

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

B719663135

<b>FACILITY:</b> ANR Storage Company - Excelsior Compressor Station		<b>SRN / ID:</b> B7196
<b>LOCATION:</b> 4936 State Rd. NE, KALKASKA		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> KALKASKA		<b>COUNTY:</b> KALKASKA
<b>CONTACT:</b>		<b>ACTIVITY DATE:</b> 05/10/2022
<b>STAFF:</b> Sharon LeBlanc	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Onsite inspection activities for FY 2022 FCE. Data review to be completed and reported independently. sgl		
<b>RESOLVED COMPLAINTS:</b>		

On May 10, 2022, AQD Gaylord District Staff conducted a scheduled field inspection of ANR Storage Company (ANR) – Excelsior Compressor Station (B7196) located at 4936 State Road NE, Kalkaska, Kalkaska County, Michigan, 49646. The purpose of the site inspection was to conduct onsite activities required to complete the FY 2022 full compliance evaluation (FCE). The last inspection was conducted on August 12, 2020. Record review is being conducted independently, and will be reported in a separate report.

The Facility presently operates under Renewable Operating Permit (ROP) MI-ROP-B7196-2017. A ROP renewal application was received on August 31, 2021. The application was determined administratively complete and the application shield was issued on September 15, 2021.

ANR facility personnel present to accompany AQD staff during the plant inspection included: Eric Hunter, Benjamin Samuelkutty, and Gary Schram.

#### FACILITY DESCRIPTION

The Excelsior Compressor Station is an existing natural gas compression and storage located in an undeveloped/unpopulated area in Excelsior Township.

The facility is 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. Surrounding property includes the Pere Marquette State Forest as well as undeveloped parcels.

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 During the winter, the gas is withdrawn and transported by pipeline to customers for distribution.

Based on the reported equipment installation dates, it appears that the Facility was constructed in 1980-1981, with the glycol dehydration unit installed in 1989. This was confirmed in readily available aerials, which indicated the Facility was constructed prior to 1985.

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.

At the time of the May 10, 2022, site inspection, the Facility was compressing and injecting for storage. The glycol dehydration unit was not in operation and is not anticipated to be in operation until November 2022.

### EQUIPMENT

Equipment at the facility includes two compression engines (EUEXCOMP-A and EUEXCOMP-B), one emergency generator engine (EUEXGEN-B), a natural gas (NG) fired boiler (EUEXBOILER), two natural gas fired withdrawal heaters (EUEXHTR-A and EUEXHTR-B), and a glycol dehydration unit (EUEXGLYDEH) equipped with a thermal oxidizer for primary control and a condenser for secondary control in the event the thermal oxidizer fails.

Permitted equipment onsite includes:

- EUEXGEN-B –

One Caterpillar G399, four-cycle, Rich Burn (RB), Spark Ignition (SI), NG-fired, Reciprocating Internal Combustion Engine (RICE), rated at 490 HP used to power an emergency electricity generator. The engine's serial number is 49C703.

Note- a second unit is present onsite but was previously decommissioned. There is no intent to bring the unit back online.

- EUEXGLYDEH –

Glycol Dehydration Unit (dehy) with maximum process capacity of 11.458 MMscf/hr of NG. The dehy includes a NG- 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.

- FGEXCOMP (EUEXCOMP-A and EUEXCOMP-B) –

This FG consists of two Ingersoll Rand, Model 410-KVR-TE, four-cycle, Lean Burn (LB), SI, NG-fired RICE rated at 3,750 HP each. The serial numbers of EUEXCOMP-A and EUEXCOMP-B are 410 KRV-160A and 410 KRV-161A, respectively.

- 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 identified in the ROP as being in this flexible group include:

- EUEXBOILER,
- EUEXHTR-A, and
- EUEXHTR-B.

EUEXBOILER is a 2.51 MMBtu/hr Cleaver Brooks NF-fired boiler installed in 1980 with the model number CB700-50 and serial number L-68920. EUEXHTR-A and EUEXHTR-B are Sivalls NG- fired withdrawal heaters rated for 10 MMBtu/hr.

