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

B719655109

FACILITY: ANR Storage Company - Excelsior Compressor Station		**SRN / ID:** B7196
LOCATION: 4936 State Rd. NE, KALKASKA		**DISTRICT:** Cadillac
CITY: KALKASKA		**COUNTY:** KALKASKA
CONTACT: Brad Stermer , Sr. Environmental Specialist		**ACTIVITY DATE:** 08/12/2020
STAFF: Jodi Lindgren	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: 2020 FCE field inspection and records review		
RESOLVED COMPLAINTS:		

FACILITY DESCRIPTION

On Friday August 12, 2019, Jodi Lindgren of the Department of Environmental, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) conducted an unannounced field inspection of ANR Storage Company (ANR) – Excelsior Compressor Station (B7196) located at 4936 State Road NE, Kalkaska Kalkaska County, Michigan, 49646. ANR facility personnel was present to accompany AQD staff during the plant inspection. A record review was completed for the timeframe of July 1, 2019 to June 30, 2020. Mr. Brad Stermer of ANR provided additional facility records via email.

The Excelsior Compressor Station is an existing natural gas compression and storage facility located west of the intersection of Hagni Road and State Road, about 5.4 miles northeast of the Village of Kalkaska. The entrance to the facility is on State Road approximately 0.12 miles west of Hagni Road and 4.25 miles east of US 131. The location is unpopulated and forested. Natural gas enters and leaves the station via pipeline and stored in natural porous rock formation reservoirs. Processes at the station include natural gas compression and glycol injection and dehydration. During the summer, natural gas is compressed and injected into the underground reservoirs for storage until needed. During the winter the gas is withdrawn and transported by pipeline to customers for distribution. Before being sent off site, the natural gas is treated to remove moisture consisting of brine and liquid hydrocarbons. The liquid hydrocarbon is sold as a product and the brine is hauled to an injection well for disposal. Equipment at the facility includes two compression engines, one emergency generator engine, a natural gas fired boiler, two natural gas fired withdrawal heaters, and a glycol dehydration unit equipped with a thermal oxidizer for primary control and a condenser for secondary control in the event the thermal oxidizer fails.

The glycol dehydration unit, natural gas fired boiler, and emergency generator engine are subject to the applicable subparts of the federal Maximum Achievable Control Technology (MACT) standards described in *Title 40 Code of Federal Regulations (40 CFR) National Emission Standards for Hazardous Air Pollutants (NESHAP) Part* 63. The glycol dehydration unit is subject to 40 CFR 63 Subpart HHH (NESHAP HHH), the natural gas fired boiler is subject to 40 CFR 63 Subpart DDDDD (Boiler MACT), and the emergency generator engine is subject to 40 CFR 63 Subpart ZZZZ (RICE MACT).

COMPLIANCE EVALUATION

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

B. EUEXGEN-B – One Caterpillar G399, four-cycle, rich burn, spark ignition, natural gas-fired reciprocating internal combustion engine, rated at 490 HP used to power an emergency electricity generator. The engine's serial number is 49C703.

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 – EUEXGEN-B is subject to the operational and maintenance requirements of the federal RICE MACT (40 CFR Part 63 Subpart ZZZZ). The operational and maintenance records indicated that EUEXGEN-B was operated for monthly testing as well as emergencies. During the timeframe of July 1 2019 to June 30 2020, EUEXGEN-B was run for a total of 18.8 hours. Maintenance testing accounts for 14.1 hours and emergency use accounts for 4.7 hours.

During the inspection, maintenance records were available documenting proper maintenance and operation according to their maintenance plan. In lieu of changing the oil annually, the option to conduct an oil analysis as stated in SC III.6 is completed. The most recent oil sample was taken on September 13, 2019 and the analysis indicates the oil does not require a change.

4. Design/Equipment Parameters – MI-ROP-B7196-2017 requires EUEXGEN-B to be equipped with a non-resettable hour meter. At the time of the inspection, EUEXGEN-B was equipped with a non-resettable hour meter. Records indicate the last operation was a 0.1 hour emergency run on June 18, 2020. The hour meter read 91,535 hours of total operating time.

5. Testing/Sampling – There are no testing and sampling requirements associated with this emission unit; therefore, this section is not applicable.

6. Monitoring/Recordkeeping – Records required by the ROP and federal regulation are maintained at the facility via field records and an electronic format utilizing a specialized computer software system. All RICE MACT records were complete and available during the inspection.

7. Reporting – All reports submitted pursuant to the ROP and RICE MACT were previously reviewed and documented with no noncompliance issues. All reports were received timely with proper certification.

