

Puite, Tammie (EGLE)

From: Chris Waltman <chris_waltman@tcenergy.com>
Sent: Monday, August 30, 2021 9:39 AM
To: EGLE-ROP
Cc: Owens, Caryn (EGLE); Keith Mossman; kanderson@wenck.com; Bruce Bendes; Jon Adamson
Subject: SRN B7196 ANR Excelsior Compressor Station ROP Renewal Application
Attachments: B7196 ROP Markup - Aug 2021.docx; Excelsior Title V Renewal Calcs Aug 2021.xlsx; 2021-08 Final Excelsior CS Renewal App - Signed.pdf

CAUTION: This is an External email. Please send suspicious emails to abuse@michigan.gov

Ms. Owens,

Attached is the Renewable Operating Permit (ROP) renewal application for ANR Storage Company for the ANR Excelsior Compressor Station which provides storage and transmission of natural gas. The Renewable Operating Permit (ROP) No. MI-ROP- B7196-2017 for the Excelsior Station expires on April 3, 2022. As required under Section A.35 of the Excelsior Station ROP, ANR is submitting this permit renewal application no later than 6 months prior to expiration of the permit or October 3, 2021. ANR Storage Company submits both the attached hard copy of the application and an electronic version of the ROP Application Package to EGLEROP@michigan.gov and thus requests that the determination of administrative completeness of the application be completed within 15 days of receipt of this hard copy version of the application by AQD.


Please find attached the renewal application including all necessary materials as listed below:

- ROP Application Form
- ROP Mark-up
- Supplemental Data
- Plans Referenced in the ROP

If you have any questions or comments concerning this request, please contact me at (715) 701-3659 or via email at chris_waltman@tcenergy.com.

Thanks,

Chris Waltman
Analyst – US Environmental Permitting

 **TC Energy**
N4956 Oakcrest Dr
Bonduel, WI 54107
C: (715) 701-3659

NEW EMAIL ADDRESS: chris_waltman@TCEnergy.com

We respect your right to choose which electronic messages you receive. To stop receiving this and similar communications from TC Energy please [Click here to unsubscribe.](#)

If you are unable to click the request link, please reply to this email and change subject line to "UNSUBSCRIBE".

This electronic message and any attached documents are intended only for the named addressee(s). This communication from TC Energy may contain information that is privileged, confidential or otherwise protected from disclosure and it must not be disclosed, copied, forwarded or distributed without authorization. If you have received this message in error, please notify the sender immediately and delete the original message.

Thank you



TCEnergy US Pipelines
USGO Integrity Services Department
700 Louisiana St.
Houston, Texas 77002

ANR Pipeline Company

August 30, 2021

Michigan Department of Environment, Great Lakes, and Energy– Air Quality Division
AQD District Supervisor
Cadillac District
120 West Chapin Street
Cadillac, MI 49601-2158

Re: Renewable Operating Permit Renewal Application
ANR Excelsior Compressor Station
Kalkaska County, Michigan
State Registration Number (SRN): B7196
ANR Storage Company

Dear Mr. Nixon,

Enclosed is the Renewable Operating Permit (ROP) renewal application for ANR Storage Company for the ANR Excelsior Compressor Station which provides storage and transmission of natural gas. The Renewable Operating Permit (ROP) No. MI-ROP- B7196-2017 for the Excelsior Station expires on April 3, 2022. As required under Section A.35 of the Excelsior Station ROP, ANR is submitting this permit renewal application no later than 6 months prior to expiration of the permit or October 3, 2021. ANR Storage Company submits both the attached hard copy of the application and an electronic version of the ROP Application Package to EGLE-ROP@michigan.gov and thus requests that the determination of administrative completeness of the application be completed within 15 days of receipt of this hard copy version of the application by AQD.

Please find attached the renewal application including all necessary materials as listed below:

- ROP Application Form
- ROP Mark-up
- Supplemental Data
- Plans Referenced in the ROP

If you have any questions or comments concerning this request, please contact me at (715) 701-3659 or via email at chris_waltman@tcenergy.com.

Sincerely,

Christian S. Waltman

Chris Waltman
TC Energy
Analyst – US Environmental Permitting



**Title V Renewable Operating
Permit Application**

Excelsior Compressor Station
Kalkaska County, MI

Permit No.: MI-ROP-B7196-2017

August 2021

Prepared for:

ANR Storage Company
700 Louisiana Street
Houston, TX 77002

Prepared by:

Stantec Consulting Services Inc.
2080 Wooddale Drive
Woodbury, MN 55125

**Title V Renewable Operating Permit Application
ANR Storage Company – Excelsior Compressor Station**

This document entitled Title V Renewable Operating Permit Application was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of TC Energy (the “Client”). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____
(signature)

Matt Culbreth

Reviewed by *Kathryn Anderson* _____
(signature)

Kathryn Anderson

Approved by *Christian S. Waltman* _____
(signature)

Chris Waltman



Table of Contents

1.0 TECHNICAL SUPPORT DOCUMENTATION 1-1

1.1 PROCESS DESCRIPTION..... 1-1

1.2 EMISSION SOURCE DESCRIPTION..... 1-2

 1.2.1 Compressor Engines (EUEXCOMP-A and EUEXCOMP-B)1-2

 1.2.2 Emergency Engine (EUEXGEN-B).....1-2

 1.2.3 Boiler/Withdrawal Gas Heaters1-3

 1.2.4 Glycol Dehydration System (EUEXGLYDEH).....1-3

 1.2.5 Insignificant Activities1-3

 1.2.6 Exempt Sources.....1-3

1.3 PERMIT SUMMARY AND COMPLIANCE AND HISTORY..... 1-6

1.4 FEDERAL AND STATE REGULATORY REVIEW..... 1-6

 1.4.1 Prevention of Significant Deterioration1-6

 1.4.2 New Source Performance Standards (NSPS)1-6

 1.4.3 National Emission Standards for Hazardous Air Pollutants (NESHAP).....1-8

 1.4.4 Compliance Assurance Monitoring (CAM).....1-10

 1.4.5 Chemical Accident Prevention Provisions and Risk Management Plan1-10

 1.4.6 Acid Rain Regulations1-10

 1.4.7 Michigan State Air Pollution Control Rules (R336)1-10

1.5 PROPOSED CHANGES TO EXISTING RENEWABLE OPERATING PERMIT 1-12

1.6 SUMMARY 1-12

2.0 APPLICATION FORM..... 2-1

LIST OF TABLES

Table 1.2.1 Equipment Exempt from Permit to Install Requirement..... 1-5

Table 1.4.1 NSPS Regulatory Review..... 1-7

LIST OF APPENDICES

APPENDIX A AREA MAPS AND PROCESS FLOW DIAGRAMS 1

APPENDIX B EMISSION CALCULATIONS..... 2

**APPENDIX C MARK-UP OF CURRENT TITLE V PERMIT, EXCELSIOR
COMPRESSOR STATION ROP NO. MI-ROP-B7196-2017 3**

APPENDIX D PLANS REFERENCED WITHIN THE ROP 4



1.0 TECHNICAL SUPPORT DOCUMENTATION

ANR Storage Company (ANR) owns and operates several facilities in Michigan that are used in both natural gas transmission and storage. The function of some ANR compressor stations is to maintain pressure in pipelines transporting natural gas to other companies and end users. The Excelsior Compressor Station (Excelsior), a natural gas compression and transmission station located near Excelsior, Michigan in Kalkaska County, two (2) compressor engines, one (1) emergency engine, one (1) natural gas fired boiler, two (2) natural gas fired withdrawal gas heaters, one (1) glycol dehydrator.

The Title V regulations established emission thresholds of 100 tons per year (tpy) for all criteria pollutants and 25 tpy for total Hazardous Air Pollutants (HAPs) or 10 tpy for an individual HAP to classify a stationary source as major. The Excelsior Station is considered a Title V Part 70 major source due to NO_x and Formaldehyde emissions in excess of the applicability threshold.

The Renewable Operating Permit (ROP) No. MI-ROP-B7196-2017 for the Excelsior Station expires on April 3, 2022. As required under Section A.35 of the Excelsior Station ROP, ANR is submitting this permit renewal application no later than 6 months prior to expiration of the permit, or October 3, 2021. Therefore, according to R336.1210(7), this is considered a timely renewal application and the facility will be authorized to continue to operate until Michigan Department of Environment, Great Lakes, and Energy (EGLE) takes final action on this application. There have been no new Permits to Install (PTI) issued by EGLE since the issuance of the current ROP (MI-ROP-B7196-2017). This ROP application is comprised of the following information:

- Section 1 consists of technical support documentation;
- Section 2 consists of the ROP renewal application forms;
- Appendix A consists of the area maps and process flow diagrams;
- Appendix B contains the emission calculations;
- Appendix C contains a mark-up of the current Excelsior Station ROP; and
- Appendix D contains all plans referenced within the ROP, as required by Question C9 of the ROP Renewal Application Form.

1.1 PROCESS DESCRIPTION

The Excelsior Station is located at 4963 State Road Northeast, Kalkaska, MI 49649. The station maintains pressure (recompression) in pipelines supporting natural gas to and from storage facilities located in Michigan, to industrial customers or to local distribution companies.

As illustrated in the process flow diagram, natural gas withdrawn from the storage field is scrubbed (field inlet and contactor units) and enters a glycol dehydration system for drying. The dehydration system may operate in two different modes. Depending on process requirements, it functions as either a glycol injection or glycol dehydration system.

During withdrawal, natural gas will initially free-flow from the reservoir into the pipeline. The pressure difference between the reservoir and the facility causes the temperature of the natural gas to drop. This temperature drop is enhanced through the use of an aerial cooler at lower field pressures. The temperature drop causes the water and hydrocarbon liquid contained in the natural gas to condense. Then the ethylene glycol and/or methanol, is injected into the pipeline to prevent the condensed liquids from freezing or forming hydrates. The resulting glycol solution is then separated from the gas, using a three phase separator, and forwarded through the glycol regeneration system.

Later during the season, the pressure drop does not cause a significant temperature drop in the gas stream. The glycol system operates in a dehydration mode. The moist natural gas enters the bottom of



the contact tower where the stream is contacted counter currently with lean diethylene glycol. Liquids are absorbed from the natural gas by the diethylene glycol within the tower. The rich glycol, which saturated with liquids absorbed from the natural gas, is then forwarded through the glycol regeneration system.

During glycol regeneration, the rich glycol, resulting from either glycol injection or glycol dehydration is routed through a glycol skimming tank, a pressurized vessel which serves as a three phase separator. This vessel separates any hydrocarbon liquid and vapor from the glycol solution. The separated vapors are routed to the thermal oxidizer. The hydrocarbons which have been separated from the rich glycol are routed to a storage tank. The glycol solution is then heated in the natural gas-fired reboiler where the absorbed water is distilled from either diethylene or ethylene glycol. Water generated from the distillation of the solution is condensed and sent to storage tanks for disposal. The uncondensed vapors are routed to the overhead accumulator and then to the thermal oxidizer.

The glycol dehydration system is followed by additional separation that removes small quantities of condensate or sediment, compressed, and then metered and delivered to the pipeline. The process flow diagram shows the natural gas drawn from the pipeline, which is scrubbed/metered/filtered separated, and then compressed and cooled prior to injection into the storage field.

After passing through the separators, the natural gas enters the compressors. The compressor engines are used to compress natural gas into the storage reservoirs during injection and into the pipeline during withdrawal. Depending on storage and delivery contracts, gas availability, and demand by end users, the two compressor engines may operate simultaneously, independently, or not at all.

Section 1.2 describes the process equipment operating at the Excelsior Station that must be included in the Renewal Operating Permit application. Section 1.2.5 describes equipment (“Insignificant Activities”) considered exempt from most requirements associated with Michigan’s Renewable Operating Permit program [R336.1212(3)]. Equipment at the Excelsior Station identified as exempt from the requirement to obtain a permit to install is discussed in Section 1.2.6 and listed in Table 1.2.1.

1.2 EMISSION SOURCE DESCRIPTION

The Excelsior Station consists of two (2) reciprocating compressor engines, one (1) emergency engine, one (1) natural gas fired boiler, two (2) natural gas fired withdrawal heaters, one (1) glycol dehydrator, and various exempt sources such as tanks, heaters, and storage vessels.

1.2.1 Compressor Engines (EUEXCOMP-A and EUEXCOMP-B)

The Excelsior Station operates two (2) reciprocating compressor engines (EUEXCOMP-A and EUEXCOMP-B) to compress natural gas into the pipeline for transport. The compressor drive equipment is the primary source of air emissions at the station. Emissions of concern are mainly the combustion products, NO_x, CO, and VOC. NO_x emissions result from thermal generation of nitric oxide (NO) in high-temperature combustion zones, while CO and VOC emissions result from incomplete combustion. ANR employs good combustion practices on well-maintained engines combined with the exclusive use of natural gas in order to minimize air emissions.

1.2.2 Emergency Engine (EUEXGEN-B)

The Excelsior Station has one (1) emergency engine (EUEXGEN-B) which is operated during the year on a routine basis for maintenance purposes. The generator is equipped with an internal combustion engine whose emissions exhaust from a single exhaust stack. Emissions of concern are mainly the following products of combustion: NO_x, CO, and VOC. ANR employs good combustion practices on well-maintained engines combined with the exclusive use of natural gas in order to minimize air emissions. The heat input was updated for EUEXGEN-B. An incorrect heat input had been used for previous applications but was updated as part of this reissuance application.



1.2.3 Boiler/Withdrawal Gas Heaters

The Excelsior Station operates one (1) natural gas fired boiler (EUEXBOILER) and two (2) natural gas fired withdrawal heaters (EUEXHTR-A and EUEXHTR-B). Emissions which result from this process are NO_x, CO, VOC, SO₂, and PM.

1.2.4 Glycol Dehydration System (EUEXGLYDEH)

The Excelsior Station operates one (1) glycol dehydration unit (EUEXGLYDEH) which can process a maximum of 11.458 MMSCF/HR (275 MMSCF/D) of natural gas. The reboiler, which is fired with natural gas, has a heat input of 0.5 MMBtu/hour. The calculations reflect current annual hourly permit limits for condenser operation.

1.2.5 Insignificant Activities

Activities identified as “insignificant” pursuant to R 336.1212 (2) do not need to be included in an administratively complete application for a renewable operating permit. These activities do not significantly contribute to the actual emissions or the potential to emit. The following activities, identified under R 336.1212 (2) as insignificant, may be performed at the Excelsior Station:

- Repair and maintenance of grounds and structures (including painting, welding, etc.);
- All activities and changes pursuant to sections (a) through (f) of Rule 285, Permit to install exemptions; miscellaneous, unless any compliance monitoring requirements in the renewable operating permit would be affected by the change;
- All activities and changes pursuant to sections (f) through (h) of Rule 287, Surface coating equipment, unless any compliance monitoring requirements in the renewable operating permit would be affected by the change;
- Use of office supplies;
- Use of housekeeping and janitorial supplies;
- Sanitary plumbing and associated stacks or vents;
- Temporary activities related to the construction or dismantlement of buildings, utility lines, pipelines, wells, earthworks, or other structures;
- Storage and handling of drums or other transportable containers that are sealed during storage and handling;
- Fire protection equipment, firefighting and training in preparation for fighting fires (prior approval by the department for open burning associated with training in preparation for fighting fires will be obtained pursuant to R 336.1310);
- Use, servicing, and maintenance of motor vehicles, except where the activity is subject to an applicable requirement;
- Construction, repair, and maintenance of roads or other paved or unpaved areas, except where the activity is subject to an applicable requirement; and
- Piping and storage of sweet natural gas, including venting from pressure relief valves and purging of gas lines.

