 21 test dates. Records are maintained of weekly visible leak inspections (example attached), monthly, quarterly and annual LDAR monitoring. Leaks that are detected are logged by the monitoring equipment directly into Guideware and records of each leak history are maintained (examples attached).

7. Reporting – All reports submitted pursuant to the ROP were previously reviewed and documented with no non-compliance issues.

8. Stack/Vent Restrictions – There are no stack or vent restrictions associated with this emission unit; therefore, this section is not applicable.

9. Other Requirements – Staff observed during the inspection that a tag was attached to leaking equipment pursuant to 40 CFR 60 Subpart KKK and OOOO as well as the ROP.

The facility is required to comply with the applicable requirements of 40 CFR 60 Subparts KKK and OOOO. Based upon the onsite inspection and review of records, AQD staff determined, to the best of their knowledge, the facility to be in compliance with 40 CFR 60 Subparts KKK and OOOO.

C. EUKGPN-TURB-C – 60.2 MMBtu/hr natural gas fired Solar Turbines, Taurus 60 turbine and 28.0 MMBtu/hr natural gas fired duct burner in the waste heat recovery unit. The turbine is used for plant electrical production and the WHRU is used to heat thermal oil for other processes. The turbine and the WHRU were operating at the time of the inspection with 0% opacity. At the time of the May 3, 2017 stack test, the turbine was producing around 4.4 Megawatts (the final test report has not been submitted yet. Based upon the construction date, the turbine is currently subject to 40 CFR 60 Subpart KKKK (Standards of Performance for Stationary Combustion Turbines). The serial number of the turbine installed is OHD14-T2577.

1. Emission Limits – NOx emissions are limited to 1.2 lb/MW-hr pursuant to conditions of the ROP. Testing performed on May 12, 2015 determined NOx emissions were 0.45 lb/MW-hr; which is in compliance with the emission limit. Testing was also conducted on May 3, 2017 but the test results are not yet available.

2. Material Limits – Total potential sulfur emissions are limited to less than or equal to 0.06 pounds SO2 per MMBtu heat input. Fuel quality characteristics including sulfur content (5 grains per 100 cubic feet) are set in a transportation contract with Michcon (DTE) and limit emissions to below the requirement.

3. Process/Operational Restrictions – The ROP only allows natural gas to be fired in the emission unit. At this time, the equipment is capable of only firing natural gas.

4. Design/Equipment Parameters – The turbine was equipped with low NOx burners pursuant to the ROP and a device to monitor and record the natural gas usage on a continuous basis. Continuous monitoring of fuel usage is available through the plant computer system including trend data. Records of the natural gas consumption rate for 2017 are attached.

5. Testing/Sampling – NOx testing is required every year unless emissions based on stack testing are less than 0.9 lb/MW-hr. Stack testing results in 2015 were less than 0.9 lb/MW-hr and allows the stationary source to reduce the frequency of testing every two years subsequent to 40 CFR 60 Subpart KKKK. The biennial testing took place May 3, 2017.

6. Monitoring/Recordkeeping – Records of fuel combusted in the duct burner were available for AQD review. Records of the monthly fuel combusted so far in 2017 are attached. Turbine fuel use was around 37MMcf per month and waste heat recovery unit fuel use was around 1.2MMcf per month.

A valid transportation contract with Michcon/DTE was on file to demonstrate that the potential sulfur emissions did not exceed the emission limit contained in the ROP.

7. Reporting – All reports submitted pursuant to the ROP were previously reviewed and documented.

8. Stack/Vent Restrictions – The stacks associated with this emission unit appeared to be installed in accordance with the specifications contained in the ROP.

9. Other Requirements – The permittee is required to comply with all applicable requirements of 40 CFR 60 Subpart KKKK. Based upon the onsite inspection and review of records, AQD staff considers the facility to be in compliance with the federal regulation.

D. EUKGPS – An idled lean oil absorption natural gas liquid recovery process consisting of a lean oil absorber, a rich oil demethanizer, and rich oil still to separate the natural gas liquids from the lean oil and is a closed system. Additional components include the pressurized natural gas storage tanks, heat medium heater, fuel gas system, and flare system. Not operating at the time of the inspection except for the previously approved use of the NGL tanks and pumping system as part of the butane production process at EUKGPN.