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 maintenance, testing, recordkeeping, and previously received all reporting indicating all compliance requirements of 40 CFR Part 63 Subpart ZZZZ are being met.

C. EUEXGLYDEH – Glycol Dehydration Unit (dehy) with maximum process capacity of 11.458 MMscf/hr of natural gas. The dehy includes a natural gas fired reboiler with a heat input capacity of 0.5 MMBtu/hr. The dehy is equipped with a thermal oxidizer for primary pollution control. In the event the thermal oxidizer malfunctions, the dehy is equipped with a condenser for secondary pollution control. The condenser is also utilized during the startup of the facility's seasonal operations.

1. Emission Limits – Pursuant the conditions of the ROP, VOC emissions are limited to 108.0 lbs/day and 18.3 tons over a 12-month rolling time period. Benzene is limited to less than 0.9 megagrams (0.992 tons) per year. Records provided by the facility demonstrated compliance reporting February 2020 as the month with the greatest emissions and January 19, 2020 as the day with the greatest emissions. Total emissions for February 2020 was 11.4 lbs. (0.0057 tons) of VOC and 0.7 lbs (0.00035 tons) of benzene. Total emissions for January 19, 2020 was 2.1 lbs (0.001 tons) of VOC and 0.1 lbs (0.00005 tons) of benzene. According to facility records, the greatest facility throughput occurred on January 19. 2020. The 2019 MAERS submittal reported an annual Benzene total of 64.51 lbs (0.032 tons) and an annual VOC total of 782.03 lbs (0.39 tons) demonstrating compliance with the permitted limits.

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

3. Process/Operational Restrictions – The ROP establishes several process and operational restrictions which are listed below.

- **The natural gas fuel for the dehy shall not contain more than 20 grains of total sulfur per 100 cubic feet of natural gas [SC III.1]. Records maintained at the facility included gas analyses indicating compliance.**
- **The dehy shall not be operated unless the glycol separator is installed and operating properly and routes VOCs to the thermal oxidizer [SC III.2]. At the time of the inspection, a glycol separator was installed, connected to a thermal oxidizer for control, and the equipment appeared to be in good condition.**
- **The dehy shall not operate while the thermal oxidizer is malfunctioning for more than 4500 hours per 12-month rolling time period [SC III.3]. The hours of operation for thermal oxidizer and condenser are constantly monitored using a specialized computer software system. If the thermal oxidizer malfunctions, the emissions are automatically routed to the condenser. During the inspection timeframe, the thermal oxidizer was always operating while the facility was active.**
- **Stripping gas shall not be used in the dehy unit [SC III.4]. No stripping gas is utilized at the facility.**
- **The control device(s) shall be a thermal oxidizer, a condenser, or combination [SC III.8]. The**

facility shall not operate the dehy unit unless the thermal oxidizer is operating at a temperature of at least 760 °C (1400 °F) [SC III.5], including demonstration of continuous compliance [SC III.12], and the VOC destruction efficiency is at least 95% by weight [SC III.5]. The facility uses a thermal oxidizer as the primary source of air pollution control. The thermal oxidizer operational data is continuously monitored by a specialized computer software system. The resulting data indicates the thermal oxidizer temperature was always above 1400 °F during times of operation and VOC destruction efficiency was maintained. The lowest temperature recorded was 1443.3 °F, which occurred while the condenser was also being in combination.

- **The control device(s) shall be a thermal oxidizer, a condenser, or combination [SC III.8]. The facility shall not operate the dehy unit during a thermal oxidizer malfunction event unless the condenser exhaust temperature is 48.9 °C (120 °F) or less [SC III.6] include demonstrating of continuous compliance [SC III.12]. The facility uses a condenser as a secondary source of air pollution control in the event of a thermal oxidizer malfunction and for additional control during the startup of facility operations. The condenser operational data is continuously monitored by a specialized computer software system. The resulting data indicates the condenser exhaust temperature was always below 120 °F during times of operation. The highest condenser exhaust temperature recorded was 46.4 °F.**
- **The process vents from the dehy shall be vented to a control device or combination of control devices through a closed-vent system [SC III.7]. The facility shall control HAP emissions from the gas-condensate-glycol (GCG) separator vent unless BTEX emissions from the reboiler vent and the CGC separator are reduced to levels below emission limit thresholds [SC III.9]. During the field inspection, the dehy unit and all process vents including the reboiler vent and CGC vent were connected to a thermal oxidizer and condenser for emission control via a closed vent system (CVS). All the standards required to be a control vent system including proper lockout of bypass valves was verified during the inspection.**
- **The facility shall operate and maintain the dehy unit and associated air pollution control equipment in a manner consistent with safety and good air pollution control practices [SC III.10]. The control equipment must be operated and monitored in accordance to NESHAP HHH [SC III.11]. The facility had available records demonstrating proper operation and maintenance. No equipment malfunctions or repairs occurred during the inspection timeframe. The CVS is current with leak detection and repair (LDAR) requirements. The LDAR monitoring required is a no detectable emission (NDE) test procedure. The NDE testing of the CVS was last performed March 4, 2020 with no leaks above 500 ppm detected. Regular audio, visual, olfactory (AVO) inspections have been completed. The continuous monitoring system for the control parameters (CPMS) was certified on December 17, 2019.**