1.2.6 Exempt Sources

Certain processes and process equipment exempt by state rule from obtaining a Permit to Install (PTI) may be subject to inclusion in the ROP application. The guidelines for determining whether an exempt process or process equipment must be included in the ROP application are summarized as follows:

- Process or process equipment exempt under R336.1212(3) need not be included in the ROP application, provided there are no applicable requirements;
- Process or process equipment exempt under R336.1212(4) need to be listed in the ROP application as Exempt Devices, provided there are no process-specific emission limitations or standards; and,



- If a process or process equipment identified as exempt under 212(3) or 212(4) has an applicable requirement with a process-specific emission limitation or standard, it must be included as an emission group in the ROP.

There are several sources at the Excelsior Station that qualify for the above exemptions. These sources are also exempt from the requirement of obtaining a PTI. Table 1.2.1 provides a list of such sources. In addition, the table provides a brief description and identifies the specific rule that exempts from the ROP and the requirement of obtaining a PTI.

As part of this renewal application, ANR is proposing the addition of flexible group FGRULE285(2)(mm) for routine and emergency venting of natural gas from transmission and distribution systems or field gas from gathering lines. Emissions from routine and emergency venting of natural gas from transmission and distribution systems or field gas from gathering lines are exempt from the requirement of obtaining a PTI under Rule 212(4). However, this activity has process-specific standards under Rule 285(2)(mm) that have been incorporated into the ROP Mark-up included as Appendix C using language provided by the EGLE template for the rule. See Table 1.2.1 below for more detail.



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

Table 1.2.1 Equipment Exempt from Permit to Install Requirement

Equipment ID	Description of Exempt Emission Unit	Basis of Exemption	RO Permit Exemption	NSR Permit Exemption
EUEXHEATER-1	Three (3) heaters, 0.012 MMBtu/hr each	Natural gas-fueled equipment used for service water heating or oil and gas production < 50 MMBtu/hr	R 336.1212(4)(b)	R 336.1282(2)(b)(i)
EUEXHEATERS-2	Two Bruest heaters, 0.012 MMBtu/hr each			
EUEXWTRHTR-1	Water heater, 0.05 MMBtu/hr			
EUEXWTRHTR-2	Water heater, 0.05 MMBtu/hr			
EUTANKCB-A	12,600 gallon condensate/brine tank	< 40,000 gallons	R336.1212(4)(c)	R336.1284(e)
EUTANKCB-B	12,600 gallon condensate/brine tank			
EUEXTANK-EG	5,515 gallon Ethylene Glycol storage tank	< 40,000 gallons and contents with a vapor pressure of ≤ 1.5 psia	R 336.1212(4)(d)	R 336.1284(2)(i)
EUEXTANK-DG-A	2,300 gallon Diethylene Glycol storage tank			
EUEXTANK-DG-B	2,900 gallon Diethylene Glycol storage tank			
N/A	110 gallon Glycol Tank			
EUEXMETHANOL	16,800 gallon Methanol storage tank	<30,000 gal	R336.1212(4)(c)	R336.1284(n)
N/A	110 gallon Corrosion Inhibitor tank	Container Contents	R336.1212(3)(e)	R336.1284(c)
N/A	Nine (9) Lube/Mini Lube Oil, Used Oil, Mist Oil, and Glycol TanksCap.: 177-12,600 gallons			
EUEXPIPEMAINT	Routine and emergency venting of natural gas from transmission and distribution systems.	Venting of natural gas provided compliance with Rule 285(2)(mm)(ii) and (iii) for events >1,000,000 scf.	R336.1212(4)(e)	R336.1285(2)(mm)
EUEXFIELDMAINT	Routine and emergency venting of field gas from gathering lines.			



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

1.3 PERMIT SUMMARY AND COMPLIANCE AND HISTORY

There have been no administrative or judicial actions taken against ANR within the past five years pertaining to operation of the Excelsior Station. There are currently no outstanding violations of state or federal environmental laws or regulations at the Excelsior Station. Since its issuance, ANR has complied with the terms and conditions of the existing permit.

1.4 FEDERAL AND STATE REGULATORY REVIEW

The Excelsior Station will be subject to certain federal and state air quality regulations. This section summarizes the air permitting requirements and key air quality regulations that will apply to the operation of the facility once constructed. Specifically, applicability or non-applicability of the following regulatory programs are addressed: Prevention of Significant Deterioration (PSD) permitting, Non-Attainment New Source Review (NNSR), New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), Compliance Assurance Monitoring (CAM), Chemical Accident Prevention (CAP) and Risk Management Program (RMP), and stratospheric ozone protection regulations. This review is presented to supplement and/or add clarification to the information provided in the EGLE ROP renewal application forms, which together fulfill the requirement to include citations and descriptions of applicable statutory and administrative code requirements.

This section provides a summary of applicable requirements and non-applicability determinations for certain regulations allowing the EGLE to confirm that identified regulations are not applicable to the facility. Note that this non-applicability review is limited to those regulations for which there may be some possible applicability specific to the Excelsior Station. Regulations that are categorically non-applicable are not discussed (e.g., NSPS Subpart J, *Standards of Performance for Petroleum Refineries*).

1.4.1 Prevention of Significant Deterioration

The Excelsior Station is located in Kankaska County, which is designated by the U.S. EPA 40 CFR §81.316 as “attainment” or “unclassifiable” for all criteria pollutants. As such, new construction or modifications that result in emission increases are potentially subject to the PSD permitting regulations. PSD applicability depends on the existing status of the facility (i.e., major or minor source) and the net emissions increases associated with the project.

The major source threshold for PSD applicability is 250 tpy unless the source is included on a list of 28 specifically defined industrial source categories for which the PSD “major” source threshold is 100 tpy. Since the Excelsior Station does not fit any of the types of sources mentioned on the above list, the PSD major source threshold is 250 tpy of regulated criteria pollutants. The Excelsior Station was subject to PSD at the time of construction and a PSD permit No. 67-80 was issued on October 28, 1981. However, ANR is not requesting any modification with this application that would subject emission units at the Excelsior Station to a PSD review. Therefore, information regarding the ambient air impacts of criteria pollutants is not required and is not addressed herein.

1.4.2 New Source Performance Standards (NSPS)

NSPS contained in 40 CFR 60 require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the relevant regulations. These NSPS regulations were reviewed to determine their applicability to the Excelsior Station equipment or to



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

confirm non-applicability as appropriate. The results of this review are summarized below by regulatory citation.

NSPS contained in 40 CFR 60 require new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology as specified in the relevant regulations. These NSPS regulations were reviewed to determine their applicability to the Excelsior Station equipment or to confirm non-applicability as appropriate. The results of this review are summarized below by regulatory citation.

Table 1.4.1 NSPS Regulatory Review

Regulatory Citation	Non-Applicability Determination
40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units	This standard is not applicable to the Excelsior Station because there are no natural gas-fired boilers with a design heat input capacity of 2.9 MW (10 MMBtu/hr) or greater.
40 CFR 60 Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and prior to May 19, 1978	There are no petroleum storage vessels with capacity greater than 40,000 gallons at this facility. Therefore, this regulation is not applicable.
40 CFR 60 Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and prior to July 23, 1984	There are no petroleum storage vessels with capacity greater than 40,000 gallons at this facility. Therefore, this regulation is not applicable.
40 CFR 60 Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	There are no volatile organic liquid storage vessels with capacity greater than 75 cubic meters at this facility. Therefore, this regulation is not applicable.
40 CFR 60 Subpart KKK-Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants	This regulation is not applicable to the Excelsior Station because the facility is not a natural gas processing plant as defined in the regulation.
40 CFR 60 Subpart LLL - Standards of Performance for Onshore Natural Gas Processing: SO ₂ Emissions	The Excelsior Station processes natural gas but does not operate a sweetening unit or a sulfur recovery unit. Therefore, this regulation is not applicable.
40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)	The Excelsior Station does not operate any stationary CI ICE; therefore, this regulation does not apply.
40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE)	The engines at the Excelsior Station were constructed prior to June 12, 2006 and have not been modified or reconstructed since June 12, 2006. Therefore, this regulation does not apply.
40 CFR 60 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution	The Excelsior Station does not employ reciprocating or centrifugal compressors that are located prior to the point of natural gas custody transfer (40 CFR Part 60.5365(b)&(c)). Additionally, all of the storage tanks located at the Excelsior Station were constructed



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

	prior to August 23, 2011 and have not been modified or reconstructed after the applicability date. Furthermore, as prescribed in 40 CFR Part 60.5395, these storage tanks are not located at well sites. Therefore, this regulation is not applicable.
--	--

1.4.3 National Emission Standards for Hazardous Air Pollutants (NESHAP)

Federal NESHAP regulations promulgated pursuant to Section 112 of the CAA are found in 40 CFR Parts 61 and 63. In general, NESHAP, or Maximum Achievable Control Technology (MACT) standards apply to major stationary sources of HAP emissions, defined as potential-to-emit of 10 tons or more per year of any single HAP or 25 tons or more per year of any combination of HAP and area stationary sources of HAP emissions (thresholds less than a major source). The Excelsior Station is considered a major source of HAPs due to potential Formaldehyde emissions greater than 10 tpy. Total HAP emissions are less than 25 tpy. Potentially applicable NESHAPs are discussed below.

40 CFR 61 Subpart M - National Emission Standard for Asbestos

The Excelsior Station may at times engage in demolition and/or renovation activities involving asbestos-containing materials (ACM). Therefore, the facility could be potentially subject to Subpart M, Standards for Demolition and Renovation (40 CFR 61.145). Procedures are in place to ensure the station complies with these standards.

40 CFR 61 Subpart V - National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

This regulation is not applicable to the Excelsior Station because the provisions of this subpart apply to sources that are intended to operate in volatile hazardous air pollutant (VHAP) service. "In VHAP service means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a volatile hazardous air pollutant (VHAP) as determined according to the provisions of 61.245(d)." The Excelsior Station processes do not have any sources that operate in VHAP service.

40 CFR 63 Subpart A – General Provisions

This regulation has general provisions that are referenced by other more specific NESHAP regulations.

40 CFR 63 Subpart HH - NESHAP from Oil and Natural Gas Production Facilities

This regulation is not applicable to the Excelsior Station because the facility is a transmission and storage facility and is not an oil and gas production facility as defined in this regulation.

40 CFR 63 Subpart HHH - NESHAP from Natural Gas Transmission and Storage Facilities

Subpart HHH establishes national emission limitations and operating limitations for natural gas transmission and storage facilities that are major sources of HAP emissions. The rule affects facilities that transport or store natural gas prior to entering the pipeline to a local distribution company or to a final user. The Excelsior Station is a natural gas compression and storage facility and is potentially subject to this regulation. The facility is a major source of HAPs and operates a glycol dehydration unit, EUEXGLYDEH (affected source).



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

EUEXGLYDEH is identified as an existing small glycol dehydration unit, as specified in 40 CFR §63.1271(4)(ii), because the benzene emissions do not exceed 0.90 megagrams per year (0.992 tpy) and the unit was constructed, reconstructed, or modified before August 23, 2011. As required by Subpart HHH, the Excelsior Station demonstrated compliance with the BTEX emission limits prior to October 15, 2015 (40 CFR §63.1270(3)). ANR will continue to comply with this rule as it applies to this emission unit.

40 CFR 63 Subpart EEEE – NESHAP for Organic Liquids Distribution (non-Gasoline)

40 CFR 63 Subpart EEEE was promulgated on August 25, 2003 and applies to organic liquids distribution (OLD) operations that are located at, or are part of, a major source of hazardous air pollutant (HAP) emissions as defined in section 112(a) of the Clean Air Act. This regulation does not apply to the tanks or loading operations at the Excelsior Station because per 40 CFR 63.2334(c)(2), OLD operations located at Natural Gas Transmission facilities as defined in 40 CFR 63 Subpart HHH are exempt from the requirements of 40 CFR 63 Subpart EEEE (OLD MACT).

40 CFR 63 Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)

Subpart ZZZZ regulates HAP emissions from existing, new, and reconstructed stationary compression ignition (CI) and spark ignition (SI), emergency and non-emergency, RICE located at a major and area sources of HAP emissions. This standard is potentially applicable to the Excelsior Station because the facility operates two (2) RICE (EUEXCOMP-A and EUEXCOMP-B), one (1) emergency stationary RICE (EUEXGEN-B), and is considered a major source of HAPs.

EUEXCOMP-A and EUEXCOMP-B are each considered existing 4SLB stationary RICE, rated at 3,750 hp, and therefore meet the exemption requirements listed in 40 CFR §63.6590(b)(3)(ii). EUEXGEN-B is considered an existing 4SRB RICE, rated at 490 hp and is subject to hourly limits for non-emergency operations as well as maintenance requirements. ANR will continue to comply with all applicable requirements under this subpart.

40 CFR 63 Subpart DDDDD – NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters

The Industrial/Commercial/Institutional Boilers and Process Heaters MACT for major sources was promulgated on March 21, 2011, and regulates HAP emissions from new and existing industrial, commercial, or institutional boilers and process heaters located at major sources of HAP emissions. The EPA subsequently issued a notice on May 18, 2011 to postpone the effective dates of the final rule until the completion of reconsideration or judicial review, whichever is earlier. On January 9, 2012, the EPA vacated the May 18, 2011 notice that delayed the effective dates of the Boiler MACT rule. The notice on final action on reconsideration was published in the Federal Register on January 31, 2013.

This rule is applicable to the natural gas fired boiler (EUEXBOILER) and the two (2) natural gas fired withdrawal heaters (EUEXHTR-A AND EUEXHTR-B) at the Excelsior Station since the station is a major source of HAP. The boiler and the withdrawal gas heaters are classified as existing (constructed before June 4, 2010), natural gas burning unit. As such, the boilers and withdrawal gas heaters are subject to a facility energy assessment, and the associated reporting and recordkeeping requirements. However, the boilers and withdrawal gas heaters are subject to different tune-ups requirements as required by 40 CFR 63 Subpart DDDDD. The boiler has a heat input of less than 5 MMBtu/hr and is therefore subject to tune-ups every five years, as listed in 40 CFR §63.7540(a)(12). Each withdrawal gas heaters has a heat input



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

of 10 MMBtu/hr or greater and is therefore subject to an annual tune-up, as listed in 40 CFR §63.7540(a)(10). ANR will comply with this rule as it applies to each emission unit.

Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers Area Sources

The Industrial/Commercial/Institutional Boilers and Process Heaters for area sources was promulgated on March 21, 2011, and regulates HAP emissions from industrial, commercial, or institutional boilers located at area sources of HAP emissions. The Excelsior Station is a major source of HAP; therefore, this regulation does not apply.

1.4.4 Compliance Assurance Monitoring (CAM)

Enhanced monitoring requirements have been adopted into 40 CFR 64. The enhanced monitoring requirements are referred to as Compliance Assurance Monitoring (CAM). CAM is applicable to sources that have a potential to emit in excess of major source thresholds, not considering “tailpipe” emission controls, and use an “active” control device to achieve compliance with the emission limit. Combustion controls may be considered in evaluating the potential to emit.

An emission unit is subject to CAM if all of the following criteria are satisfied:

- the unit is located at a major source that is required to obtain a Part 70 or Part 71 permit;
- the unit is subject to an emission limitation or standard for a regulated air pollutant;
- the unit uses an active control device to achieve compliance with any such emission limit or standard, and
- the unit has potential pre-controlled emissions of the applicable air pollutant above the major source threshold.