Note that in addition to the three previously noted EUs, that EUEXGLYDEH (reboiler only) with a maximum heat input capacity of 0.5 MMBtu/Hr is subject to the Boiler MACT and will be added to the ROP FG during the ROP Renewal process.

Unpermitted pieces of equipment onsite include:

Equipment	Description	Exemption
EUTANKCB-A	12,600-gallon condensate/brine tank	R284(e)
EUTANKCB-B	12,600-gallon condensate/brine tank	R284(e)
EUEXTANK-EG	5515-gallon ethylene glycol storage tank	R284(i)
EUEXTANK-DG-A	2300-gallon diethylene glycol storage tank	R284(i)
EUEXTANK-DG-B	2900-gallon diethylene glycol storage tank	R284(i)
EUEXHEATER-1	Three heaters, 0.012 MMBtu/hr each	R282(b)(i)
EUEXHEATER-2	Two Bruest heaters, 0.012 MMBtu/hr each	R282(b)(i)
EUEXWTRHTR-1	Water heater, 0.05 MMBtu/hr	R282(b)(i)
EUEXWTRHTR-2	Water heater, 0.05 MMBtu/hr	R282(b)(i)
EUEXMETHANOL	16,800-gallon Methanol storage tank	R284(n)
NA	110-gallon Glycol	R284(i)
NA	110-gallon Corrosion Inhibitor	R284(c)

NA	9 lube/minilube oil, used oil, mist oil and glycol tanks; capacity of 177-12,600-gallons	R284(c)
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**PERMITTING**

District records indicate that the following permits have been issued and incorporated into MI-ROP-B7196-2017:

PTI No.	Approval Date	Voided
6-12	2/28/2012	3/21/2013
3-01	1/31/2001	3/7/2006
77-97	6/10/1998	10/20/1999
67-80	4/15/1980	10/20/1999

**Applicable Federal Requirements:**

The Facility is reported to be subject to Prevention of Significant Deterioration (PSD) regulations under 40 CFR 52.251, as Potential to Emit (PTE) for EUEXCOMP-A and EUEXCOMP-B exceeded 250 tons per year NOX.

Note that unlike ANR Rapid River CPF (B7197), there is no reference to an US EPA PSD having been issued for this Facility by US EPA.

**Applicable Federal Requirements:**

EMISSION UNIT	40 CFR SUBPART	TITLE
Source	Part 70	State Operating Permit Program
EUEXDEHY	40 CFR Part 63, Subpart HHH	Natural Gas Transmission and Storage Facilities (Major source of HAPs)
EUEXBOILER, EUEXHTR-A, EUEXHTR-B	40 CFR Part 63, Subpart DDDDD	Industrial, Commercial and Institutional Boilers and Process Heaters (BOILER MACT)

<p><b>EUEXGLYDEH (reboiler only)**</b></p>		
<p><b>EUEXGEN-B*</b></p>	<p><b>40 CFR Part 63, Subpart A and ZZZZ</b></p>	<p><b>National Emission Standards for HAPs for Stationary Reciprocating Internal Combustion Engines (RICE)</b></p>

\*Note that FGEXCOMP (EUEXCOMP-A and EUEXCOMP-B) are reported to be exempt from the RICE MACT under 63.6590(b)(3)(ii), which exempts existing SI 4SLB stationary RICE with a site rating of more than 500 brake Hp.

\*\* EPA Applicability determinations by US EPA Region 6 dated February 4, 2015 and February 10, 2016, were reviewed. The referenced documents indicated that the reboiler for the glycol dehydration unit is also subject to Subpart DDDDD (Boiler MACT)

The 2021 ROP renewal application has identified the following Federal New Source Performance Standards (NSPS) an provided the following reasons for not being subject to the regulations under the referenced subpart:

<p><b>40 CFR SUBPART</b></p>	<p><b>COMMENT</b></p>
<p><b>40 CFR Part 60 Subpart DC – Small Steam Generating Units</b></p>	<p><b>Boiler onsite has a design heat input of less than 2.9 MW (10 MMBtu/hr)</b></p>
<p><b>40 CFR Part 60 Subpart K – Storage Vessels for Petroleum Liquids</b></p>	<p><b>Storage tanks at the facility have storage capacities below 40,000 gallons.</b></p>
<p><b>40 CFR Part 60 Subpart Ka – Storage Vessels for Petroleum Liquids</b></p>	<p><b>Storage tanks at the facility have storage capacities below 40,000 gallons.</b></p>
<p><b>40 CFR Part 60 Subpart Kb – Volatile Organic Liquid Storage Vessels</b></p>	<p><b>Storage tanks at the facility have storage capacities below 75 cubic meters.</b></p>
<p><b>40 CFR Part 60 Subpart KKK – Equipment Leaks of VOC from Onshore NG Processing Plants</b></p>	<p><b>Facility is not a NG processing plant and does not engage in extraction of NG field liquids from field gas or fractionate mixed NG liquids to natural NG products.</b></p>

<b>40 CFR Part 60 Subpart LLL – Onshore NG Processing: SO2 Emissions.</b>	<b>Does not apply because the Facility does not have any gas sweetening or sulfur recovery equipment.</b>
<b>40 CFR Part 60 Subpart IIII – Compression Ignition Internal Combustion Engines (CIICE)</b>	<b>No diesel fired, stationary, CI ICE onsite.</b>
<b>40 CFR Part 60 Subpart JJJJ – Spark Ignition ICE</b>	<b>Reports that all SI ICE &gt;25 HP EU were reported to have been installed prior to June 12, 2006.</b>
<b>40 CFR Part 60 Subpart OOOO – Crude Oil and NG Production, Transmission and Distribution</b>	<b>The Facility operates no compressors prior to the point of NG custody transfer</b>
<b>40 CFR Part 60 Subpart KKKK – Stationary Combustion Turbines</b>	<b>No Turbines in use at the Facility.</b>

National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations promulgated pursuant to Section 112 of the Clean Air Act (CAA) are found in 40 CFR parts 61 and 63. NESHAP or Maximum Achievable Control Technology (MACT) standards apply to major source of Hazardous Air Pollutants (HAPs). Major sources of HAP are defined to have either > 10 tons/Year of any individual HAP, or >25 tons of combined HAPs. The Facility is reported to not be subject to the following subparts:

<b>40 CFR SUBPART</b>	<b>COMMENT</b>
<b>40 CFR Part 61, Subpart V, Standards for Equipment Leaks</b>	<b>Provisions of subpart apply to sources intended to operate in volatile hazardous air pollutant (VHAP) service. The facility does not have any sources that operate in VHAP service.</b>
<b>40 CFR Part 63, Subpart HH, NESHAP from Oil and Natural Gas Production Facilities</b>	<b>Facility reports being a transmission and storage Facility and is not an oil and gas production facility as defined in subpart.</b>

<p><b>40 CFR Part 63, Subpart HHH, NESHAP from NG Transmission and Storage Facilities</b></p>	<p>Facility is potentially subject to this subpart as the Facility is a major source of HAPs and operates a glycol dehydrator (affected source). Because benzene emissions do not exceed 0.90 megagrams/year (0.992 ton/yr) and compliance was demonstrated prior to October 15, 2015, and reports that they will continue to demonstrate compliance in the future.</p>
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### COMPLIANCE EVALUATION

#### **EUEXGEN-B –**

One Caterpillar G399, four-cycle/stroke 4SRB), SI, NG-fired RICE, rated at 490 HP used to power an emergency electricity generator. The engine’s serial number is 49C703.

The engine appeared to be in good working order, with operational log sheets located at the EU. No emission limits, material limits, stack/vent restrictions or testing requirements are associated with the EU.

At the time of the May 10, 2022, site inspection, the operational log indicated that the unit had not operated under emergency conditions for the 2022 calendar year (to date). The unit conducts monthly testing, the most recent being the previous day (May 9, 2022). Total hours of operation for 2022 at the time of the inspection was 8.2 hours. The hour meter itself indicated a total of 91575.6 hours. Total hours at the time of the August 12, 2020, site visit was reported to be 91535 hours. Indicating total use of 40.6 hours for the previous approximately 21-months suggesting compliance with non-emergency operational limits of SC III.2-4.

