

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

N583160025

FACILITY: Riverside Energy Michigan, LLC - Wilderness CO2		SRN / ID: N5831
LOCATION: 10875 Geronimo Trail, GAYLORD		DISTRICT: Cadillac
CITY: GAYLORD		COUNTY: OTSEGO
CONTACT: Carolann Knapp , Compliance Coordinator		ACTIVITY DATE: 07/27/2021
STAFF: Jodi Lindgren	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Site inspection and record review		
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

On Tuesday July 27, 2021, Jodi Lindgren of the Department of Environmental, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted an unannounced field inspection of Breitburn Operating, LP (Breitburn) – Wilderness CO2 Plant and Riverside Energy Michigan, LLC (Riverside) – Hayes 29 CPF located at 10875 Geronimo Trail, Gaylord, Otsego County, Michigan, 49735. The entrance to facility is on the east side of Geronimo Trail approximately two mile south of the intersection of Mancelona Road and Geronimo Trail. The operation manager of the Wilderness CO2 Plant was present at the facility during the inspection. The Hayes 29 CPF was unmanned at the time of the inspection. Mr. Eric Hasso of Breitburn Operating provided AQD staff Wilderness CO2 Plant compliance records. Ms. Carolann Knapp of Riverside Energy provided AQD staff Hayes 29 CPF compliance records.

The Wilderness CO2 Plant and the Hayes 29 CPF have been determined to be a single stationary source as such they are covered by single sectioned ROP, MI-ROP-N5831-2014a. Wilderness CO2 Plant is covered by section 1 of the ROP and Hayes 29 CPF is covered by section 2. The Hayes 29 CPF receives natural gas from the production wells in various shale formations. The Hayes 29 CPF utilizes a glycol dehydrator, process separators, process heaters, a natural gas compressor, and a compressor engine to remove water, brine, and oil condensate from the natural gas stream. The gas is then sent to the Wilderness CO2 plant for CO2 removal. The Wilderness CO2 Plant receives natural gas from several production facilities including the Hayes 29 CPF. The CO2 removal process actively uses four permitted reciprocating internal combustion engines (RICE) and a Rule 201 exempt RICE that was installed on May 29, 2021 for emergency use. The ROP includes two additional RICE that have been permanently decommissioned. Operation of EUENGINE5 ceased in 2015 and EUENGINE6 was officially decommissioned in December 2020 after being out of operation for several months due to mechanical issues. The Wilderness CO2 Plant also utilizes process separators, process heaters, and storage tanks as part of the CO2 removal process. Upon leaving the Wilderness CO2 Plant, the natural gas goes directly into a metered sale line.

The facilities were planning to become separate stationary sources. Breitburn was intending to apply for a Title V opt-out permit for the Wilderness CO2 Plant and Riverside obtained a new SRN (P1194) and minor source PTI (22-21) for the Hayes 29 CPF. However, on September 1, 2021, ownership of the facilities will change. Both facilities will be owned by a single entity and therefore a single stationary source. Breitburn decided not to apply for a Title V opt-out permit once the ownership change was announced. As such, the Wilderness CO2 Plant is still covered by Section 1 of MI-ROP-N5831-2014a. The new minor source permit obtained by Riverside, PTI 22-21, was issued on July 9, 2021 and only includes conditions for the glycol dehydrator. The record review completed as part of this inspection covered the timeframe of July 1, 2020 to June 30,

2021. Since the inspection timeframe is prior to the issue date of PTI 22-21 and the new permit only includes conditions that appear in Section 2 of MI-ROP-N5831-2014a, PTI 22-21 will not be addressed in this compliance evaluation.

COMPLIANCE EVALUATION

A. SOURCEWIDE – The source-wide terms and conditions apply to both the Wilderness CO2 Plant and Hayes 29 CPF as a singular stationary source.

1. Emission Limits – The ROP establishes a NOx limit of 224 tons per year (tpy), a CO limit of 224 tpy, an individual HAP limit of less than 10 tpy, and an aggregate HAP limit of less than 25 tpy calculated at the end of each month using a 12-month rolling time period. Each company keeps their individual emission calculations. However, Breitburn keeps source-wide emission totals and reports them annually with the MAERS system. The source-wide totals reported in MAERS for 2020 indicates 57 tpy of NOx emissions, 11.1 tpy CO emissions, and 8.78 tpy of total aggregate HAP emissions. The records are maintained throughout the year keeping source-wide emission totals calculated using a 12-month rolling time period. These records indicate compliance with the emission limits established in the ROP.