The Excelsior Station is not subject to the CAM rule because all emission units with a control device do not have potential pre-control emissions over the major source thresholds. Therefore, the CAM rule does not apply to the Excelsior Station at this time.

1.4.5 Chemical Accident Prevention Provisions and Risk Management Plan

The Excelsior Station is not subject to the Chemical Accident Prevention Provisions of 40 CFR Subpart 68. Applicability to this regulation is based on the type and quantity of certain regulated substances stored at a facility, and the Excelsior Station does not exceed the applicability thresholds (40 CFR 68.10). The facility is not considered a stationary source under 40 CFR 68.3 (Chemical Accident Prevention) because it is regulated under 49 CFR 192, DOT.

1.4.6 Acid Rain Regulations

The Excelsior Station is not subject to the federal acid rain regulations found in 40 CFR Parts 72 through 77 because the Station does not own or operate an affected unit as defined in 40 CFR part 72.6.

1.4.7 Michigan State Air Pollution Control Rules (R336)

The following paragraphs discuss the general compliance with the Michigan state air pollution control rules.



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

Part 2 – Air Use Approval

This part requires facilities in Michigan to obtain a permit to install prior to installation, construction, reconstruction, relocation, or modification of any process or process equipment that has the potential to emit any pollutant to the atmosphere. In addition, some facilities will be required to obtain a renewable operating permit. All processes or process equipment at this facility have either a permit to install or construction was authorized under one of the various exemptions provided in the rule. This facility is also required to obtain a renewable operating permit. A complete and timely application was submitted in 2010 and a renewable operating permit was issued in 2012. This application is being submitted in order to renew this renewable operating permit.

Part 3 – Emission Limitations and Prohibitions- Particulate Matter

The processes and the process equipment at this facility are subject to the visible emission limitations specified in R336.1301(1). All sources at the facility are operated in compliance with these requirements. It should be noted that for natural gas-fired fuel burning equipment, compliance with this requirement is demonstrated by using pipeline quality natural gas.

R336.1331 of this part limits the emissions of particulate matter from a process or process equipment. This facility does not operate any sources listed in Table 31. The rule also establishes a particulate matter emission limit based on a process weight rate. However, no particulate matter emissions, other than fuel combustion sources, are anticipated from the processes at this facility. Therefore, the rule is not currently applicable to the facility.

Part 4 – Emissions Limitations and Prohibitions- Sulfur-Bearing Compounds

R336.1403 limits emissions of sour gas from an oil- or natural gas-producing or transporting facility, of a natural gas-producing facility. This facility does not handle sour gas. Therefore, this part is not applicable.

Part 6 – Emission Limitations and Prohibitions- Existing Sources of Volatile Organic Compound Emissions

This part limits emissions of volatile organic compounds from various sources including storage vessels, loading facilities, and natural gas processing plants. The facility is in compliance with all the applicable requirements of this regulation. R336.1629 requires a monitoring program to control emissions of volatile organic compounds from components of existing process equipment used in natural gas processing. The rule only applies to facilities located in Kent, Livingston, Macomb, Monroe, Muskegon, Oakland, Ottawa, St. Clair, Washtenaw, and Wayne. Although this facility is located in Kalkaska County, it is not a natural gas processing plant. Therefore, the rule does not apply.

Part 7 – Emission Limitations and Prohibitions- New Sources of Volatile Organic Compound Emissions

This part limits emissions of volatile organic compounds from all new sources. A “new source” is defined as a process or process equipment which is either placed into operation on or after July 1, 1979, or for which a permit to install is made to the DEQ on or after July 1, 1979. Some of the sources at the facility may be subject to this regulation. The facility is in compliance with all the applicable requirements of this regulation.



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Technical Support documentation

Part 9 – Emission Limitations and Prohibitions- Miscellaneous

Part 9 specifies numerous miscellaneous limitations and prohibitions. Rule 336.1901 prohibits emission of an air contaminant which may result in injurious effects to human health or safety, animal life, plant life of significant economic value, property, or interference with the comfortable enjoyment of life and property. Rule 336.1906 prohibits dilution or concealment of emissions. This facility operates in compliance with these requirements.

Rule 336.1911 requires the facility to develop a malfunction abatement plan if and when requested by the department. The facility will develop and implement a malfunction abatement plan upon receipt of such request from the department.

This part also specifies the operating, notification, and reporting procedures associated with start-up, shutdown, and malfunction of a source, process or process equipment in R336.1912. The facility complies with all the requirements of this part in the event of a start-up, shutdown, or a malfunction as required by the general conditions section of the ROP.

Part 10 – Intermittent Testing and Sampling

Part 10 allows the department to require the owner or operator of a source to conduct performance tests using reference test methods or the department to conduct the tests on behalf of the state. Upon receipt of any such request from the department, the facility will conduct the specified performance test within the established timelines and following the agreed upon reference test methods. If the department intends to perform the test, the owner or operator will provide the necessary performance test facilities.

1.5 PROPOSED CHANGES TO EXISTING RENEWABLE OPERATING PERMIT

ANR has proposed the addition of flexible group FGRULE285(2)(mm) for routine and emergency venting of natural gas from transmission and distribution systems or field gas from gathering lines, exempt from the requirement of obtaining a PTI under 212(4). ANR has proposed language to incorporate the process-specific standards under Rule 285(2)(mm) using language provided by the EGLE template for the rule. ANR has proposed that Section E of the permit be removed in order to reduce confusion should non-applicability of the requirements change at the site. The updates are included in the marked-up version of the permit included in Appendix C.

1.6 SUMMARY

This document contains all the necessary elements for ANR to meet the requirements for a complete ROP renewal application under the EGLE rules and guidance. ANR requests that this renewal application be reviewed and a draft ROP be issued at the earliest convenience.



TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Application Form

2.0 APPLICATION FORM





RENEWABLE OPERATING PERMIT RENEWAL APPLICATION FORM

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Refer to instructions for additional information to complete the Renewable Operating Permit Renewal Application Form.

GENERAL INSTRUCTIONS

This application form should be submitted as part of an administratively complete application package for renewal of a Renewable Operating Permit (ROP). This application form consists of nine parts. Parts A – H must be completed for all applications and must also be completed for each section of a sectioned ROP. Answer all questions in all parts of the form unless directed otherwise. Detailed instructions for this application form can be found at <http://michigan.gov/air> (select the Permits Tab, “Renewable Operating Permits (ROP)/Title V”, then “ROP Forms & Templates”).

PART A: GENERAL INFORMATION

Enter information about the source, owner, contact person and the responsible official.

SOURCE INFORMATION

SRN B7196	SIC Code 4922	NAICS Code 486210	Existing ROP Number MI-ROP-B7196-2017	Section Number (if applicable)
Source Name Excelsior Compressor Station				
Street Address 4963 State Road Northeast				
City Kalkaska	State MI	ZIP Code 49646	County Kalkaska	
Section/Town/Range (if address not available)				
Source Description The Excelsior Compressor Station is an existing facility that transports natural gas through ANR's pipeline system.				
<input type="checkbox"/> Check here if any of the above information is different than what appears in the existing ROP. Identify any changes on the marked-up copy of your existing ROP.				

OWNER INFORMATION

Owner Name ANR Storage Company	Section Number (if applicable)			
Mailing address (<input type="checkbox"/> check if same as source address) 700 Louisiana Street, Suite 700				
City Houston	State TX	ZIP Code 77002	County Harris	Country USA

Check here if any information in this ROP renewal application is confidential. Confidential information should be identified on an Additional Information (AI-001) Form.

SRN: B7196	Section Number (if applicable):
------------	---------------------------------

PART A: GENERAL INFORMATION (continued)

At least one contact and responsible official must be identified. Additional contacts and responsible officials may be included if necessary.

CONTACT INFORMATION

Contact 1 Name Chris Waltman		Title Analyst – US Environmental Permitting		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address) N4956 Oakcrest Dr				
City Bonduel	State WI	ZIP Code 54107	County	Country USA
Phone number (715) 701-3659		E-mail address Chris_Waltman@tcenergy.com		

Contact 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number		E-mail address		

RESPONSIBLE OFFICIAL INFORMATION

Responsible Official 1 Name Keith R. Mossman		Title Director US Gas Operation Great Lakes Region		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address) 5250 Corporate Dr.				
City Troy	State MI	ZIP Code 48098	County Oakland	Country USA
Phone number (248) 205-4510		E-mail address Keith_mossman@tcenergy.com		

Responsible Official 2 Name (optional)		Title		
Company Name & Mailing address (<input type="checkbox"/> check if same as source address)				
City	State	ZIP Code	County	Country
Phone number		E-mail address		


<input type="checkbox"/> Check here if an AI-001 Form is attached to provide more information for Part A. Enter AI-001 Form ID:

PART B: APPLICATION SUBMITTAL and CERTIFICATION by Responsible Official

Identify the items that are included as part of your administratively complete application in the checklist below. For your application to be complete, it must include information necessary to evaluate the source and to determine all applicable requirements. Answer the compliance statements as they pertain to all the applicable requirements to which the source is subject. The source's Responsible Official must sign and date this form.

Listing of ROP Application Contents. Check the box for the items included with your application.	
<input checked="" type="checkbox"/> Completed ROP Renewal Application Form (and any AI-001 Forms) (required)	<input type="checkbox"/> Compliance Plan/Schedule of Compliance
<input checked="" type="checkbox"/> Mark-up copy of existing ROP using official version from the AQD website (required)	<input type="checkbox"/> Stack information
<input type="checkbox"/> Copies of all Permit(s) to Install (PTIs) that have not been incorporated into existing ROP (required)	<input type="checkbox"/> Acid Rain Permit Initial/Renewal Application
<input checked="" type="checkbox"/> Criteria Pollutant/Hazardous Air Pollutant (HAP) Potential to Emit Calculations	<input type="checkbox"/> Cross-State Air Pollution Rule (CSAPR) Information
<input type="checkbox"/> MAERS Forms (to report emissions not previously submitted)	<input type="checkbox"/> Confidential Information
<input type="checkbox"/> Copies of all Consent Order/Consent Judgments that have not been incorporated into existing ROP	<input type="checkbox"/> Paper copy of all documentation provided (required)
<input type="checkbox"/> Compliance Assurance Monitoring (CAM) Plan	<input checked="" type="checkbox"/> Electronic documents provided (optional)
<input checked="" type="checkbox"/> Other Plans (e.g., Malfunction Abatement, Fugitive Dust, Operation and Maintenance, etc.)	<input type="checkbox"/> Other, explain:

Compliance Statement	
This source is in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
This source will continue to be in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
This source will meet in a timely manner applicable requirements that become effective during the permit term.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The method(s) used to determine compliance for each applicable requirement is/are the method(s) specified in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and all other applicable requirements not currently contained in the existing ROP.	
If any of the above are checked No, identify the emission unit(s) or flexible group(s) affected and the specific condition number(s) or applicable requirement for which the source is or will be out of compliance at the time of issuance of the ROP renewal on an AI-001 Form. Provide a compliance plan and schedule of compliance on an AI-001 Form.	

Name and Title of the Responsible Official (Print or Type)	
Keith R. Mossman – Director US Gas Operation Great Lakes Region	
<i>As a Responsible Official, I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.</i>	
 Signature of Responsible Official	8/25/2021 Date

PART C: SOURCE REQUIREMENT INFORMATION

Answer the questions below for specific requirements or programs to which the source may be subject.

C1.	Actual emissions and associated data from all emission units with applicable requirements (including those identified in the existing ROP, Permits to Install and other equipment that have not yet been incorporated into the ROP) are required to be reported in MAERS. Are there any emissions and associated data that have not been reported in MAERS for the most recent emissions reporting year? If Yes , identify the emission unit(s) that was/were not reported in MAERS on an AI-001 Form. Applicable MAERS form(s) for unreported emission units must be included with this application.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C2.	Is this source subject to the federal regulations on ozone-depleting substances? (40 CFR Part 82)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C3.	Is this source subject to the federal Chemical Accident Prevention Provisions? (Section 112(r) of the Clean Air Act Amendments, 40 CFR Part 68) If Yes , a Risk Management Plan (RMP) and periodic updates must be submitted to the USEPA. Has an updated RMP been submitted to the USEPA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
C4.	Has this stationary source added or modified equipment since the last ROP renewal that changes the potential to emit (PTE) for criteria pollutant (CO, NO _x , PM ₁₀ , PM _{2.5} , SO ₂ , VOC, lead) emissions? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers, or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. If No , criteria pollutant potential emission calculations do not need to be included.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C5.	Has this stationary source added or modified equipment since the last ROP renewal that changes the PTE for hazardous air pollutants (HAPs) regulated by Section 112 of the federal Clean Air Act? If Yes , include potential emission calculations (or the PTI and/or ROP revision application numbers or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. Fugitive emissions must be included in HAP emission calculations. If No , HAP potential emission calculations do not need to be included.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C6.	Are any emission units subject to the Cross-State Air Pollution Rule (CSAPR)? If Yes , identify the specific emission unit(s) subject to CSAPR on an AI-001 Form.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
C7.	Are any emission units subject to the federal Acid Rain Program? If Yes , identify the specific emission unit(s) subject to the federal Acid Rain Program on an AI-001 Form. Is an Acid Rain Permit Renewal Application included with this application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
C8.	Are any emission units identified in the existing ROP subject to compliance assurance monitoring (CAM)? If Yes , identify the specific emission unit(s) subject to CAM on an AI-001 Form. If a CAM plan has not been previously submitted to EGLE, one must be included with the ROP renewal application on an AI-001 Form. If the CAM Plan has been updated, include an updated copy. Is a CAM plan included with this application? If a CAM Plan is included, check the type of proposed monitoring included in the Plan: 1. Monitoring proposed by the source based on performance of the control device, or 2. Presumptively Acceptable Monitoring, if eligible	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/>
C9.	Does the source have any plans such as a malfunction abatement plan, fugitive dust plan, operation/maintenance plan, or any other monitoring plan that is referenced in an existing ROP, Permit to Install requirement, or any other applicable requirement? If Yes , then a copy must be submitted as part of the ROP renewal application.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
C10.	Are there any specific requirements that the source proposes to be identified in the ROP as non-applicable? If Yes , then a description of the requirement and justification must be submitted as part of the ROP renewal application on an AI-001 Form.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/>	Check here if an AI-001 Form is attached to provide more information for Part C. Enter AI-001 Form ID: AI-	

PART D: PERMIT TO INSTALL (PTI) EXEMPT EMISSION UNIT INFORMATION

Review all emission units at the source and answer the question below.

D1. Does the source have any emission units that do not appear in the existing ROP but are required to be listed in the ROP application under R 336.1212(4) (Rule 212(4)) of the Michigan Air Pollution Control Rules? If Yes, identify the emission units in the table below. Yes No

If No, go to Part E.

Note: Emission units that are subject to process specific emission limitations or standards, even if identified in Rule 212, must be captured in either Part G or H of this application form. Identical emission units may be grouped (e.g. PTI exempt Storage Tanks).