#### Process/Operational Restrictions –

EUEXGEN-B is subject to the operational and maintenance requirements of the Federal RICE MACT (40 CFR Part 63 Subpart ZZZZ). SC III.1 -3 limits the hours of operation for non-emergency situations (50 hours) and maintenance checks and readiness testing (100 hours). Operational log onsite indicated compliance with the referenced limits.

As previously indicated, the operational records for 2022 indicated that the EUEXGEN-B has operated for a limited time for the calendar year, with total hours to date well within the previously indicated limits. Monthly “crank tests” are reported to be approximately 1.3 hours in length with engine startup activities of less than 19 minutes in compliance with SC III.7.

Maintenance activities (SC III.4) are conducted per workorders issued and are maintained electronically. Consistent with the previous inspection, the Facility staff reports that they make use of the oil analysis option to (SC III.5 & 6) to extend annual oil changes. The most recent oil sample were reported to be collected on September 13, 2019, September 17, 2020 and June 9, 2021.

**Design/Equipment Parameters –**

MI-ROP-B7196-2017 requires EUEXGEN-B to be equipped with a non-resettable hour meter (IV.1). At the time of the inspection, EUEXGEN-B was equipped with a non-resettable hour meter. Records indicate the last operation was May 9, 2022, for 1.3 hour “crank test”. The hour meter read 91,575.6 hours of total operating time.

**Testing –**

No testing requirements for EUEXGEN-B are included in the ROP.

**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 will be requested and reviewed independent of this document.

**Reporting –**

Reports submitted pursuant to the ROP (SC VII.2 and VII.3) and Federal air regulations (SC IX.1) were reported to be timely, reviewed upon receipt and documented.

**Other Requirements –**

SC IX.1 is a high-level citation for 40 CFR Part 63, Subpart ZZZZ. Limited observations made at the time of the site inspection, indicated proper recordkeeping to meet requirements of 40 CFR Part 63 Subpart ZZZZ are being met.

**EUEXGLYDEH –**

Glycol Dehydration Unit (dehy) with maximum process capacity of 11.458 MMscf/hr of natural gas. The dehy includes a NG- fired reboiler with a heat input capacity of 0.5 MMBtu/hr. The unit is considered a closed vent system (CVS). No modifications to the system have been made since the previous site inspection.

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. Note this combination of control devices meets the requirements of SC III.7. The units are reported to be operated in compliance with SC III.10. The condenser is also utilized during the startup of the facility’s seasonal operations.

EUEXGLYDEH was not in operation at the time of the May 10, 2022, site inspection. Facility staff report that the system operates during the withdrawal season and is anticipated to start back up again in November 2022.

**Emission Limits –**

Emission limits for EUEXGLYDEH include the following parameters:

- VOC (SC I.1 & 2),
- Benzene (SC I.3) and



- BTEX (SC I.4)

**Emissions and will be evaluated as part of the data review.**

**Material Limits –**

**No material limits exist for EUEXGLYDEH.**

**Process/Operational Restrictions –**

**The ROP establishes several process and operational restrictions which are listed below;**

- The NG fuel for the dehy shall not contain more than 20 grains of total sulfur per 100 cubic feet of natural gas (SC III.1).

**The Facility reports the most recent gas analysis was collected on March 1, 2019, and the report dated March 6, 2019. Hydrogen Sulfide concentrations of less than detection limits (0.1 ppm or 0.06 grains) were reported. This data confirms that total sulfur concentrations will be in compliance with permit limits.**

- 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 May 10, 2022, site inspection, a glycol separator was installed, connected to a thermal oxidizer for control, and the equipment appeared to be in good condition. Facility staff reported that at no time since the previous inspection has the thermal oxidizer been shut down or bypassed.**

- EUEXGLYDEH shall not operate while the thermal oxidizer is malfunctioning for more than 4500 hours per 12-month rolling time period (SC III.).

**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. Facility staff reported that no malfunctions of the thermal oxidizer occurred during the previous operational season and that the Facility is in compliance with the permit condition.**

- Stripping gas shall not be used in the dehy unit (SC III.).