2. Material Limits – There are no source-wide material limits; therefore, this section is not applicable.

3. Process/Operational Restrictions – Only sweet natural gas is permitted to be used in natural gas fired equipment. Both facilities only use sweet natural gas and both facilities have recent gas analyses.

4. Design/Equipment Parameters – There are no source-wide design or equipment parameters; therefore, this section is not applicable.

5. Testing/Sampling – There are no source-wide testing and sampling requirements; therefore, this section is not applicable.

6. Monitoring/Recordkeeping – the ROP establishes recordkeeping for all source-wide emissions calculations. The companies keep these records.

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

8. Stack/Vent Restrictions – There are no source-wide stack or vent restrictions; therefore, this section is not applicable.

9. Other Requirements – There are no additional source-wide requirements; therefore, this section is not applicable.

SECTION 1 WILDERNESS CO2 PLANT COMPLIANCE EVALUATION

B. FGCATENGINES – Four natural gas fired reciprocating engines designated as EUENGINE1, EUENGINE2, EUENGINE3, and EUENGINE4. EUENGINE2, EUENGINE3, and EUENGINE4 are equipped with oxidation catalysts. EUENGINE1 does not have add-on pollution control. EUENGINE3 was installed on July 14, 2021 to replace an equivalent engine.

EUENGINE1 is a 1085 hp CAT G3516 lean burn engine with a serial number of 3RC00254, a rebuild date of May 10, 2018, and a unit number of 831. At the time of the inspection, the engine was running with an RPM of 1161, engine oil temperature of 193°F, engine oil pressure of 59 psi, coolant system temperature of 198°F, a compressor oil temperature of 206°F, a compressor oil pressure of 57 psi, and 25,246.4 hours of operation. This was consistent with the records kept on site which indicated that on July 27, 2021, EUENGINE1 was running with an RPM of 1163, engine oil temperature of 192°F, engine oil pressure of 60 psi, coolant system temperature of 190°F, a compressor oil temperature of 200°F, and a compressor oil pressure of 53 psi.

EUENGINE2 is a 1085 hp CAT G3516 lean burn engine with a serial number of 4EK01389, a rebuild date September 11, 2012, and a unit number of 856. At the time of the inspection, the engine was not operating due to building repairs.

EUENGINE3 is a 1085 hp CAT G3516 EIS lean burn engine with a serial number of 4EK00340, a manufacture date of June 2006, and a unit number of 885. At the time of the inspection, the engine was running with an RPM of 1153, engine oil temperature of 193°F, engine oil pressure of 51 psi, coolant system temperature of 183°F, a compressor oil temperature of 209°F, a compressor oil pressure of 54 psi, and 291.4 hours of operation. This was consistent with the records kept on site which indicated that on July 27, 2021, EUENGINE3 was running with an RPM of 1160, engine oil temperature of 189°F, engine oil pressure of 52 psi, coolant system temperature of 190°F, a compressor oil temperature of 200°F, and a compressor oil pressure of 53 psi.

EUENGINE4 is a 1150 hp CAT G3516 lean burn engine and a unit number of 907. A engine nameplate could not be located to records the serial number or the manufacture/rebuild date. At the time of the inspection, the engine was running with an RPM of 1159, engine oil temperature of 203°F, engine oil pressure of 57 psi, coolant system temperature of 205°F, a compressor oil temperature of 199°F, a compressor oil pressure of 60 psi, and 62342.4 hours of operation. This was consistent with the records kept on site which indicated that on July 27, 2021, EUENGINE3 was running with an RPM of 1160, engine oil temperature of 197°F, engine oil pressure of 58 psi, coolant system temperature of 198°F, a compressor oil temperature of 199°F, a compressor oil pressure of 59 psi.

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.

All leaks detected are required to be repaired as soon as practicable but not later than 15 days after it is detected. If a leak cannot be repaired without process unit shut down, the component can be placed on the Delay of Repair (DOR) list and repaired during the next scheduled shutdown.