Emission Unit ID	Emission Unit Description	Rule 212(4) Citation [e.g. Rule 212(4)(c)]	Rule 201 Exemption Rule Citation [e.g. Rule 282(2)(b)(i)]
EUTANKCB-A	12,600 gallon condensate/brine tank	R336.1212(4)(c)	R336.1284(2)(e)
EUTANKCB-B	12,600 gallon condensate/brine tank	R336.1212(4)(c)	R336.1284(2)(e)
EUEXTANK-EG	5,515 gallon Ethylene Glycol storage tank	R336.1212(4)(c)	R336.1284(2)(i)
EUEXTANK-DG-A	2,300 gallon Diethylene Glycol storage tank	R336.1212(4)(c)	R336.1284(2)(i)
EUEXTANK-DG-B	2,900 gallon Diethylene Glycol storage tank	R336.1212(4)(c)	R336.1284(2)(i)
EUEXHEATER-1	Three (3) heaters, 0.012 MMBtu/hr each	R336.1212(4)(b)	R336.1282(2)(b)(i)
EUEXHEATERS-2	Two Bruest heaters, 0.012 MMBtu/hr each	R336.1212(4)(b)	R336.1282(2)(b)(i)
EUEXWTRHTR-1	Water heater, 0.05 MMBtu/hr	R336.1212(4)(b)	R336.1282(2)(b)(i)
EUEXWTRHTR-2	Water heater, 0.05 MMBtu/hr	R336.1212(4)(b)	R336.1282(2)(b)(i)
EUEXMETHANOL	16,800 gallon Methanol storage tank	R336.1212(4)(c)	R336.1284(2)(n)
N/A	110 gallon Corrosion Inhibitor tank	R336.1212(3)(e)	R336.1284(2)(c)
N/A	Nine (9) Lube/Mini Lube Oil, Used Oil, Mist Oil, and Glycol tanks Cap.: 177-12,600 gallons	R336.1212(3)(e)	R336.1284(2)(c)
N/A	110 gallon Glycol tank	R336.1212(4)(c)	R336.1284(2)(i)
EUEXPIPEMAINT	Routine and emergency venting of natural gas from transmission and distribution systems.	R336.1212(4)(e)	R336.1285(2)(mm)
EUEXFIELDMAINT	Routine and emergency venting of field gas from gathering lines.	R336.1212(4)(e)	R336.1285(2)(mm)

Comments:

Check here if an AI-001 Form is attached to provide more information for Part D. Enter AI-001 Form ID: **AI-**

PART E: EXISTING ROP INFORMATION

Review all emission units and applicable requirements (including any source wide requirements) in the existing ROP and answer the questions below as they pertain to **all** emission units and **all** applicable requirements in the existing ROP.

E1. Does the source propose to make any additions, changes or deletions to terms, conditions and underlying applicable requirements as they appear in the existing ROP? Yes No
 If Yes, identify changes and additions on Part F, Part G and/or Part H. See Part H and Section 1.5 of the application text for discussion

E2. For each emission unit(s) identified in the existing ROP, all stacks with applicable requirements are to be reported in MAERS. Are there any stacks with applicable requirements for emission unit(s) identified in the existing ROP that were not reported in the most recent MAERS reporting year? If Yes, identify the stack(s) that was/were not reported on applicable MAERS form(s). Yes No

E3. Have any emission units identified in the existing ROP been modified or reconstructed that required a PTI? Yes No
 If Yes, complete Part F with the appropriate information.

E4. Have any emission units identified in the existing ROP been dismantled? If Yes, identify the emission unit(s) and the dismantle date in the comment area below or on an AI-001 Form. Yes No

Comments:

Check here if an AI-001 Form is attached to provide more information for Part E. Enter AI-001 Form ID: **AI-**

PART F: PERMIT TO INSTALL (PTI) INFORMATION

Review all emission units and applicable requirements at the source and answer the following questions as they pertain to **all** emission units with PTIs. Any PTI(s) identified below must be attached to the application.

F1. Has the source obtained any PTIs where the applicable requirements from the PTI have not been incorporated into the existing ROP? If Yes, complete the following table. Yes No
 If No, go to Part G.

Permit to Install Number	Emission Units/Flexible Group ID(s)	Description (Include Process Equipment, Control Devices and Monitoring Devices)	Date Emission Unit was Installed/ Modified/ Reconstructed

F2. Do any of the PTIs listed above change, add, or delete terms/conditions to **established emission units** in the existing ROP? If Yes, identify the emission unit(s) or flexible group(s) affected in the comments area below or on an AI-001 Form and identify all changes, additions, and deletions in a mark-up of the existing ROP. Yes No

F3. Do any of the PTIs listed above identify **new emission units** that need to be incorporated into the ROP? If Yes, submit the PTIs as part of the ROP renewal application on an AI-001 Form, and include the new emission unit(s) or flexible group(s) in the mark-up of the existing ROP. Yes No

F4. Are there any stacks with applicable requirements for emission unit(s) identified in the PTIs listed above that were not reported in MAERS for the most recent emissions reporting year? If Yes, identify the stack(s) that were not reported on the applicable MAERS form(s). Yes No

F5. Are there any proposed administrative changes to any of the emission unit names, descriptions or control devices in the PTIs listed above for any emission units not already incorporated into the ROP? If Yes, describe the changes on an AI-001 Form. Yes No

Comments:

Check here if an AI-001 Form is attached to provide more information for Part F. Enter AI-001 Form ID: **AI-**

PART G: EMISSION UNITS MEETING THE CRITERIA OF RULES 281(2)(h), 285(2)(r)(iv), 287(2)(c), OR 290

Review all emission units and applicable requirements at the source and answer the following questions.

G1. Does the source have any new and/or existing emission units which do not already appear in the existing ROP and which meet the criteria of Rules 281(2)(h), 285(2)(r)(iv), 287(2)(c), or 290.

If Yes, identify the emission units in the table below. If No, go to Part H.

Yes No

Note: If several emission units were installed under the same rule above, provide a description of each and an installation/modification/reconstruction date for each.

Origin of Applicable Requirements	Emission Unit Description – <i>Provide Emission Unit ID and a description of Process Equipment, Control Devices and Monitoring Devices</i>	Date Emission Unit was Installed/ Modified/ Reconstructed
<input type="checkbox"/> Rule 281(2)(h) or 285(2)(r)(iv) cleaning operation		
<input type="checkbox"/> Rule 287(2)(c) surface coating line		
<input type="checkbox"/> Rule 290 process with limited emissions		

Comments:

Check here if an AI-001 Form is attached to provide more information for Part G. Enter AI-001 Form ID: **AI-**

PART H: REQUIREMENTS FOR ADDITION OR CHANGE

Complete this part of the application form for all proposed additions, changes or deletions to the existing ROP. This includes state or federal regulations that the source is subject to and that must be incorporated into the ROP or other proposed changes to the existing ROP. **Do not include additions or changes that have already been identified in Parts F or G of this application form.** If additional space is needed copy and complete an additional Part H.

Complete a separate Part H for each emission unit with proposed additions and/or changes.

H1. Are there changes that need to be incorporated into the ROP that have not been identified in Parts F and G? If <u>Yes</u> , answer the questions below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H2. Are there any proposed administrative changes to any of the existing emission unit names, descriptions or control devices in the ROP? If <u>Yes</u> , describe the changes in questions H8 – H16 below and in the affected Emission Unit Table(s) in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H3. Does the source propose to add a new emission unit or flexible group to the ROP not previously identified in Parts F or G? If <u>Yes</u> , identify and describe the emission unit name, process description, control device(s), monitoring device(s) and applicable requirements in questions H8 – H16 below and in a new Emission Unit Table in the mark-up of the ROP. See instructions on how to incorporate a new emission unit/flexible group into the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H4. Does the source propose to add new state or federal regulations to the existing ROP? If <u>Yes</u> , on an AI-001 Form, identify each emission unit/flexible group that the new regulation applies to and identify <u>each</u> state or federal regulation that should be added. Also, describe the new requirements in questions H8 – H16 below and add the specific requirements to existing emission units/flexible groups in the mark-up of the ROP, create a new Emission Unit/Flexible Group Table, or add an AQD template table for the specific state or federal requirement.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H5. Has a Consent Order/Consent Judgment (CO/CJ) been issued where the requirements were not incorporated into the existing ROP? If <u>Yes</u> , list the CO/CJ number(s) below and add or change the conditions and underlying applicable requirements in the appropriate Emission Unit/Flexible Group Tables in the mark-up of the ROP.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H6. Does the source propose to add, change and/or delete source-wide requirements? If <u>Yes</u> , identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
H7. Are you proposing to streamline any requirements? If <u>Yes</u> , identify the streamlined and subsumed requirements and the EU ID, and provide a justification for streamlining the applicable requirement below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H8. Does the source propose to add, change and/or delete **emission limit** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H9. Does the source propose to add, change and/or delete **material limit** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H10. Does the source propose to add, change and/or delete **process/operational restriction** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No
 FGRULE285(2)(mm): ANR proposes to incorporate language for the process-specific standards under Rule 285(2)(mm) to match the EGLE template for Rule 285(2)(mm) Natural Gas & Field Gas Venting.

H11. Does the source propose to add, change and/or delete **design/equipment parameter** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H12. Does the source propose to add, change and/or delete **testing/sampling** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H13. Does the source propose to add, change and/or delete **monitoring/recordkeeping** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H14. Does the source propose to add, change and/or delete **reporting** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No
 FGRULE285(2)(mm): ANR proposes to incorporate language for the process-specific standards under Rule 285(2)(mm) to match the EGLE template for Rule 285(2)(mm) Natural Gas & Field Gas Venting.

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H15. Does the source propose to add, change and/or delete **stack/vent restrictions**? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H16. Does the source propose to add, change and/or delete any **other** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

H17. Does the source propose to add terms and conditions for an alternative operating scenario or intra-facility trading of emissions? If Yes, identify the proposed conditions in a mark-up of the corresponding section of the ROP and provide a justification below. Yes No

Check here if an AI-001 Form is attached to provide more information for Part H. Enter AI-001 Form ID: **AI-**



RENEWABLE OPERATING PERMIT APPLICATION AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: B7196

Section Number (if applicable):

1. Additional Information ID
AI-

Additional Information

2. Is This Information Confidential?

Yes No

Page of

APPENDICIES

TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Appendix A Area Maps and Process Flow Diagrams

Appendix A AREA MAPS AND PROCESS FLOW DIAGRAMS





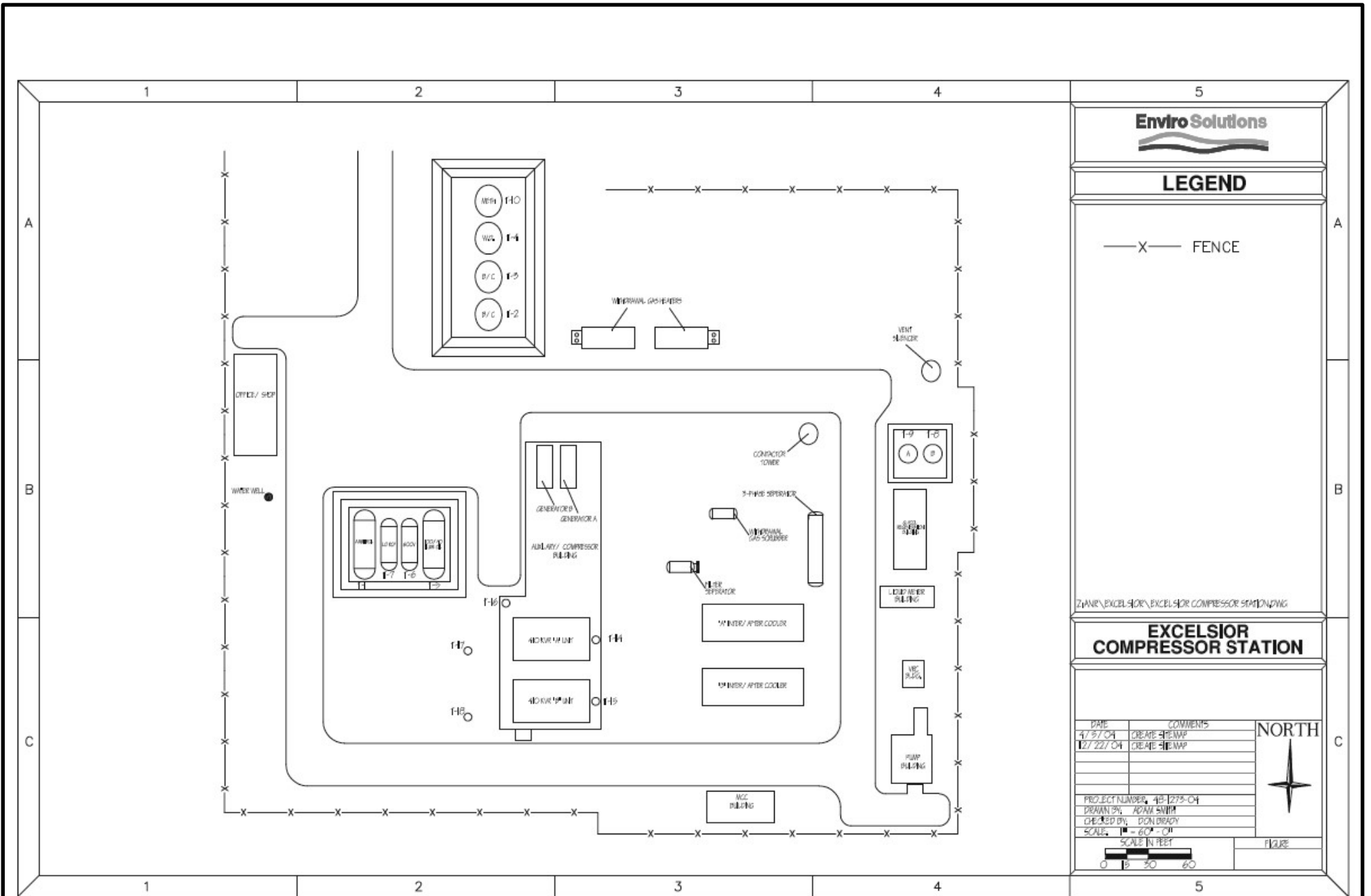
ANR Storage Company – Excelsior Compressor Station, Kalkaska County, MI