4. Design/Equipment Parameters – The ROP required design and equipment parameters are reviewed below.

- **The dehy unit shall be equipped with any combination of glycol pump(s) that have a combined capacity no greater than 12.8 gpm [SC IV.1]. The facility uses two 6 gpm glycol pumps for a total of 12 gpm which meets the ROP restriction.**
- **The facility shall not operate the dehy unit unless the glycol regenerator still is equipped with a properly installed and operated thermal oxidizer [SC IV.2]. The thermal oxidizer shall be designed to maintain a minimum retention time of 0.5 seconds [SC IV.3]. The facility shall install a monitoring device equipped with a continuous recorder to measure the operating parameters [SC IV.6]. The continuous parameter monitoring system shall measure and record monitoring parameters at least once per hour or at shorter intervals that are used to determine an hourly average [SC IV.5]. All emissions from the dehy unit and associated process equipment is connected via a CVS to a thermal oxidizer for primary control and to a condenser for secondary control in the event of a thermal oxidizer malfunction. The thermal oxidizer was designed by the manufacture to have a minimum retention time of 0.5 seconds if the equipment is operated and maintained properly. The operating parameters of the thermal oxidizer and condenser are constantly monitored by a specialized computer software system. The continuous parameter monitoring system (CPMS) was certified December 17, 2019. The CPMS logs data for an hourly average.**
- **The CVS shall be designed and operated to route all gases, vapors, and fumes to a control device [SC IV.4a]. The CVS shall operate with no detectable emissions [SC IV.4b]. All bypass valves must be equipped with a flow meter that initiates an alarm when the valve is opened and secured with a proper lock out device to prevent it being opened. During the facility inspection, bypass valves were properly locked, equipped with a flow meter and alarm, and no emissions were detected with an AVO inspection.**

5. Testing/Sampling – The ROP establishes several testing and sampling requirements outlined below.

- **The facility shall determine the composition, including the VOC and benzene content, of the natural gas processed in the dehy at least once every five calendar years [SC V.1]. The actual flow rate of natural gas to the dehy shall be determined [SC V.2]. The facility most recent gas analysis was February 12, 2019. The natural gas flow rate is monitored, and daily averages are recorded along with CPMS data with the specialized computer software system. During the inspection timeframe, the day with the greatest average daily flow rate of 141.4 MMscf/day occurred on January 19, 2020.**
- **Determination of the actual average BTEX emissions from the dehy controlled by the thermal oxidizer and/or condenser shall be made using GRI-GLYCalc utilizing actual operating conditions [SC V.3]. As an alternative to using GRI-GLYCalc, the facility could choose to conduct performance testing to demonstrate compliance with the BTEX emission limit [SC V.5]. For condenser control devices, the facility shall use the procedures documented in the GRI report [SC V.6]. The facility utilizes GRI-GLYCalc to determine the emission factors utilized to calculate actual average BTEX emissions. The GRI-GlyCalc determination utilizing the most recent gas analysis and actual operating conditions collected by the CPMS was submitted with the 2019 MAERS submittal.**
- **The facility shall perform NDE testing on the CVS [SC V.4]. The NDE testing of the CVS was last performed March 4, 2020 with no leaks above 500 ppm detected.**

6. Monitoring/Recordkeeping – The ROP establishes numerous monitoring and recordkeeping requirements which are listed below.