E. FG-KGPS-TURB – Two 19,750 hp natural gas fired GE Frame 5 turbines, each equipped with a 7.5 MW electrical generator and a 55 MMBtu per hour natural gas fired duct burner in the waste heat recovery units (WHRU). The turbines are used for plant electrical production and the WHRUs are used to heat thermal oil for other processes. Currently, the turbines could be used as backup power generators in the event that EU-TURB-C is

inoperable. Neither turbine was operating at the time of the inspection.

1. Emission Limits – There are no emission limits associated with this flexible group; therefore, this section is not applicable. The turbines are subject to 40 CFR 60 Subpart GG but are not subject to an emission limit. The turbines were installed prior 1982 and exempts them from the emission limits contained in 40 CFR 60.332(a).

2. Material Limits – The total sulfur contained in the natural gas fuel is limited to 0.8% by weight total as a requirement of the ROP and 40 CFR 60 Subpart GG. Sales gas is used as fuel throughout the plant. The gas quality specifications of the current sales contract with Michcon/DTE indicates the total sulfur content limit is 5 grains of total sulfur per 100 cubic feet or 0.008%.

3. Process/Operational Restrictions – There are no process or operational restrictions associated with this flexible group; therefore, this section is not applicable.

4. Design/Equipment Parameters – There are no design or equipment parameters associated with this flexible group; therefore, this section is not applicable.

5. Testing/Sampling – There are no testing or sampling requirements associated with this flexible group; therefore, this section is not applicable.

6. Monitoring/Recordkeeping – A copy of the transportation contract with Michcon/DTE was available for AQD staff to review and a pertinent section of the contract is attached. The natural gas usage of each turbine is to be monitored and recorded. Fuel use records maintained at the facility (attached) indicate the turbines have not been operated in the past year other than for maintenance.

7. Reporting – All reporting submitted pursuant to conditions of the ROP were previously reviewed and documented by AQD staff.

8. Stack/Vent Restrictions – There are no stack or vent restrictions associated with this flexible group; therefore, this section is not applicable.

9. Other Requirements – Based upon the records review and onsite inspection, AQD staff determined the facility to be in compliance with the applicable requirements of 40 CFR 60 Subpart GG.

F. FG-EMERGENS – 275 horsepower International Harvester gas-fired emergency generator, 1,090 horsepower Waukesha gas-fired emergency generator, 125 horsepower Cummins gas-fired emergency fire water engine, 145 horsepower Minneapolis Moline gas-fired emergency fire water engine. The Kalkaska Gas Plant is considered an area source for Hazardous Air Pollutants (HAPs). The applicable requirements contained in the flexible group were established pursuant to the regulations found in 40 CFR 63 Subpart ZZZZ. AQD does not have delegation to enforce the regulation as it pertains to area sources for HAPs however, Merit Energy did provide documentation of tune-ups and oil analysis required for reduced oil change frequency (see attached).

G. FGRULE290 – Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rule 278 and Rule 290. The ROP must contain all applicable requirements and three remediation basins for groundwater contamination are covered under this flexible group. This table was included in the ROP to cover groundwater remediation basins that are no longer in use.

1. Emission Limits – Noncarcinogenic volatile organic compounds (VOC) and benzene emissions are limited to 1,000 pounds per month and 20 pounds per month, respectively. The basins are no longer operating.

2. Material Limits – There are no material limits associated with this flexible group; therefore, this section is not applicable.

3. Process/Operational Restrictions – General language in the condition states Rule 290 applies to each emission unit that is operating pursuant to Rule 290.

4. Design/Equipment Parameters – There are no design or equipment parameters associated with this flexible group; therefore, this section is not applicable.

5. Testing/Sampling – There are no testing or sampling requirements associated with this flexible group; therefore this section is not applicable.

6. Monitoring/Recordkeeping – The groundwater remediation basins are no longer in use and were not operating at the time of the inspection.

7. Reporting – All reporting submitted pursuant to the ROP was previously reviewed and documented by AQD staff.

8. Stack/Vent Restrictions – There are no stack or vent restrictions associated with this flexible group; therefore, this section is not applicable.

9. Other Requirements – There are no other requirements associated with this flexible group; therefore this section is not applicable.

Conclusion – Based upon the Full Compliance Evaluation, It appears the source was in compliance with ROP No. MI-ROP-B4292-2014 at the time of the evaluation.

NAME 

DATE 5-22-17

SUPERVISOR SN