Site Map



Figure 1

August 2021



ANR Storage Company – Excelsior Compressor Station, Kalkaska County, MI

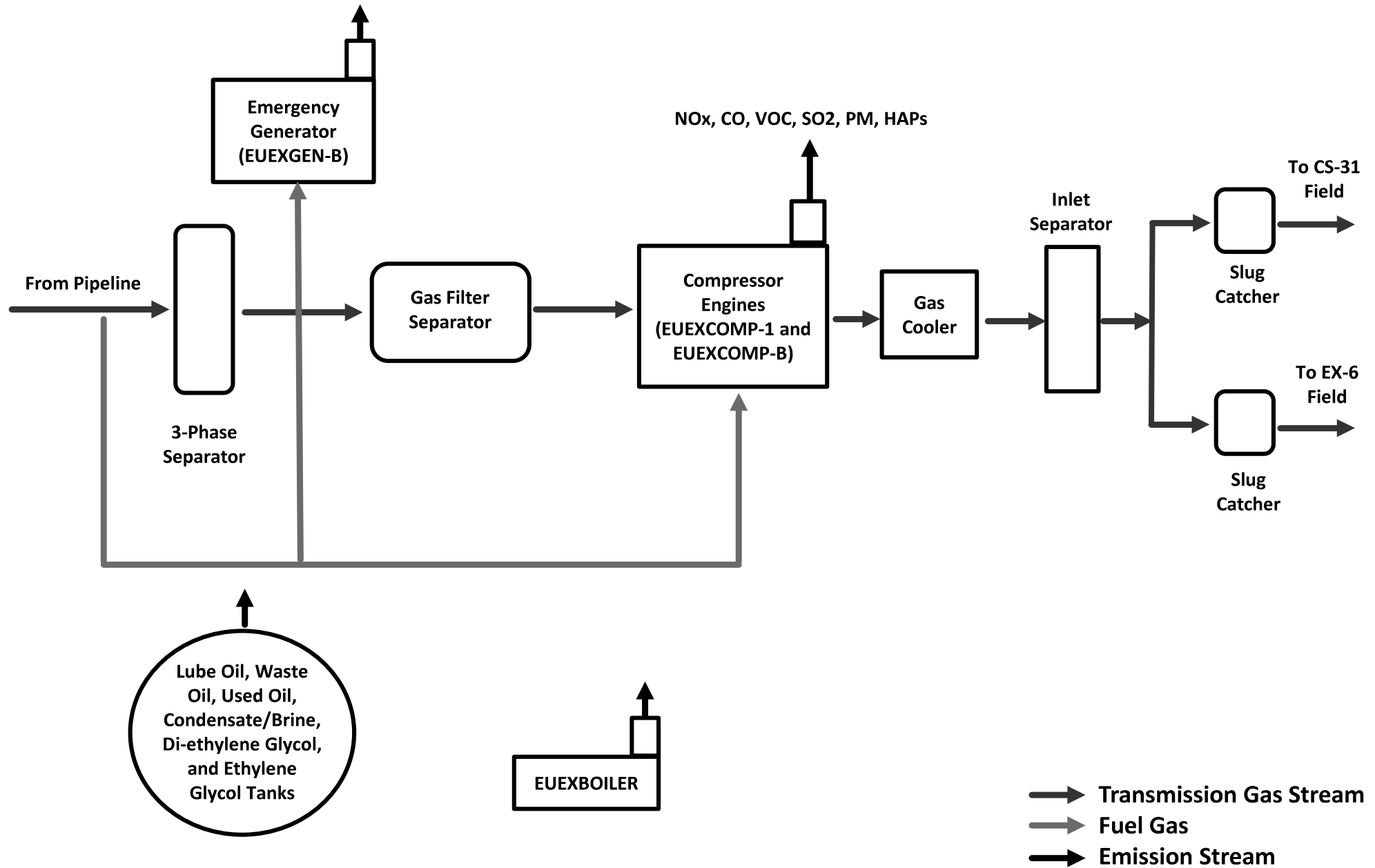
Plot Plan



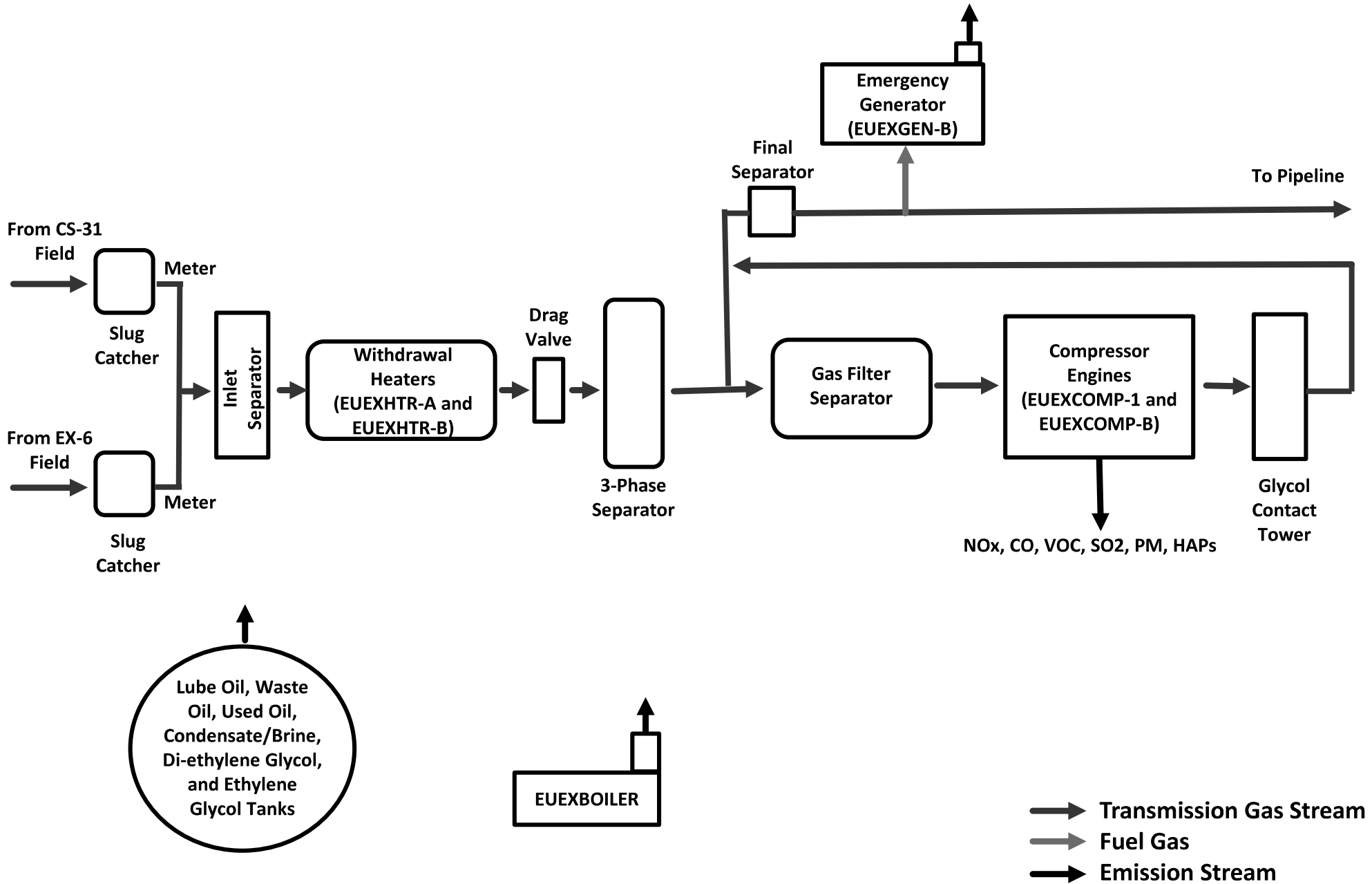
Figure 2

August 2021

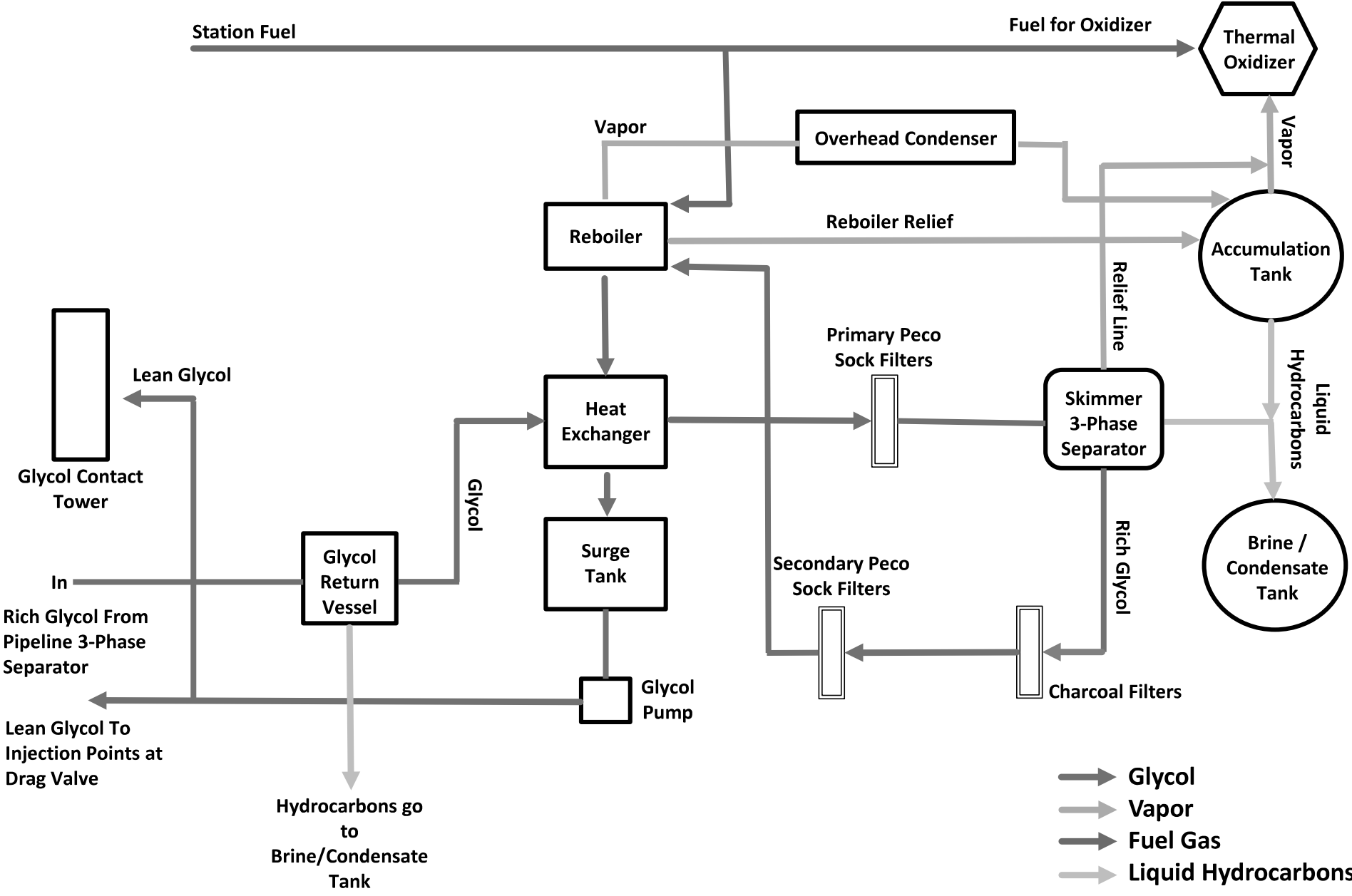
GAS INJECTION PROCESS FLOW DIAGRAM



GAS WITHDRAWAL PROCESS FLOW DIAGRAM



GLYCOL DEHYDRATION SYSTEM PROCESS FLOW DIAGRAM



- Glycol
- Vapor
- Fuel Gas
- Liquid Hydrocarbons

TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Appendix B Emission Calculations

Appendix B EMISSION CALCULATIONS



**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Significant Activities

Emission Point ID	Source	Manufacturer	Model/Type	Rated Capacity (hp)	Heat Input (MMBtu/hr)
EUEXCOMP-A	Compressor Engine A	Ingersoll Rand	410-KVR-TE	3,750	28.56
EUEXCOMP-B	Compressor Engine B	Ingersoll Rand	410-KVR-TE	3,750	28.56
EUEXGEN-B	Generator Engine	Caterpillar	G99	490	1.25
EUEXBOILER	Natural Gas Fired Boiler	Cleaver Brooks	--	--	2.51
EUEXHTR-A	Natural Gas Fired Withdrawal Gas Heater	Sivalls	--	--	10.00
EUEXHTR-B	Natural Gas Fired Withdrawal Gas Heater	Sivalls	--	--	10.00
EUEXGLYDEH	Glycol Dehydrator/Reboiler	--	--	--	0.5

Exempt Sources

Emission Point ID	Source Description	Rating/Capacity	Citation / Reason for classification as insignificant activity
EUTANKCB-A	Condensate/Brine Tank	12,600 gal	Exempt from Rule 201 under Rule 1284(2)(e)
EUTANKCB-B	Condensate/Brine Tank	12,600 gal	Exempt from Rule 201 under Rule 1284(2)(e)
EUEXTANK-EG	Ethylene Glycol Tank	5,515 gal	Exempt from Rule 201 under Rule 1284(2)(i)
EUEXTANK-DG-A	Diethylene Glycol Tank	2,300 gal	Exempt from Rule 201 under Rule 1284(2)(i)
EUEXTANK-DG-B	Diethylene Glycol Tank	2,900 gal	Exempt from Rule 201 under Rule 1284(2)(i)
EUEXHEATER-1	Three (3) Heaters	0.012 MMBtu/hr ea.	Exempt from Rule 201 under Rule 1282(2)(b)(i)
EUEXHEATERS-2	Two (2) Brutest Heaters	0.012 MMBtu/hr ea.	Exempt from Rule 201 under Rule 1282(2)(b)(i)
EUEXWTRHTR-1	Water Heater	0.05 MMBtu/hr	Exempt from Rule 201 under Rule 1282(2)(b)(i)
EUEXWTRHTR-2	Water Heater	0.05 MMBtu/hr	Exempt from Rule 201 under Rule 1282(2)(b)(i)
EUEXMETHANOL	Methanol Tank	16,800 gal	Exempt from Rule 201 under Rule 1284(2)(n)
N/A	Corrosion Inhibitor	110 gal	Exempt from Rule 201 under Rule 1284(2)(c)
N/A	Nine (9) Lube, MiniLube Oil, Used Oil, and Mist Oil Tanks	Cap.: 177-12,600 gal	Exempt from Rule 201 under Rule 1284(2)(c)
N/A	Glycol Tank	110 gal	Exempt from Rule 201 under Rule 1284(2)(i)
EUEXPIPEMAINT	Routine and emergency venting of natural gas from transmission and distribution systems.	--	Exempt from Rule 201 under Rule 1285(2)(mm)
EUEXFIELDMAINT	Routine and emergency venting of field gas from gathering lines.	--	Exempt from Rule 201 under Rule 1285(2)(mm)

TITLE V RENEWABLE OPERATING PERMIT APPLICATION
 ANR STORAGE COMPANY
 EXCELSIOR COMPRESSOR STATION, MICHIGAN

Significant Activities:

SOURCE ID:	Emission Rate															
	NOX		CO		VOC		PM		PM10		PM2.5		SO2		GHG's	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
EUEXCOMP-A	99.20	434.50	15.91	20.17	3.37	4.27	0.29	0.36	0.29	0.36	0.29	0.36	0.017	0.021	3,340.94	14,633.32
EUEXCOMP-B	99.20	434.50	15.91	20.17	3.37	4.27	0.29	0.36	0.29	0.36	0.29	0.36	0.017	0.021	3,340.94	14,633.32
EUEXGEN-B	8.66	37.94	14.58	63.87	0.116	0.51	0.08	0.33	0.08	0.33	0.08	0.33	2.30E-03	1.01E-02	458.56	2,008.50
EUEXBOILER	0.25	1.08	0.21	0.91	0.014	0.059	0.019	0.082	0.02	0.08	0.02	0.08	1.48E-03	6.47E-03	293.62	1,286.05
EUEXHTR-A	0.98	4.29	0.82	3.61	0.054	0.24	0.075	0.33	0.07	0.33	0.07	0.33	5.88E-03	0.026	1,169.80	5,123.71
EUEXHTR-B	0.98	4.29	0.82	3.61	0.054	0.24	0.075	0.33	0.07	0.33	0.07	0.33	5.88E-03	0.026	1,169.80	5,123.71
EUEXGLYDEH	--	--	--	--	5.19	22.74	--	--	--	--	--	--	--	--	--	--
Total:	209.270	916.603	48.252	112.329	12.170	32.328	0.814	1.791	0.814	1.79	0.814	1.79	0.049	0.111	9,773.656	42,808.612

TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN

Compound	Emission Rate														Total	
	EUEXCOMP-A		EUEXCOMP-B		EUEXGEN-B		EUEXBOILER		EUEXHTR-A		EUEXHTR-B		EUEXGLYDEH			
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1,1,2,2-Tetrachloroethane	1.14E-03	5.00E-03	1.14E-03	5.00E-03	1.10E-04	4.83E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	2.39E-03	1.05E-02
1,1,2-Trichloroethane	9.08E-04	3.98E-03	9.08E-04	3.98E-03	6.66E-05	2.92E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.88E-03	8.25E-03
1,3-Butadiene	7.63E-03	3.34E-02	7.63E-03	3.34E-02	2.89E-03	1.26E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.81E-02	7.94E-02
1,3-Dichloropropene	7.54E-04	3.30E-03	7.54E-04	3.30E-03	5.53E-05	2.42E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.56E-03	6.85E-03
2,2,4-Trimethylpentane	7.14E-03	3.13E-02	7.14E-03	3.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.43E-02	6.25E-02
2-Methylnaphthalene	9.48E-04	4.15E-03	9.48E-04	4.15E-03	0.00E+00	0.00E+00	5.91E-08	2.59E-07	2.35E-07	1.03E-06	2.35E-07	1.03E-06	--	--	1.90E-03	8.31E-03
3-Methylcholanthrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	3.97E-08	1.74E-07
7,12-Dimethylbenz(a)anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.94E-08	1.72E-07	1.57E-07	6.87E-07	1.57E-07	6.87E-07	--	--	3.53E-07	1.55E-06
Acenaphthene	3.57E-05	1.56E-04	3.57E-05	1.56E-04	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	7.14E-05	3.13E-04
Acenaphthylene	1.58E-04	6.92E-04	1.58E-04	6.92E-04	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	3.16E-04	1.38E-03
Acetaldehyde	2.39E-01	1.05E+00	2.39E-01	1.05E+00	1.22E-02	5.32E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	4.90E-01	2.14E+00
Acrolein	1.47E-01	6.43E-01	1.47E-01	6.43E-01	1.15E-02	5.02E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	3.05E-01	1.34E+00
Anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.91E-09	2.59E-08	2.35E-08	1.03E-07	2.35E-08	1.03E-07	--	--	5.30E-08	2.32E-07
Benz(a)anthracene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	3.97E-08	1.74E-07
Benzene	1.26E-02	5.50E-02	1.26E-02	5.50E-02	6.88E-03	3.01E-02	5.17E-06	2.26E-05	2.06E-05	9.02E-05	2.06E-05	9.02E-05	5.53E-03	2.42E-02	3.76E-02	1.65E-01
Benzo(a)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.95E-09	1.29E-08	1.18E-08	5.15E-08	1.18E-08	5.15E-08	--	--	2.65E-08	1.16E-07
Benzo(b)fluoranthene	4.74E-06	2.08E-05	4.74E-06	2.08E-05	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	9.52E-06	4.17E-05
Benzo(e)pyrene	1.19E-05	5.19E-05	1.19E-05	5.19E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	2.37E-05	1.04E-04
Benzo(g,h,i)perylene	1.18E-05	5.18E-05	1.18E-05	5.18E-05	0.00E+00	0.00E+00	2.95E-09	1.29E-08	1.18E-08	5.15E-08	1.18E-08	5.15E-08	--	--	2.37E-05	1.04E-04
Benzo(k)fluoranthene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	3.97E-08	1.74E-07
Biphenyl	6.05E-03	2.65E-02	6.05E-03	2.65E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.21E-02	5.30E-02
Carbon Tetrachloride	1.05E-03	4.59E-03	1.05E-03	4.59E-03	7.71E-05	3.38E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	2.17E-03	9.52E-03
Chlorobenzene	8.68E-04	3.80E-03	8.68E-04	3.80E-03	5.62E-05	2.46E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.79E-03	7.85E-03
Chloroform	8.14E-04	3.57E-03	8.14E-04	3.57E-03	5.97E-05	2.61E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.69E-03	7.39E-03
Chrysene	1.98E-05	8.67E-05	1.98E-05	8.67E-05	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	3.96E-05	1.74E-04
Dichlorobenzene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.95E-06	1.29E-05	1.18E-05	5.15E-05	1.18E-05	5.15E-05	--	--	2.65E-05	1.16E-04
Ethylbenzene	1.13E-03	4.97E-03	1.13E-03	4.97E-03	1.08E-04	4.73E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	2.38E-03	1.04E-02
Ethylene Dibromide	1.27E-03	5.54E-03	1.27E-03	5.54E-03	9.28E-05	4.06E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	2.62E-03	1.15E-02
Fluoranthene	3.17E-05	1.39E-04	3.17E-05	1.39E-04	0.00E+00	0.00E+00	7.38E-09	3.23E-08	2.94E-08	1.29E-07	2.94E-08	1.29E-07	--	--	6.35E-05	2.78E-04
Fluorene	1.62E-04	7.09E-04	1.62E-04	7.09E-04	0.00E+00	0.00E+00	6.89E-09	3.02E-08	2.75E-08	1.20E-07	2.75E-08	1.20E-07	--	--	3.24E-04	1.42E-03
Formaldehyde	1.51E+00	6.60E+00	1.51E+00	6.60E+00	8.93E-02	3.91E-01	1.85E-04	8.08E-04	7.35E-04	3.22E-03	7.35E-04	3.22E-03	--	--	3.11	13.61
Indeno(1,2,3-c,d)pyrene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-09	1.94E-08	1.76E-08	7.73E-08	1.76E-08	7.73E-08	--	--	3.97E-08	1.74E-07
Methanol	7.14E-02	3.13E-01	7.14E-02	3.13E-01	1.33E-02	5.84E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.56E-01	6.84E-01
Methylene Chloride	5.71E-04	2.50E-03	5.71E-04	2.50E-03	1.79E-04	7.86E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.32E-03	5.79E-03
n-Hexane	3.17E-02	1.39E-01	3.17E-02	1.39E-01	0.00E+00	0.00E+00	4.43E-03	1.94E-02	1.76E-02	7.73E-02	1.76E-02	7.73E-02	--	--	1.03E-01	4.52E-01
Naphthalene	2.12E-03	9.31E-03	2.12E-03	9.31E-03	4.23E-04	1.85E-03	1.50E-06	6.57E-06	5.98E-06	2.62E-05	5.98E-06	2.62E-05	--	--	4.69E-03	2.05E-02
PAH	7.68E-04	3.36E-03	7.68E-04	3.36E-03	6.14E-04	2.69E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	2.15E-03	9.42E-03
Perylene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	0.00E+00	0.00E+00
Phenanthrene	2.97E-04	1.30E-03	2.97E-04	1.30E-03	0.00E+00	0.00E+00	4.18E-08	1.83E-07	1.67E-07	7.30E-07	1.67E-07	7.30E-07	--	--	5.94E-04	2.60E-03
Phenol	6.85E-04	3.00E-03	6.85E-04	3.00E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.37E-03	6.00E-03
Pyrene	3.88E-05	1.70E-04	3.88E-05	1.70E-04	0.00E+00	0.00E+00	1.23E-08	5.39E-08	4.90E-08	2.15E-07	4.90E-08	2.15E-07	--	--	7.78E-05	3.41E-04
Styrene	6.74E-04	2.95E-03	6.74E-04	2.95E-03	5.18E-05	2.27E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.40E-03	6.13E-03
Toluene	1.17E-02	5.10E-02	1.17E-02	5.10E-02	2.43E-03	1.06E-02	8.37E-06	3.66E-05	3.33E-05	1.46E-04	3.33E-05	1.46E-04	--	--	2.58E-02	1.13E-01
Vinyl Chloride	4.26E-04	1.86E-03	4.26E-04	1.86E-03	3.13E-05	1.37E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	8.82E-04	3.86E-03
Xylene	5.26E-03	2.30E-02	5.26E-03	2.30E-02	8.45E-04	3.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	--	--	1.14E-02	4.97E-02
Arsenic	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.92E-07	2.16E-06	1.96E-06	8.59E-06	1.96E-06	8.59E-06	--	--	4.41E-06	1.93E-05
Beryllium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.95E-08	1.29E-07	1.18E-07	5.15E-07	1.18E-07	5.15E-07	--	--	2.65E-07	1.16E-06
Cadmium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-06	1.19E-05	1.08E-05	4.72E-05	1.08E-05	4.72E-05	--	--	2.43E-05	1.06E-04
Chromium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.45E-06	1.51E-05	1.37E-05	6.01E-05	1.37E-05	6.01E-05	--	--	3.09E-05	1.35E-04
Cobalt	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-07	9.05E-07	8.24E-07	3.61E-06	8.24E-07	3.61E-06	--	--	1.85E-06	8.12E-06
Manganese	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.35E-07	4.10E-06	3.73E-06	1.63E-05	3.73E-06	1.63E-05	--	--	8.39E-06	3.67E-05
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.40E-07	2.80E-06	2.55E-06	1.12E-05	2.55E-06	1.12E-05	--	--	5.74E-06	2.51E-05
Nickel	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.17E-06	2.26E-05	2.06E-05	9.02E-05	2.06E-05	9.02E-05	--	--	4.63E-05	2.03E-04
Selenium	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.91E-08	2.59E-07	2.35E-07	1.03E-06	2.35E-07	1.03E-06	--	--	5.30E-07	2.32E-06
Total	2.06	9.03	2.06	9.03	0.141	6.18E-01	4.65E-03	0.020	0.019	0.081	0.019	0.081	1.52	6.66	4.31	18.89

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Emission Unit ID	EUEXCOMP-A
Unit ID No.	EU00020
Description of Unit	Compressor Engine A
Manufacturer	Ingersoll Rand 410-KVR-TE
Date of Construction/Modification	10/28/1981
Stroke Cycle	4-Stroke
Type of Burn	Lean-burn
Fuel Used	Natural Gas
Minimum Higher Heating Value (HHV)	918 Btu/scf
Maximum Higher Heating Value (HHV)	1,020 Btu/scf
Rated Horsepower (hp)	3,750 hp
Heat Input (MMBtu/hr)	28.56 MMBtu/hr
Maximum Hourly Fuel Consumption	28,000 scf/hr
Control Device	N/A
Stack Designation	SVEX001
Annual Hours of Operation	8,760 hr/yr
Annual Fuel Consumption	245.28 MMscf/yr

Emission Factors:

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Source
NOx	99.20	lbs/hr	a
CO	5.57E-01	lb/MMBtu	b
NM/NE VOC	1.18E-01	lb/MMBtu	b
PM (Filterable + Condensable)	9.99E-03	lb/MMBtu	b
PM10	9.99E-03	lb/MMBtu	b
PM2.5	9.99E-03	lb/MMBtu	b
SO2	5.88E-04	lb/MMBtu	b

^a Permit Limit

^b Based on AP-42 Table 3.2-2 "Uncontrolled Emission Factors for 4-Stroke Lean Burn Engines" (7/00)

POTENTIAL EMISSIONS:

Pollutant	Emission Rate lb/hr	Calculation Methodology	Potential Emissions ^e ton/yr
NOx	99.20	c	434.50
CO	15.91	d	20.17
NM/NEVOC	3.37	d	4.27
PM (Filterable + Condensable)	0.29	d	0.36
PM10	0.29	d	0.36
PM2.5	0.29	d	0.36
SO2	0.017	d	0.021

Sample Calculation:

^c Permit Limit

^d Emission Rate (lb/hr) = (Emission Factor lb/MMBtu) * (Heat Input MMBtu/hr)

^e Emission Rate (ton/yr) = (Emission Factor gm/hp-hr) * (1 lb/453.6 gm) * (Rated Horsepower hp) * (Annual Operation hrs/yr) * (1 ton/2000 lb)

HAP Calculated Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^f	Potential Emissions	
		(lb/hr) ^g	(tons/yr) ^h
HAPs:			
1,1,2,2-Tetrachloroethane	4.00E-05	1.14E-03	5.00E-03
1,1,2-Trichloroethane	3.18E-05	9.08E-04	3.98E-03
1,3-Butadiene	2.67E-04	7.63E-03	0.0334
1,3-Dichloropropene	2.64E-05	7.54E-04	3.30E-03
2,2,4-Trimethylpentane	2.50E-04	7.14E-03	0.0313
2-Methylnaphthalene	3.32E-05	9.48E-04	4.15E-03
Acenaphthene	1.25E-06	3.57E-05	1.56E-04
Acenaphthylene	5.53E-06	1.58E-04	6.92E-04
Acetaldehyde	8.36E-03	0.239	1.0458
Acrolein	5.14E-03	0.147	0.6430
Benzene	4.40E-04	0.0126	0.0550
Benzo(b)fluoranthene	1.66E-07	4.74E-06	2.08E-05
Benzo(e)pyrene	4.15E-07	1.19E-05	5.19E-05
Benzo(g,h,i)perylene	4.14E-07	1.18E-05	5.18E-05
Biphenyl	2.12E-04	6.05E-03	0.0265
Carbon Tetrachloride	3.67E-05	1.05E-03	4.59E-03
Chlorobenzene	3.04E-05	8.68E-04	3.80E-03
Chloroform	2.85E-05	8.14E-04	3.57E-03
Chrysene	6.93E-07	1.98E-05	8.67E-05
Ethylbenzene	3.97E-05	1.13E-03	4.97E-03
Ethylene Dibromide	4.43E-05	1.27E-03	5.54E-03
Fluoranthene	1.11E-06	3.17E-05	1.39E-04
Fluorene	5.67E-06	1.62E-04	7.09E-04
Formaldehyde	0.0528	1.51	6.6049
Methanol	2.50E-03	0.0714	0.3127
Methylene Chloride	2.00E-05	5.71E-04	2.50E-03
n-Hexane	1.11E-03	0.0317	0.1389
Naphthalene	7.44E-05	2.12E-03	9.31E-03
PAH	2.69E-05	7.68E-04	3.36E-03
Phenanthrene	1.04E-05	2.97E-04	1.30E-03
Phenol	2.40E-05	6.85E-04	3.00E-03
Pyrene	1.36E-06	3.88E-05	1.70E-04
Styrene	2.36E-05	6.74E-04	2.95E-03
Toluene	4.08E-04	0.0117	0.0510
Vinyl Chloride	1.49E-05	4.26E-04	1.86E-03
Xylene	1.84E-04	5.26E-03	0.0230
Total HAP		2.06	9.03

^f Based on AP-42 Table 3.2-2 "Uncontrolled Emission Factors for 4-Stroke Lean Burn Engines" (7/00).

^g Emission Rate (lb/hr) = (Emission Factor lb/MMBtu) * (Max Fuel Flow scf/hr) * (NG Heat Content Btu/scf) / (1e^6)

^h Emission Rate (ton/yr) = (Emission Factor lb/MMBtu) * (Max Fuel Flow scf/hr) * (NG Heat Content Btu/scf) / (1e^6) * (Annual Hours of Operation hrs/yr) * (1 ton/2000 lb)

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Unit ID No.: EUEXCOMP-A
Description of Unit: Compressor Engine A

Potential Greenhouse Gas (GHG) Emission Calculations^[2]

Pollutant	Uncontrolled Emission Factor ^[2]	Factor Units ^[2]	Emissions (lb/hr)	Emissions (TPY)	Global Warming Potential (GWP) ^[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO ₂	53.06	kg CO ₂ /MMBtu	3340.87	14633.02	1	3340.87	14633.02
CH ₄	1.00E-03	kg CH ₄ /MMBtu	0.063	0.28	25	1.57	6.89
N ₂ O	1.00E-04	kg N ₂ O/MMBtu	6.30E-03	0.028	298	1.88	8.22
TOTAL GHGs	--	--	3,340.94	14,633.32	--	--	--
TOTAL GHGs (CO₂e)	--	--	--	--	--	3,344.32	14,648.13

^[1] Heat input based on fuel consumption and permitted HP.