- **The facility shall monitor and record the thermal oxidizer operating temperature on a daily basis [SC VI.1], the condenser exhaust gas temperature on a daily basis [SC VI.2], the total hours of operation of the dehy on a monthly and 12-month rolling time period [SC VI.3], the total hours of operation of the dehy when the thermal oxidizer is malfunctioning on a monthly and 12-month rolling time period [SC VI.4], and the amount of natural gas processed by the dehy on a daily and annual basis [SC VI.5]. The CPMS and associate specialized computer software system is utilized to monitor and record these parameters. Records demonstrating compliance was provided to AQD.**
- **For the dehy, The facility shall calculate, record and retain daily VOC emissions [SC VI.6], monthly and 12-month rolling time period VOC and benzene emissions [SC VI.7], verification of a 95% VOC destruction efficiency by the thermal oxidizer [SC VI.8], an average daily temperature of the thermal oxidizer greater than the established minimum [SC VI.9], an average daily temperature of the condenser less than the established maximum [SC VI.9], and verification of BTEX emission reduction by the condenser [SC VI.10]. The facility provided records from the CPMS and subsequent calculations demonstrating compliance.**
- **The facility shall conduct initial and continuing (every 5 years) NDE inspections, annual AVO inspections, and LDAR protocol of the CVS according to NESHAP HHH requirements [SC VI.11]. NESHAP HHH required written LDAR inspection plans and plan dictated NDE inspections shall be completed for any difficult to inspect [SC VI.13] and unsafe to inspect [SC VI.12] components of the CVS. The last LDAR NDE testing of the CVS was last performed March 4, 2020 with no leaks above 500 ppm detected. The facility has a LDAR plan dated October 15, 2015 that identifies all LDAR tag locations and numbers, list no components as difficult nor unsafe to inspect, and established protocol for delay of repair leaks. During the field inspection, LDAR tags were present, easily visible, and in good condition, no open-ended lines were noted, and proper seal or closure mechanisms appeared to be properly installed to satisfy the lock-out procedure requirements for bypass valves.**
- **The data recorded with the CPMS shall be used to calculate daily averages of each performance parameter [SC VI.14]. The minimum and/or maximum performance parameters chosen to indicate the control device(s) achieves emission limits shall be established via facility performance testing, manufactures performance testing, and/or manufacture design analysis [SC VI.15]. A control device deviation is determined to have occurred when the monitoring data is insufficient, the device operates outside of established performance parameters, and/or the emission reduction efficiency does not meet the requirement [SC VI.16]. A CVS deviation is determined to have occurred when a flow indicator indicates stream flow has been diverted away from the control device, a bypass valve position has changed, and/or a bypass valve seal or closure has been broken, removed, or the lock-out key has been moved [SC VI.17]. A deviation shall be deemed a violation if the facility fails to properly apply control to achieve the required operating parameter limits [SC VI.18]. Records provided by the facility indicated the CPMS was**

utilized to measure and record performance parameters. No deviation nor excursions were reported during the inspection period.

- **The facility shall maintain records in accordance with NESHAP HHH [SC VI.20] including CPMS monitoring data [SC VI.21a], daily average value of each performance parameters [SC VI.21b], 30 day rolling average of condenser efficiency [SC VI.21c], compliance determination calculations and hourly records [SC VI.21d], hourly records of the duration that stream flow is diverted away from the control device or that the control device is not working [SC VI.21e], records of the monthly visual inspection of the bypass valves seals or mechanical closures [SC VI.21f], and records of bypass valve position change and/or seal breaks [SC VI.21f]. Records provided by the facility demonstrated proper CPMS data and calculations are maintained. There were no bypass valve diversions nor seal breaks during the period of inspection.**
- **The facility shall maintain records identifying all parts of the CVS designated as unsafe to inspect [SC VI.22] or difficult to inspect [SC VI.23] as well as an explanation validating the designation and an inspection plan. No CVS components at the facility are designated as unsafe nor difficult to inspect.**
- **The facility shall maintain detailed records of LDAR inspections resulting in a leak detected including instrumentation and operator information [SC VI.24a], dates of leaks identified and repair attempts [SC VI.24b], maximum instrument reading after the leak is repaired or deemed unrepairable via a method 21 inspection [SC VI.24c], delay of repair data [SC VI.24d], facility official which authorized the delay of repair [SC VI.24e], expected date of repair for components on the delay of repair list [SC VI.24f], dates and duration of shutdowns that occurred but repairs were not completed [SC VI.24g], and the date of final repair [SC VI.24h]. The facility shall keep records indicating the date of NDE LDAR inspections in which no leaks were detected [SC VI.25]. The facility maintains records of all NDE LDAR inspections and submits the information with the semi-annual reports. No leaks have been detected.**
- **The facility shall maintain records of any process equipment, control devices, or monitoring equipment malfunctions including dates, duration, and corrective actions taken. The facility includes this information with the semi-annual reports. No malfunctions were reported.**

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

8. Stack/Vent Restrictions – There are three stacks associated with this emission unit which 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 NESHAP HHH. Based upon the onsite inspection and review of records, AQD staff considers the facility to be in compliance with the federal regulation.