**Facility staff report that no stripping gas is utilized at the facility.**

- The control device(s) shall be a thermal oxidizer, a condenser, or combination (SC III.7 and 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 for the CVS. The thermal oxidizer operational data is continuously monitored by a specialized computer software system. Facility Staff report that the thermal oxidizer operates at approximately 1450 °F, and that there are alarms at select temperatures below that temperature so corrective actions can be taken prior to 1400 °F and below, when the unit would be in noncompliance. Demonstration of**

continuous compliance would be met by providing documentation of thermal oxidizer temperatures for periods of operation. As the dehydration system was not operating at the time of the inspection, operating data could not be obtained at the time of the site inspection.

Facility Staff report that the GLYCalc data has indicated a 95% VOC destruction efficiency for the thermal oxidizer and meets the requirements of SC III.5. District Files contain copies of records indicating that BTEX levels from the thermal oxidizer were confirmed during testing activities conducted February 18, 2015. The activities were reported to AQD on April 14, 2015, and reported again in Subpart HHH Notification of compliance dated April 11, 2016, received by AQD on April 13, 2016.

- The control device(s) shall be a thermal oxidizer, a condenser, or combination (SC III.7 and 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).

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 is reported to be operating at all times EUEXGLYDEH operates, and is maintained at an operating temperature below 120 °F. The condenser operational data is continuously monitored by a specialized computer software system. The resulting condenser exhaust temperature data is used to demonstrate compliance with SC III.6 and III.12.

- The process vents from the dehy shall be vented to a control device or combination of control devices through a cvs (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 CVS. The standards required to be a CVS including proper lockout of bypass valves have been verified.

- 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 with NESHAP HHH (SC III.11).

Facility staff report that records demonstrating proper operation, maintenance and compliance are available electronically. No equipment malfunctions or repairs were reported to have occurred during the recent operating season.

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 10, 2021, with no leaks above 500 ppm detected. Records of reports include:

Report Type	Report Date	Comments

LDAR	10/15/2015	LDAR Plan
LDAR	4/14/2015	No Leaks <500 ppm
LDAR	1/25/2017	No Leaks <500 ppm
LDAR	3/4/2020	No Leaks <500 ppm
LDAR	03/10/2021	No Leaks <500 ppm

District Files indicate that initial LDAR activities were conducted on February 18, 2015, with identification and labeling of LDAR monitoring points. The data was reported to be used to determine the LDAR Plan dated October 15, 2015.

The continuous parameter monitoring system (CPMS) for the control parameters associated with EUEXGLYDEH was certified on:

Report Type	Report Date	Comments
CPMS certification	December 17, 2019	None
CPMS certification	November 24, 2020	None
CPMS certification	March 18, 2021	None
CPMS certification	March 15, 2022	None

#### 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) with a combined capacity no greater than 12.8 gpm (SC IV.1.)

The facility reports use of two glycol pumps on an as needed basis, which is normally one at a time. Onsite staff indicated that the pumps are approximately 5 gpm, which even with both operating is in compliance with 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).

**All emissions from the dehy unit and associated process equipment is connected via the CVS to a thermal oxidizer for primary control and a condenser for secondary control in the event of a thermal oxidizer malfunction. The thermal oxidizer was designed by the manufacturer with a minimum retention time of 0.5 seconds if operated and maintained properly.**

- The facility shall install a monitoring device equipped with a continuous recorder to measure the operating parameters (SC IV.6). The CPMS 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).

**The operating parameters of the thermal oxidizer and condenser are constantly monitored by a specialized computer software system. The CPMS was last certified March 15, 2022. The CPMS logs data for hourly averages.**

- 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 NDE (SC IV.4b).

**As previously indicated, the CVS is designed to route all gases, vapor and fumes to the thermal oxidizer. During the facility inspection, bypass valves were properly locked. LDAR inspections/reporting was previously summarized in this document.**

#### **Testing/Sampling –**

**The ROP establishes several testing and sampling requirements discussed below.**

- The facility shall determine the composition, including the VOC and benzene content, of the natural gas processed in EUEXGLYDEH at least once every five calendar years (SC V.1).