^[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

$$\text{GHG Emissions (lb/hr)} = \text{EF}_{\text{GHG}} \text{ (kg/MMBtu)} * 2.204623 \text{ lb/kg} * \text{Source Specific Heat Input (MMBtu/hr)}$$

$$\text{GHG Emissions (TPY)} = \text{GHG Emissions (lb/hr)} * \text{Annual Hoperating Hours (hr/yr)} * 1 \text{ Ton}/2000 \text{ lb}$$

$$\text{CO}_2\text{e Emissions (TPY)} = \sum (\text{GHG Emissions (tpy)} * \text{GWP})$$

Where:

$$\text{EF}_{\text{GHG}} = \text{Table C-2 for CH}_4 \text{ and N}_2\text{O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)}$$

$$\text{Heat Input} = \text{Btu/hp-hr} * \text{Site-rated hp} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = \text{MMBtu/hr}$$

$$\text{GWP} = \text{Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1}$$

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Emission Unit ID	EUEXCOMP-B
Unit ID No.	EU00021
Description of Unit	Compressor Engine B
Manufacturer	Ingersoll Rand 410-KVR-TE
Date of Construction/Modification	10/28/1981
Stroke Cycle	4-Stroke
Type of Burn	Lean-burn
Fuel Used	Natural Gas
Minimum Higher Heating Value (HHV)	918 Btu/scf
Maximum Higher Heating Value (HHV)	1,020 Btu/scf
Rated Horsepower (hp)	3,750 hp
Heat Input (MMBtu/hr)	28.56 MMBtu/hr
Maximum Hourly Fuel Consumption	28,000 scf/hr
Control Device	N/A
Stack Designation	SVWL002
Annual Hours of Operation	8,760 hr/yr
Annual Fuel Consumption	245.28 MMscf/yr

Emission Factors:

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Source
NOx	99.20	lbs/hr	a
CO	5.57E-01	lb/MMBtu	b
NM/NE VOC	1.18E-01	lb/MMBtu	b
PM (Filterable + Condensable)	9.99E-03	lb/MMBtu	b
PM10	9.99E-03	lb/MMBtu	b
PM2.5	9.99E-03	lb/MMBtu	b
SO2	5.88E-04	lb/MMBtu	b

^a Permit Limit

^b Based on AP-42 Table 3.2-2 "Uncontrolled Emission Factors for 4-Stroke Lean Burn Engines" (7/00)

POTENTIAL EMISSIONS:

Pollutant	Emission Rate lb/hr	Calculation Methodology	Potential Emissions ^e ton/yr
NOx	99.20	c	434.50
CO	15.91	d	20.17
NM/NEVOC	3.37	d	4.27
PM (Filterable + Condensable)	0.29	d	0.36
PM10	0.29	d	0.36
PM2.5	0.29	d	0.36
SO2	0.017	d	0.021

Sample Calculation:

^c Permit Limit

^d Emission Rate (lb/hr) = (Emission Factor lb/MMBtu) * (Heat Input MMBtu/hr)

^e Emission Rate (ton/yr) = (Emission Factor gm/hp-hr) * (1 lb/453.6 gm) * (Rated Horsepower hp) * (Annual Operation hrs/yr) * (1 ton/2000 lb)

HAP Calculated Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^f	Potential Emissions	
		(lb/hr) ^g	(tons/yr) ^h
HAPs:			
1,1,2,2-Tetrachloroethane	4.00E-05	1.14E-03	5.00E-03
1,1,2-Trichloroethane	3.18E-05	9.08E-04	3.98E-03
1,3-Butadiene	2.67E-04	7.63E-03	0.0334
1,3-Dichloropropene	2.64E-05	7.54E-04	3.30E-03
2,2,4-Trimethylpentane	2.50E-04	7.14E-03	0.0313
2-Methylnaphthalene	3.32E-05	9.48E-04	4.15E-03
Acenaphthene	1.25E-06	3.57E-05	1.56E-04
Acenaphthylene	5.53E-06	1.58E-04	6.92E-04
Acetaldehyde	8.36E-03	0.239	1.0458
Acrolein	5.14E-03	0.147	0.6430
Benzene	4.40E-04	0.0126	0.0550
Benzo(b)fluoranthene	1.66E-07	4.74E-06	2.08E-05
Benzo(e)pyrene	4.15E-07	1.19E-05	5.19E-05
Benzo(g,h,i)perylene	4.14E-07	1.18E-05	5.18E-05
Biphenyl	2.12E-04	6.05E-03	0.0265
Carbon Tetrachloride	3.67E-05	1.05E-03	4.59E-03
Chlorobenzene	3.04E-05	8.68E-04	3.80E-03
Chloroform	2.85E-05	8.14E-04	3.57E-03
Chrysene	6.93E-07	1.98E-05	8.67E-05
Ethylbenzene	3.97E-05	1.13E-03	4.97E-03
Ethylene Dibromide	4.43E-05	1.27E-03	5.54E-03
Fluoranthene	1.11E-06	3.17E-05	1.39E-04
Fluorene	5.67E-06	1.62E-04	7.09E-04
Formaldehyde	5.28E-02	1.51	6.6049
Methanol	2.50E-03	0.0714	0.3127
Methylene Chloride	2.00E-05	5.71E-04	2.50E-03
n-Hexane	1.11E-03	0.0317	0.1389
Naphthalene	7.44E-05	2.12E-03	9.31E-03
PAH	2.69E-05	7.68E-04	3.36E-03
Phenanthrene	1.04E-05	2.97E-04	1.30E-03
Phenol	2.40E-05	6.85E-04	3.00E-03
Pyrene	1.36E-06	3.88E-05	1.70E-04
Styrene	2.36E-05	6.74E-04	2.95E-03
Toluene	4.08E-04	0.0117	0.0510
Vinyl Chloride	1.49E-05	4.26E-04	1.86E-03
Xylene	1.84E-04	5.26E-03	0.0230
Total HAP		2.06	9.03

^f Based on AP-42 Table 3.2-2 "Uncontrolled Emission Factors for 4-Stroke Lean Burn Engines" (7/00).

^g Emission Rate (lb/hr) = (Emission Factor lb/MMBtu) * (Max Fuel Flow scf/hr) * (NG Heat Content Btu/scf) / (1e^6)

^h Emission Rate (ton/yr) = (Emission Factor lb/MMBtu) * (Max Fuel Flow scf/hr) * (NG Heat Content Btu/scf) / (1e^6) * (Annual Hours of Operation hrs/yr) * (1 ton/2000 lb)

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Unit ID No.: EUEXCOMP-B
Description of Unit: Compressor Engine B

Potential Greenhouse Gas (GHG) Emission Calculations^[2]

Pollutant	Uncontrolled Emission Factor ^[2]	Factor Units ^[2]	Emissions (lb/hr)	Emissions (TPY)	Global Warming Potential (GWP) ^[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO ₂	53.06	kg CO ₂ /MMBtu	3340.87	14633.02	1	3340.87	14633.02
CH ₄	1.00E-03	kg CH ₄ /MMBtu	0.063	0.28	25	1.57	6.89
N ₂ O	1.00E-04	kg N ₂ O/MMBtu	6.30E-03	0.028	298	1.88	8.22
TOTAL GHGs	--	--	3,340.94	14,633.32	--	--	--
TOTAL GHGs (CO₂e)	--	--	--	--	--	3,344.32	14,648.13

^[1] Heat input based on fuel consumption and permitted HP.

^[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

$$\text{GHG Emissions (lb/hr)} = \text{EF}_{\text{GHG}} \text{ (kg/MMBtu)} * 2.204623 \text{ lb/kg} * \text{Source Specific Heat Input (MMBtu/hr)}$$

$$\text{GHG Emissions (TPY)} = \text{GHG Emissions (lb/hr)} * \text{Annual Hoperating Hours (hr/yr)} * 1 \text{ Ton}/2000 \text{ lb}$$

$$\text{CO}_2\text{e Emissions (TPY)} = \sum (\text{GHG Emissions (tpy)} * \text{GWP})$$

Where:

$$\text{EF}_{\text{GHG}} = \text{Table C-2 for CH}_4 \text{ and N}_2\text{O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)}$$

$$\text{Heat Input} = \text{Btu/hp-hr} * \text{Site-rated hp} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = \text{MMBtu/hr}$$

$$\text{GWP} = \text{Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1}$$

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Emission Unit No.	EUEXGEN-B
Unit ID No.	Emergency Engine
Description of Unit	Emergency Generator No. 2
Manufacturer	Caterpillar G399
Date of Construction/Modification	10/28/1981
Stroke Cycle	4-Stroke
Type of Burn	Rich-burn
Fuel Used	Natural Gas
Minimum Higher Heating Value (HHV)	918 Btu/scf
Maximum Higher Heating Value (HHV)	1,020 Btu/scf
Heat Rate (Btu/bhp-hr)	8000 Btu/bhp-hr
Rated Horsepower (hp)	490 hp
Heat Input (MMBtu/hr)	3.92 MMBtu/hr
Maximum Hourly Fuel Consumption	4,270 scf/hr
Stack Designation	SVEX005
Annual Hours of Operation	8,760 hr/yr
Annual Fuel Consumption	37.41 MMscf/yr

Emission Factors:

Pollutant	Emission Factor	Emission Factor Units	Emission Factor Source
NOx	2.21	lb/MMBtu	a
CO	3.72	lb/MMBtu	a
NM/NE VOC	0.0296	lb/MMBtu	a
PM (Filterable + Condensable)	0.019	lb/MMBtu	a
PM10	0.019	lb/MMBtu	a
PM2.5	0.019	lb/MMBtu	a
SO2	5.88E-04	lb/MMBtu	a

^a Based on AP-42 Table 3.2-3 "Uncontrolled Emission Factors for 4-Stroke Rich Burn Engines" (7/00)

POTENTIAL EMISSIONS:

Pollutant	Emission Rate lb/hr	Calculation Methodology	Potential Emissions ^c ton/yr
NOx	8.66	b	37.94
CO	14.58	b	63.87
NM/NEVOC	0.116	b	0.51
PM (Filterable + Condensable)	0.076	b	0.33
PM10	0.076	b	0.33
PM2.5	0.076	b	0.33
SO2	2.30E-03	b	0.01

^b Emission Rate (lb/hr) = (Emission Factor lb/MMBtu) * (Heat Input MMBtu/hr)

^c Potential Emissions (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

HAP Calculated Emissions:

Pollutant	Emission Factor (lb/MMBtu) ^d	Potential Emissions	
		(lb/hr) ^e	(tons/yr) ^f
HAPs:			
1,1,2,2-Tetrachloroethane	2.53E-05	1.10E-04	4.83E-04
1,1,2-Trichloroethane	1.53E-05	6.66E-05	2.92E-04
1,3-Butadiene	6.63E-04	2.89E-03	1.26E-02
1,3-Dichloropropene	1.27E-05	5.53E-05	2.42E-04
Acetaldehyde	2.79E-03	1.22E-02	5.32E-02
Acrolein	2.63E-03	1.15E-02	5.02E-02
Benzene	1.58E-03	6.88E-03	3.01E-02
Carbon Tetrachloride	1.77E-05	7.71E-05	3.38E-04
Chlorobenzene	1.29E-05	5.62E-05	2.46E-04
Chloroform	1.37E-05	5.97E-05	2.61E-04
Ethylbenzene	2.48E-05	1.08E-04	4.73E-04
Ethylene Dibromide	2.13E-05	9.28E-05	4.06E-04
Formaldehyde	0.0205	0.0893	0.39
Methanol	3.06E-03	1.33E-02	5.84E-02
Methylene Chloride	4.12E-05	1.79E-04	7.86E-04
Naphthalene	9.71E-05	4.23E-04	1.85E-03
PAH	1.41E-04	6.14E-04	2.69E-03
Styrene	1.19E-05	5.18E-05	2.27E-04
Toluene	5.58E-04	2.43E-03	1.06E-02
Vinyl Chloride	7.18E-06	3.13E-05	1.37E-04
Xylene	1.94E-04	8.45E-04	3.70E-03
Total HAP		0.1412	0.62

^d Based on AP-42 Table 3.2-3 "Uncontrolled Emission Factors for 4-Stroke Rich Burn Engines" (7/00).

^e Emission Rate (lb/hr) = (Emission Factor lb/MMBtu) * (Heat Input MMBtu/hr)

^f Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Hours of Operation, hrs/yr) * (1 ton/2000 lb)

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Unit ID No.: EUEXGEN-B
Description of Unit: Emergency Generator No. 2

Potential Greenhouse Gas (GHG) Emission Calculations^[2]

Pollutant	Uncontrolled Emission Factor ^[2]	Factor Units ^[2]	Emissions (lb/hr)	Emissions (TPY)	Global Warming Potential (GWP) ^[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO ₂	53.06	kg CO ₂ /MMBtu	458.55	2008.45	1	458.55	2008.45
CH ₄	1.00E-03	kg CH ₄ /MMBtu	8.64E-03	3.79E-02	25	0.216	9.46E-01
N ₂ O	1.00E-04	kg N ₂ O/MMBtu	8.64E-04	3.79E-03	298	0.258	1.13E+00
TOTAL GHGs	--	--	458.56	2008.50	--	--	--
TOTAL GHGs (CO₂e)	--	--	--	--	--	459.02	2010.53

^[1] Heat input based on fuel consumption and permitted HP.

^[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

$$\text{GHG Emissions (lb/hr)} = \text{EF}_{\text{GHG}} \text{ (kg/MMBtu)} * 2.204623 \text{ lb/kg} * \text{Source Specific Heat Input (MMBtu/hr)}$$

$$\text{GHG Emissions (TPY)} = \text{GHG Emissions (lb/hr)} * \text{Annual Hoperating Hours (hr/yr)} * 1 \text{ Ton}/2000 \text{ lb}$$

$$\text{CO}_2\text{e Emissions (TPY)} = \sum (\text{GHG Emissions (tpy)} * \text{GWP})$$

Where:

$$\text{EF}_{\text{GHG}} = \text{Table C-2 for CH}_4 \text{ and N}_2\text{O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)}$$

$$\text{Heat Input} = \text{Btu/hp-hr} * \text{Site-rated hp} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = \text{MMBtu/hr}$$

$$\text{GWP} = \text{Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1}$$

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Emission Unit No.	EUEXBOILER
Unit ID No.	Boiler
Description of Unit	Natural gas-fired boiler No.1
Manufacturer	
Date of Construction/Modification	
Fuel Used	Natural Gas
Maximum Higher Heating Value (HHV)	1,020 Btu/scf
Rated Horsepower (hp)	NA hp
Heat Input (MMBtu/hr)	2.51 MMBtu/hr
Maximum Hourly Fuel Consumption	2,461 scf/hr
Annual Hours of Operation	8,760 hr/yr
Annual Fuel Consumption	21.56 MMscf/yr

Emission Factors:

Pollutant	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Emission Factor Source
NOx	100	9.80E-02	a
CO	84	8.24E-02	a
NM/NE VOC	5.5	5.39E-03	b
PM (Filterable + Condensable)	7.6	7.45E-03	b
PM10	7.6	7.45E-03	b
PM2.5	7.6	7.45E-03	b
SO2	0.6	5.88E-04	b

^a AP-42 Table 1.4-1 "Emission Factors for Nitrogen Oxides (NOx) and Carbon Monoxide (CO) from Natural Gas Combustion" (7/98). Converted from lb/MMscf to lb/MMBtu by dividing by 1,020 Btu/scf.

^b AP-42 Table 1.4-2 "Emission Factors for Criteria Pollutants and Greenhouse Gasses from Natural Gas Combustion" (7/98). Converted from lb/MMscf to lb/MMBtu by dividing by 1,020 Btu/scf.