D. FGRRCOMP – Two Ingersoll Rand, Model 410-KVR-TE, four-cycle, lean burn, spark ignition, natural gas-fired reciprocating internal combustion engines rated at 3,750 HP each. The serial number of EUEXCOMP-A is 410 KRV-160A. The serial number of EUEXCOMP-B is 410 KRV-161A.

1. Emission Limits – Pursuant the conditions of the ROP, NOx emissions are limited to 99.2 lbs/hr. To demonstrate compliance, a stack test for EUEXCOMP-A was performed on August 19, 2019 with AQD oversight. The stack test report indicated the NOx emissions for EUEXCOMP-A to be 79.31 lbs/hr, which is 79.9% of the allowable emissions. A stack test on EUEXCOMP-B was performed on April 23, 2019 with AQD oversight and indicated a 73.87 NOx emission rate, which is 79.9% of the allowable emissions.

2. Material Limits – The natural gas fuel for the compressor engines shall not contain more than 20 grains of total sulfur per 100 cubic feet of natural gas. Gas analyses records maintained at the facility indicated compliance with the ROP.

3. Process/Operational Restrictions –.The facility shall maintain an AQD approved Preventive Maintenance Plan. Thorough maintenance records maintained at the facility indicating compliance with the ROP.

4. Design/Equipment Parameters – The compressor engines shall be designed so that each engine does not emit more than 12 grams of NOx per brake horsepower hour at 100% speed and 100 % torque. Each compressor engine is rated for 3,750 hp resulting in 12 grams/hp-hr equaling 99.2 lbs/hr. The stack tests demonstrate compliance with this parameter.

5. Testing/Sampling – Stack testing is required every five years to demonstrate compliance with the NOx

emission limits. A stack test on EUEXCOMP-A was completed on August 19, 2019 and a stack test on EUEXCOMP-B was completed on April 23, 2019. An analysis of the natural gas burned in the compressor is required every five years. A gas analysis was available during the field inspection indicating compliance.

6. Monitoring/Recordkeeping –The facility shall retain maintenance records per the AQD approved Preventative Maintenance Plan. Thorough maintenance records were available during the field inspection demonstrating compliance.

7. Reporting – The facility is required to submit an annual certification, semiannual certification, and testing protocol and reports. All reporting submitted pursuant to conditions of the ROP were previously reviewed and documented by AQD staff.

8. Stack/Vent Restrictions – There are two stacks associated with this flexible group which appeared to be installed in accordance with the specifications contained in the ROP.

9. Other Requirements – The facility shall maintain the engines per the AQD approved Preventative Maintenance Plan. Thorough maintenance records were available during the field inspection demonstrating compliance.

E. FGMACT DDDDD – Requirements for existing boilers and process heaters at a major source of HAPs per 40 CFR Subpart DDDDD (MACT DDDDD). The emission units in this flexible group are EUEXBOILER, EUEXHTR-A, and EUEXHTR-B. EUEXBOILER is a 2.51 MMBtu/hr Cleaver Brooks natural gas boiler built in 1980 with the model number CB700-50 and serial number L-68920. EUEXHTR-A and EUEXHTR-B are Sivalls natural gas fired withdrawal heaters rated for 10 MMBtu/hr.

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

2. Material Limits – The facility shall only burn natural gas. Records available during the field inspections demonstrate compliance.

3. Process/Operational Restrictions –The facility shall maintain equipment including air pollution control equipment and monitor equipment in a manner consistent with safety and good air pollution control practices. A complete tune-up every 5 years for the EUEXBOILER and a complete tune-up for the EUEXHTR-A and EUEXHTR-B every 2 years. The tune-up requirements include an inspection and maintenance of the burners, flame pattern, and the air-to-fuel ratio controllers, optimization of emission reduction, and effluent stream concentration measurements. The facility provided maintenance records during the field inspection and further detail via email. EUEXBOILER had a complete inspection and tune-up by a third-party contractor on August 9, 2019. EUEXHTR-A and EUEXHTR-B has a complete inspection and tune-up by a third-party contractor on February 25, 2020.

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 facility shall keep all annual and semiannual reports as well as all notifications and maintenance records on site or accessible from the site. The facility was able to provide all the records I requested in a timely manner.

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 MACT DDDDD.

EVALUATION SUMMARY

Conclusion – Based upon the Full Compliance Evaluation, it appears the source was in compliance with ROP No. MI-ROP-B7196-2017 at the time of the evaluation.

NAME _____ DATE _____ SUPERVISOR _____