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

B429259616

FACILITY: Lambda Energy Resources, LLC - KALKASKA GAS PLANT		**SRN / ID:** B4292
LOCATION: 1510 Thomas Road SW, KALKASKA		**DISTRICT:** Cadillac
CITY: KALKASKA		**COUNTY:** KALKASKA
CONTACT: Nick Summerland , HSE Manager		**ACTIVITY DATE:** 05/12/2021
STAFF: Jodi Lindgren	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: On-site inspection and records review		
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

On Wednesday May 12, 2021, Jodi Lindgren of the Department of Environmental, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted an unannounced field inspection of Lambda Energy Resources, LLC (Lambda) – Kalkaska Gas Plant (B4292) located at 1080 Prough Road SW, Kalkaska, Kalkaska County, Michigan, 49646. Mr. Nick Summerland of Lambda Energy Resources was present to accompany AQD staff during the plant inspection. Mr. Nick Summerland provided compliance records for AQD staff to review during the inspection.

The Kalkaska Gas Plant (KGP), comprised of the North Plant (KGPN) and the South Plant (KGPS), 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 entrance to the facility is on Prough Road approximately 0.9 miles north of Thomas Road. The facility extracts ethane, propane, and butane as well as heavier hydrocarbons (sold as crude oil) from natural gas using a cryogenic process at the North Plant. The South Plant, which is currently inactive, implements a lean oil absorption process to remove natural gas liquids from the natural gas. KGP acquires natural gas sent via pipeline from central production facilities around Northern Michigan. KGP sells the processed natural gas to DTE and enters their pipeline. Other equipment at the facility includes several storage tanks, an amine unit, a hydrodesulfurization unit, 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. In August 2020, a project to expand propane storage in the KGPN area began. The project converted underground storage previously used for ethane storage into propane storage. The ethane compressor and associated equipment was isolated and removed from service. Existing piping to the underground storage was rerouted and connected to existing propane flowlines. The storage is now in VOC service so therefore all physical changes are subject to 40 CFR Part 60 subpart OOOOa. The propane storage project was completed on October 23, 2020. Also, on October 23, 2020, an electrically driven reciprocating compressor was installed to recover vapors from railcars in the KGPN storage area. The new compressor did not increase emissions but is subject to 40 CFR Part 60 subpart OOOOa. The primary focus of this compliance evaluation will be on the north plant and its process equipment due to the inoperative status of the south plant.

The process units at KGP are subject to various federal regulations including applicable subparts of the New Source Performance Standards (NSPS) described in *Title 40 Code of Federal Regulations (40 CFR) Part 60, National Emission Standards for Hazardous Air Pollutants (NESHAP) Part* 63, and an USEPA consent decree outlined in case 1:15-cv-00455 doc #2-1 file May 1, 2015 (EPA CD). The lean oil absorption process at the south plant and the slug catcher at the north

plant are considered grandfathered therefore not subject to these regulations. The inlet gas separation and treating, pre-boost compression, cryogenic plant, propane refrigeration, and flare system are subject to 40 CFR 60 Subpart KKK (NSPS KKK)-Equipment leaks of VOC from Onshore Natural Gas Processing Plants. The gas dehydration unit, natural gas liquid (NGL) storage and loading at the north plant, NGL storage and pumping at the south plant are subject to 40 CFR 60 subpart OOOO (NSPS OOOO) Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution. The new propane storage unit, new railcar vapor recovery system, stabilizer system, and fractionation plant are subject to 40 CFR 60 subpart OOOOa (NSPS OOOOa) Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015. The KGP is a minor source of hazardous air pollutant (HAP) emissions therefore the process heaters are not subject to 40 CFR 63 Subpart DDDDD NESHAP Major Sources: Industrial, Commercial and Institutional Boilers and Process Heaters nor 40 CFR 63 Subpart JJJJJJ NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources.

All equipment subject to NSPS KKK, NSPS OOOO, and NSPS OOOOa is also subject to the EPA CD which stipulates the establishment of an enhanced leak detection and repair (LDAR) Program (ELP) to address monitoring, recordkeeping and reporting of leaks. The AQD receives copies of the ELP reports and reviews them as they are received.

At both KGPN and KGPS are emergency generator engines and fire pump engines subject to 40 CFR 63 Subpart ZZZZ (NESHAP ZZZZ) for Reciprocating Internal Combustion Engines (RICE).

COMPLIANCE EVALUATION

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 NSPS KKK, NSPS OOOO, and NSPS OOOOa 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.

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 – NOx emissions are limited to 1.2 lb/MW-hr pursuant to conditions of the ROP. Testing performed on May 12, 2021 determined NOx 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 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 2018 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 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.

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