**The August 12, 2020, site inspection report indicated that the most recent gas analysis was conducted on February 12, 2019. The next required testing would be February 12, 2024.**

- The actual flow rate of NG to EUEXGLYDEH shall be determined by the Facility (SC V.2).

**The NG flow rate is monitored, and daily averages are recorded along with CPMS data with the specialized computer software system.**

- The Facility is required to determine the actual average BTEX emissions from the EUEXGLYDEH controlled by the thermal oxidizer and/or condenser (SC V.3).

**The Facility reports using GRI-GLYCalc with actual operating conditions to determine BTEX emissions from EUEXGLYDEH. 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). District records indicate that stack testing to determine emissions and develop a performance curve was completed on February 18, 2015.**

- For condenser control devices, the facility shall use the procedures documented in the GRI report for determining inputs to GRI-GlyCalc version 3.0 or higher to generate a condenser performance curve (SC V.6).

**The facility reports utilizing 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 for the 2021 CY was submitted with the 2022 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, 2022, with no leaks above 500 ppm detected.

### **Monitoring/Recordkeeping –**

**The ROP establishes numerous monitoring and recordkeeping requirements which are listed below. The CPMS and associate specialized computer software system is utilized to monitor and record these parameters. Verification shall be completed as part of the data review and reported independently.**

- The Facility reports monitoring and recording the following parameters on a daily basis in compliance with permit conditions:
  - thermal oxidizer operating temperature (SC VI.),
  - The condenser exhaust gas temperature during times of thermal oxidizer malfunction. (SC VI.2)
  - The amount of NG processed by the EUEXGLYDEH (note that annual NG processed is also monitored and recorded) (SC VI.5)
- The Facility reports monitoring and recording the following parameters on a monthly and 12-month rolling time period in compliance with permit conditions:
  - The total hours of operation of the dehy (SC VI.3), and
  - The total hours of operation of the dehy when the thermal oxidizer is malfunctioning (SC VI.4).
    - The facility shall calculate, record and retain the following:
      - 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),
      - Average daily temperature of the thermal oxidizer (SC VI.9),
      - Average daily temperature of the condenser (SC VI.9), and
      - Verification of BTEX emission reduction by the condenser (SC VI.1).

**Records from the CPMS and subsequent calculations demonstrating compliance will be reviewed and reportedly independently. Verification of the 95% destruction efficiency for the thermal oxidizer was determined using GRI-GlyCalc.**

- 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).

**Reports submitted were previously summarized in this document and appear to be in general compliance with permit conditions. LDAR tags were present, visible and appeared to be in good condition at the time of the May 10, 2022, site inspection.**

- 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 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. The last LDAR NDE testing of the CVS was last performed March 4, 2022, with no leaks above 500 ppm detected.**

**During the August 12, 2020, field inspection, LDAR tags were reported 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. No changes were reported by the Facility, nor noted during the May 10, 2022, site inspection.**

**Facility staff reported compliance with the following conditions:**

- 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).
- 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].

**The above records will be requested for review independent of the onsite 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.

**Previous reports and confirmation during the site visit indicated 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:
  - Leaks 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 unreparable 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 reported to have been detected. All applicable requirements under SC VI.24 and VI.25 are maintained by the Facility.**

- 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. (SC VI.26)

**No malfunctions were reported for the previous season by onsite Facility staff. The Facility maintains records electronically and are readily available upon request.**

#### **Reporting –**

**Reports submitted pursuant to the ROP (SC VII.2 and VII.3) and Federal air regulations (SC IX.1) were reported to be timely and are reviewed at the time of receipt and documented.**

#### **Stack/Vent Restrictions –**

**There are two stacks associated with EUEXGLYDEH with restrictions. They include SVEX008 (condenser) and SVEX009 (oxidizer). Both visually appear to be installed in accordance with the specifications contained in the ROP (SC VIII.1 & 2).**

**Other Requirements –**

Other requirements associated with EUEXGLYDEH as outlined in SC IX.1 through 3 shall be addressed as part of the data review for the FCE completion.