The second 2020 LDAR semi-annual report (7/1/2020 – 12/31/2020) identified twelve NSPS KKK subject components (12 valves), forty NSPS OOOO subject components (30 valves, 1 PRV, 9

connectors), and fourteen NSPS OOOOa subject components (14 valves) above the applicable leak threshold. Three NSPS KKK components (3 valves), one NSPS OOOO component (1 valve), and two NSPS OOOOa component (2 valves) were added to the DOR list as reported in the second 2020 LDAR semi-annual report. LDAR recordkeeping for component leak detection and repair history, documentation of audio, visual, and olfactory (AVO) inspections, DOR accounting, and management of change (MOC) orders were reviewed and appeared to meet the federal requirements. The KGP LDAR Plan was last updated on August 6, 2019. The piping and instrument diagram (P&ID) is regularly updated as part of the MOC procedure. A third-party audit of the LDAR program according to EPA CD requirements was completed on September 14, 2020. One action item was found during the third-party. A corrective action plan and completion date was submitted to the EPA with the audit report. Lambda's LDAR contractors perform a quarterly QA/QC audit. Records from the quarterly audits are maintained on site.

Records maintained at the facility and the semiannual reporting indicate no PRV release events occurred during the inspection timeframe.

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. No deviations during the inspection time frame.

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 NSPS KKK, OOOO, and OOOOa are performed by a LDAR contractor (EMSI). 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, a LDAR software and database. A log of all equipment subject to the standards in NSPS KKK, OOOO, and OOOOa 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.

7. Reporting – All reports submitted pursuant to the ROP were previously reviewed and documented with no noncompliance 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 – During the facility inspection, AQD Staff observed proper LDAR component tagging, including leak tags and DOR tags, and no open-ended lines were observed

pursuant to NSPS KKK, OOOO, and OOOOa as well as the ROP. The new propane storage area and the new railcar vapor recovery system were properly tagged and the initial LDAR monitoring had been completed.

The facility is required to comply with the applicable requirements of NSPS KKK, OOOO, and OOOOa. 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, OOOO, and OOOOa.

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. During the May 12, 2021 stack test, the turbine was observed by AQD staff to be producing an average 4443 kilowatts at an 85.4% load capacity. The stack test report indicated compliance with the ROP and NSPS KKKK. The stack testing was witnessed by AQD staff and the final report was also review by AQD staff. No noncompliance items or concerns were noted by the reviewing AQD staff. The serial number of the turbine installed is OHF18-T7876. The serial number was verified during the inspection and record review (a copy of the manufacturer’s certified test report is attached).

1. Emission Limits – NO_x emissions are limited to 1.2 lb/MW-hr pursuant to conditions of the ROP. Testing performed on May 12, 2021 determined NO_x emissions were 0.28 lb/MW-hr; which is in compliance with the emission limit.

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. Certified gas analysis results were provided during the record review.

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 NO_x 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 2018 are attached.

5. Testing/Sampling – NO_x testing is required every year unless emissions based on stack testing are less than 0.9 lb/MW-hr. Stack testing results in 2021 were less than 0.9 lb/MW-hr and allows the stationary source to reduce the frequency of testing every two years subsequent to NSPS KKKK. The biennial testing took place May 12, 2021.

6. Monitoring/Recordkeeping – Records of fuel combusted in the duct burner were available for AQD review. The fuel use total for the turbine and waste heat recovery unit averaged 36.2 MMcf per month.

Certified laboratory analyses in accordance with ASTM, UOP, and GPA guidelines were on file to demonstrate that the potential sulfur emissions did not exceed the emission limit contained in

the ROP. A hydrodesulfurization unit was added to the KGPN in 2018. The analytical results reported hydrogen sulfide as not detectable.

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 NSPS 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 13,250 hp natural gas fired GE Frame A-500 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, one of the KGPS turbines could be used as backup power generators in the event that EU-TURB-C is inoperable. The other KGPS turbine has been rendered inoperable as it is being used for spare parts. 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 – The natural gas usage of each turbine is to be monitored and recorded. Fuel use records maintained at the facility 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 NSPS 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 KGP 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 NESHAP ZZZZ. AQD does not have delegation to enforce the regulation as it pertains to area sources for HAPs. However, Lambda did provide documentation of tune-ups and oil analysis required for reduced oil change frequency (see attached maintenance schedule).

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. Use of the remediation basin discontinued on April 8, 2016.

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 – Recordkeeping requirements pursuant the ROP were provided to AQD staff upon request (see attached).

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.

NAME 

DATE _____

SUPERVISOR _____