SC IX.4, requires preparation of a site-specific monitoring plan to address the monitoring system design, data collection and the QA/QC elements for the CPMS. The referenced document identified as the Subpart HHH Site Monitoring Plan, version 01, effective date December 21, 2015, is of record for the Facility and appears in general compliance with the permit condition. No more recent version was identified in electronic records for the Facility.

**FGRRCOMP (EUEXCOMP-A and EUEXCOMP-B)–**

Two Ingersoll Rand, Model 410-KVR-TE, four-cycle, LB, SI, NG-fired RICE rated at 3,750 HP each. At the time of the May 10, 2022, site inspection EUEXCOMP-A was operating, EUEXCOMP-B was not.

Engine	Serial No	Hours of Operation*
EUEXCOMP -A	410 KRV-160A	11.1
EUEXCOMP-B	410 KRV-161A	423

\*The hours reflect hours since the last rebuild.

Operational Parameters for EUEXCOMP-A at the time of the May 10, 2022, site inspection included the following:

Parameter	Rate
HP	2503
RPM	316
Torque Act.	74.4
Throughput	45.7 MMSCFD
Total Hours	11.1

**Emission Limits(s) –**



The ROP identifies NOx emission limits for each engine in FGEXCOMP of 99.2 lbs/hr (SC I.1). To demonstrate compliance with the emission limits, the Facility is required to conduct stack testing per SC V.1. the most recent verification testing is summarized below:

Engine	Test Date	NOx Emissions (lb/hr)	Next Test Date (SC V.1)
EUEXCOMP-A	August 19, 2019	79.31	August 19, 2024
EUEXCOMP-A	October 14, 2014	66.84	October 14, 2019
EUEXCOMP-B	April 23, 2019	73.87	April 23, 2024
EUEXCOMP-B	August 4, 2014	85.81	August 4, 2019
Limit	NA	99.2	NA

#### Material Limits –

SC II.1 requires that the NG 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 the last gas analysis was completed on March 1, 2019 (reported March 6, 2019). Hydrogen sulfide concentrations were reported below 0.1 ppm (0.006 grains). This data would confirm compliance with the limit.

#### Process/Operational Restrictions –

SC III.1 requires the facility shall maintain an AQD approved Preventive Maintenance Plan for FGEXCOMP. The most recent copy of the referenced document was received on January 9, 2017. The document indicates that the document is reviewed annually by the Facility and revised should it be determined necessary.

#### 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 (SC IV.1). 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.

#### Testing/Sampling –

Per V.1, the Facility is required every five years to demonstrate compliance with the NOx emission limits. As previously noted stack testing for EUEXCOMP-A and EUEXCOMP-B was most recently completed on August 19, 2019 and April 23, 2019, respectively. The next required testing will be due in 2024.

Analysis of the NG burned in the compressors is required every five years (SC V.2) and is used to show compliance with total sulfur limits in SC II.1. Gas analysis was conducted on March 5, 2019, the next test is not due until March 5, 2024.

#### Monitoring/Recordkeeping –

The facility is required to retain records of preventative maintenance activities per the AQD approved Preventative Maintenance Plan (PMP) (SC VI.1). Facility staff report that maintenance activities for the engines in FGEXCOMP are conducted per the PMP in compliance with SC IX.1 using an electronic work order system to ensure compliance with ROP and Federal requirements. The records are available electronically and will be evaluated during the data review portion of the FCE.

#### Reporting –

Under the ROP, the Facility is required to submit the following documentation:

- Annual compliance certification (SC VII.3)
- Semi-annual compliance certification (SC VII.2)
- Test Protocols (SC VII.4)
- 30-day notification of testing (SC VII.4)
- 7-day notification of testing activities (SC VII.5) and
- Testing reports (SC VII.6)

Copies of the referenced reporting appear to have been submitted in a timely manner and were reviewed upon receipt and documented by AQD staff.

Stack/Vent Restrictions – There is one stack associated with each of the two compressor engines associated with this FG. Both stacks visually appear to be installed in compliance with the requirements of SC VIII.1 and SC VIII.2.

#### FGMACT DDDDD –

This FG contains the requirements for existing boilers and process heaters at a major source of HAPs per 40 CFR Subpart DDDDD (MACT DDDDD). The ROP identifies the following emission units in this flexible group are EUEXBOILER, EUEXHTR-A, and EUEXHTR-B. The units were identified in the initial Notification dated May 22, 2013, and received June 5, 2013. The units are summarized below:

Emission Unit	EUEXBOILER	EUEXHTR-A	EUEXHTR-B
Manufacturer	Cleaver Brooks	Sivalls	Sivalls
Model	CB700-50	Unk	Unk
Serial No.	L-68920	Unk	Unk

<b>Capacity/Rating</b>	<b>2.51 MMBtu/hr</b>	<b>10 MMBtu/Hr</b>	<b>10 MMBtu/Hr</b>
<b>Other</b>	Constructed in 1980- reported to heat glycol rather than water	NA	NA

Note: in addition to the above EUs the reboiler of the glycol dehydration unit (0.5 MMBtu/Hr heat input) is also subject to 40 CFR Part 63, Subpart DDDDD. It will be incorporated into the ROP renewal.

No emission limits exist for this FG. The FG is in compliance with the single material limit which is limited to SC II.1 which limits fuels utilized by the FG to NG.

Process/Operational Restrictions –

The Facility under SC III.2 is required to maintain equipment including air pollution control equipment and monitor equipment in a manner consistent with safety and good air pollution control practices. Towards that purpose, the Facility meets the requirements of SC III.1 and III.4 which requires 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.

In compliance with SC III.6 the tune-up requirements include an inspection and maintenance of the burners, flame pattern, and the air-to-fuel ratio controllers (AFRC), optimization of emission reduction, and effluent stream concentration measurements.

Previously reported maintenance activities included:

<b>Activity Type</b>	<b>Emission Unit</b>	<b>Date</b>	<b>Next Activity due on/before</b>
<b>Tune Up</b>	<b>EUEXBOILER</b>	<b>August 9, 2019</b>	<b>August 9, 2024</b>
<b>Inspection &amp; Tune Up</b>	<b>EUEXHTR-A and EUEXHTR-B</b>	<b>February 25, 2020</b>	<b>February 25, 2022</b>
<b>Inspection &amp; Tune Up</b>	<b>EUEXHTR-A and EUEXHTR-B</b>	<b>February 21, 2022</b>	<b>February 24, 2024</b>
<b>Inspection &amp; Tune Up</b>	<b>EUEXGLYDEHY (reboiler only)</b>	<b>February 21, 2022</b>	<b>February 3, 2026</b>

Design and Equipment Parameters –

No design or equipment parameters exist for this FG.

**Testing/Sampling –**

No testing or sampling requirements are associated with this FG.

**Monitoring/Recordkeeping –**

In compliance with permit conditions SC VI.1 and VI.2, the Facility maintains copies of required records and submittals for a period of two years. Facility staff reports that the records are maintained and are available electronically.

**Reporting –**

Under the ROP, the Facility is required to submit the following documentation:

- Annual compliance certification (SC VII.3)
- Semi-annual compliance certification (SC VII.2) and
- Boiler tune-up compliance reports (SC VII.4 and VII.5)

Copies of the above referenced reporting appear to have been submitted in a timely manner and were reviewed upon receipt and documented by AQD staff.

**Stack/Vent Restrictions –**

No requirements exist under this FG.

**Other Requirements --**

The FG includes a high level citation that the EUs shall comply will all applicable requirements of 40 CFR Part 63, Subpart DDDDD (SC IX.1) as well as compliance with all applicable work practice standards (IX.2). Based on information provided during the May 10, 2022, site inspection it appears that the Facility is in general compliance with the referenced subpart.

**EVALUATION SUMMARY**

With the exception of conditions requiring data review to determine compliance, it appears that the Facility is in general compliance with ROP No. MI-ROP-B7196-2017 and applicable Federal requirements as documented at the time of the evaluation.

NAME \_\_\_\_\_

DATE \_\_\_\_\_

SUPERVISOR \_\_\_\_\_