POTENTIAL EMISSIONS:

Pollutant	Emission Rate (lb/hr)	Calculation Methodology	Potential Emissions ^d (ton/yr)
NOx	0.25	c	1.08
CO	0.21	c	0.91
NM/NEVOC	0.014	c	0.059
PM (Filterable + Condensable)	0.019	c	0.082
PM10	0.019	c	0.082
PM2.5	0.019	c	0.082
SO2	1.48E-03	c	6.47E-03

Sample Calculation:

^c Emission Rate (lb/hr) = (Emission Factor, lb/MMBtu) * (Maximum Higher Heating Value (HHV), Btu/scf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

^d Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

HAP Calculated Emissions:

Pollutant	Emission Factor (lb/MMscf) ^e	Potential Emissions	
		(lb/hr) ^f	(tons/yr) ^g
HAPs:			
2-Methylnaphthalene	2.40E-05	5.91E-08	2.59E-07
3-Methylcholanthrene	1.80E-06	4.43E-09	1.94E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	3.94E-08	1.72E-07
Acenaphthene	1.80E-06	4.43E-09	1.94E-08
Acenaphthylene	1.80E-06	4.43E-09	1.94E-08
Anthracene	2.40E-06	5.91E-09	2.59E-08
Benz(a)anthracene	1.80E-06	4.43E-09	1.94E-08
Benzene	2.10E-03	5.17E-06	2.26E-05
Benzo(a)pyrene	1.20E-06	2.95E-09	1.29E-08
Benzo(b)fluoranthene	1.80E-06	4.43E-09	1.94E-08
Benzo(g,h,i)perylene	1.20E-06	2.95E-09	1.29E-08
Benzo(k)fluoranthene	1.80E-06	4.43E-09	1.94E-08
Chrysene	1.80E-06	4.43E-09	1.94E-08
Dichlorobenzene	1.20E-03	2.95E-06	1.29E-05
Fluoranthene	3.00E-06	7.38E-09	3.23E-08
Fluorene	2.80E-06	6.89E-09	3.02E-08
Formaldehyde	0.0750	1.85E-04	8.08E-04
Indeno(1,2,3-c,d)pyrene	1.80E-06	4.43E-09	1.94E-08
n-Hexane	1.80	4.43E-03	0.0194
Naphthalene	6.10E-04	1.50E-06	6.57E-06
Phenanthrene	1.70E-05	4.18E-08	1.83E-07
Pyrene	5.00E-06	1.23E-08	5.39E-08
Toluene	3.40E-03	8.37E-06	3.66E-05
Arsenic	2.00E-04	4.92E-07	2.16E-06
Beryllium	1.20E-05	2.95E-08	1.29E-07
Cadmium	1.10E-03	2.71E-06	1.19E-05
Chromium	1.40E-03	3.45E-06	1.51E-05
Cobalt	8.40E-05	2.07E-07	9.05E-07
Manganese	3.80E-04	9.35E-07	4.10E-06
Mercury	2.60E-04	6.40E-07	2.80E-06
Nickel	2.10E-03	5.17E-06	2.26E-05
Selenium	2.40E-05	5.91E-08	2.59E-07
Total HAP		4.65E-03	0.0203

^e AP-42 Table 1.4-3 "Emission Factors for Speciated Organic Compounds from Natural Gas Combustion" (7/98) and Table 1.4-4 "Emission Factors for Metals from Natural Gas Combustion" (7/98).

^f Emission Rate (lb/hr) = (Emission Factor, lb/MMscf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

^g Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Unit ID No.: EUEXBOILER
Description of Unit: Natural gas-fired boiler No.1

Potential Greenhouse Gas (GHG) Emission Calculations^[2]

Pollutant	Uncontrolled Emission Factor ^[2]	Factor Units ^[2]	Emissions (lb/hr)	Emissions (TPY)	Global Warming Potential (GWP) ^[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO ₂	53.06	kg CO ₂ /MMBtu	293.61	1286.03	1	293.61	1286.03
CH ₄	1.00E-03	kg CH ₄ /MMBtu	5.53E-03	0.024	25	0.14	0.61
N ₂ O	1.00E-04	kg N ₂ O/MMBtu	5.53E-04	2.42E-03	298	0.16	0.72
TOTAL GHGs	--	--	293.62	1,286.05	--	--	--
TOTAL GHGs (CO₂e)	--	--	--	--	--	293.92	1,287.35

^[1] Heat input based on fuel consumption and permitted HP.

^[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

$$\text{GHG Emissions (lb/hr)} = \text{EF}_{\text{GHG}} \text{ (kg/MMBtu)} * 2.204623 \text{ lb/kg} * \text{Source Specific Heat Input (MMBtu/hr)}$$

$$\text{GHG Emissions (TPY)} = \text{GHG Emissions (lb/hr)} * \text{Annual Hoperating Hours (hr/yr)} * 1 \text{ Ton/2000 lb}$$

$$\text{CO}_2\text{e Emissions (TPY)} = \sum (\text{GHG Emissions (tpy)} * \text{GWP})$$

Where:

$$\text{EF}_{\text{GHG}} = \text{Table C-2 for CH}_4 \text{ and N}_2\text{O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)}$$

$$\text{Heat Input} = \text{Btu/hp-hr} * \text{Site-rated hp} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = \text{MMBtu/hr}$$

$$\text{GWP} = \text{Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1}$$

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Emission Unit No.	EUEXHTR-A
Unit ID No.	--
Description of Unit	Withdrawal Heater
Manufacturer	Sivalls
Date of Construction/Modification	
Fuel Used	Natural Gas
Maximum Higher Heating Value (HHV)	1,020 Btu/scf
Heat Input (MMBtu/hr)	10.00 MMBtu/hr
Maximum Hourly Fuel Consumption	9,804 scf/hr
Annual Hours of Operation	8,760 hr/yr
Annual Fuel Consumption	85.88 MMscf/yr

Emission Factors:

Pollutant	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Emission Factor Source
NOx	100	9.80E-02	a
CO	84	8.24E-02	a
NM/NE VOC	5.5	5.39E-03	b
PM (Filterable + Condensable)	7.6	7.45E-03	b
PM10	7.6	7.45E-03	b
PM2.5	7.6	7.45E-03	b
SO2	0.6	5.88E-04	b

^a AP-42 Table 1.4-1 "Emission Factors for Nitrogen Oxides (NOx) and Carbon Monoxide (CO) from Natural Gas Combustion" (7/98). Converted from lb/MMscf to lb/MMBtu by dividing by 1,020 Btu/scf.

^b AP-42 Table 1.4-2 "Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion" (7/98). Converted from lb/MMscf to lb/MMBtu by dividing by 1,020 Btu/scf.

POTENTIAL EMISSIONS:

Pollutant	Emission Rate (lb/hr)	Calculation Methodology	Potential Emissions ^d (ton/yr)
NOx	0.98	c	4.29
CO	0.82	c	3.61
NM/NEVOC	0.054	c	0.24
PM (Filterable + Condensable)	0.075	c	0.33
PM10	0.075	c	0.33
PM2.5	0.075	c	0.33
SO2	5.88E-03	c	0.026

Sample Calculation:

^c Emission Rate (lb/hr) = (Emission Factor lb/MMscf) * (Max. Hourly Fuel Consumption)/1000000

^d Potential Emissions (tons/yr) = (lb/hr)Potential × (8,760 hr/yr) × (1 ton/2,000 lb).

HAP Calculated Emissions:

Pollutant	Emission Factor (lb/MMscf) ^e	Potential Emissions	
		(lb/hr) ^f	(tons/yr) ^g
HAPs:			
2-Methylnaphthalene	2.40E-05	2.35E-07	1.03E-06
3-Methylcholanthrene	1.80E-06	1.76E-08	7.73E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.57E-07	6.87E-07
Acenaphthene	1.80E-06	1.76E-08	7.73E-08
Acenaphthylene	1.80E-06	1.76E-08	7.73E-08
Anthracene	2.40E-06	2.35E-08	1.03E-07
Benz(a)anthracene	1.80E-06	1.76E-08	7.73E-08
Benzene	2.10E-03	2.06E-05	9.02E-05
Benzo(a)pyrene	1.20E-06	1.18E-08	5.15E-08
Benzo(b)fluoranthene	1.80E-06	1.76E-08	7.73E-08
Benzo(g,h,i)perylene	1.20E-06	1.18E-08	5.15E-08
Benzo(k)fluoranthene	1.80E-06	1.76E-08	7.73E-08
Chrysene	1.80E-06	1.76E-08	7.73E-08
Dichlorobenzene	1.20E-03	1.18E-05	5.15E-05
Fluoranthene	3.00E-06	2.94E-08	1.29E-07
Fluorene	2.80E-06	2.75E-08	1.20E-07
Formaldehyde	0.0750	7.35E-04	3.22E-03
Indeno(1,2,3-c,d)pyrene	1.80E-06	1.76E-08	7.73E-08
n-Hexane	1.80	0.0176	0.0773
Naphthalene	6.10E-04	5.98E-06	2.62E-05
Phenanthrene	1.70E-05	1.67E-07	7.30E-07
Pyrene	5.00E-06	4.90E-08	2.15E-07
Toluene	3.40E-03	3.33E-05	1.46E-04
Arsenic	2.00E-04	1.96E-06	8.59E-06
Beryllium	1.20E-05	1.18E-07	5.15E-07
Cadmium	1.10E-03	1.08E-05	4.72E-05
Chromium	1.40E-03	1.37E-05	6.01E-05
Cobalt	8.40E-05	8.24E-07	3.61E-06
Manganese	3.80E-04	3.73E-06	1.63E-05
Mercury	2.60E-04	2.55E-06	1.12E-05
Nickel	2.10E-03	2.06E-05	9.02E-05
Selenium	2.40E-05	2.35E-07	1.03E-06
Total HAP		0.0184	0.0807

^e AP-42 Table 1.4-3 "Emission Factors for Speciated Organic Compounds from Natural Gas Combustion" (7/98) and Table 1.4-4 "Emission Factors for Metals from Natural Gas Combustion" (7/98).

^f Emission Rate (lb/hr) = (Emission Factor, lb/MMscf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

^g Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Unit ID No.: EUEXHTR-A
Description of Unit: Withdrawal Heater

Potential Greenhouse Gas (GHG) Emission Calculations^[2]

Pollutant	Uncontrolled Emission Factor ^[2]	Factor Units ^[2]	Emissions (lb/hr)	Emissions (TPY)	Global Warming Potential (GWP) ^[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO ₂	53.06	kg CO ₂ /MMBtu	1169.77	5123.61	1	1169.77	5123.61
CH ₄	1.00E-03	kg CH ₄ /MMBtu	0.022	0.097	25	0.55	2.41
N ₂ O	1.00E-04	kg N ₂ O/MMBtu	2.20E-03	9.66E-03	298	0.66	2.88
TOTAL GHGs	--	--	1,169.80	5,123.71	--	--	--
TOTAL GHGs (CO₂e)	--	--	--	--	--	1,170.98	5,128.90

^[1] Heat input based on fuel consumption and permitted HP.

^[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

$$\text{GHG Emissions (lb/hr)} = \text{EF}_{\text{GHG}} \text{ (kg/MMBtu)} * 2.204623 \text{ lb/kg} * \text{Source Specific Heat Input (MMBtu/hr)}$$

$$\text{GHG Emissions (TPY)} = \text{GHG Emissions (lb/hr)} * \text{Annual Hoperating Hours (hr/yr)} * 1 \text{ Ton}/2000 \text{ lb}$$

$$\text{CO}_2\text{e Emissions (TPY)} = \sum (\text{GHG Emissions (tpy)} * \text{GWP})$$

Where:

$$\text{EF}_{\text{GHG}} = \text{Table C-2 for CH}_4 \text{ and N}_2\text{O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)}$$

$$\text{Heat Input} = \text{Btu/hp-hr} * \text{Site-rated hp} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = \text{MMBtu/hr}$$

$$\text{GWP} = \text{Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1}$$

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Emission Unit No.	EUEXHTR-B
Unit ID No.	--
Description of Unit	Withdrawal Heater
Manufacturer	Sivalls
Date of Construction/Modification	
Fuel Used	Natural Gas
Maximum Higher Heating Value (HHV)	1,020 Btu/scf
Heat Input (MMBtu/hr)	10.00 MMBtu/hr
Maximum Hourly Fuel Consumption	9,804 scf/hr
Annual Hours of Operation	8,760 hr/yr
Annual Fuel Consumption	85.88 MMscf/yr

Emission Factors:

Pollutant	Emission Factor (lb/MMscf)	Emission Factor (lb/MMBtu)	Emission Factor Source
NOx	100	9.80E-02	a
CO	84	8.24E-02	a
NM/NE VOC	5.5	5.39E-03	b
PM (Filterable + Condensable)	7.6	7.45E-03	b
PM10	7.6	7.45E-03	b
PM2.5	7.6	7.45E-03	b
SO2	0.6	5.88E-04	b

^a AP-42 Table 1.4-1 "Emission Factors for Nitrogen Oxides (NOx) and Carbon Monoxide (CO) from Natural Gas Combustion" (7/98). Converted from lb/MMscf to lb/MMBtu by dividing by 1,020 Btu/scf.

^b AP-42 Table 1.4-2 "Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion" (7/98). Converted from lb/MMscf to lb/MMBtu by dividing by 1,020 Btu/scf.

POTENTIAL EMISSIONS:

Pollutant	Emission Rate (lb/hr)	Calculation Methodology	Potential Emissions ^d (ton/yr)
NOx	0.98	c	4.29
CO	0.82	c	3.61
NM/NEVOC	0.054	c	0.24
PM (Filterable + Condensable)	0.075	c	0.33
PM10	0.075	c	0.33
PM2.5	0.075	c	0.33
SO2	5.88E-03	c	0.026

Sample Calculation:

^c Emission Rate (lb/hr) = (Emission Factor lb/MMscf) * (Max. Hourly Fuel Consumption)/1000000

^d Potential Emissions (tons/yr) = (lb/hr)Potential * (8,760 hr/yr) * (1 ton/2,000 lb).

HAP Calculated Emissions:

Pollutant	Emission Factor (lb/MMscf) ^e	Potential Emissions	
		(lb/hr) ^f	(tons/yr) ^g
HAPs:			
2-Methylnaphthalene	2.40E-05	2.35E-07	1.03E-06
3-Methylcholanthrene	1.80E-06	1.76E-08	7.73E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	1.57E-07	6.87E-07
Acenaphthene	1.80E-06	1.76E-08	7.73E-08
Acenaphthylene	1.80E-06	1.76E-08	7.73E-08
Anthracene	2.40E-06	2.35E-08	1.03E-07
Benz(a)anthracene	1.80E-06	1.76E-08	7.73E-08
Benzene	2.10E-03	2.06E-05	9.02E-05
Benzo(a)pyrene	1.20E-06	1.18E-08	5.15E-08
Benzo(b)fluoranthene	1.80E-06	1.76E-08	7.73E-08
Benzo(g,h,i)perylene	1.20E-06	1.18E-08	5.15E-08
Benzo(k)fluoranthene	1.80E-06	1.76E-08	7.73E-08
Chrysene	1.80E-06	1.76E-08	7.73E-08
Dichlorobenzene	1.20E-03	1.18E-05	5.15E-05
Fluoranthene	3.00E-06	2.94E-08	1.29E-07
Fluorene	2.80E-06	2.75E-08	1.20E-07
Formaldehyde	0.0750	7.35E-04	3.22E-03
Indeno(1,2,3-c,d)pyrene	1.80E-06	1.76E-08	7.73E-08
n-Hexane	1.80	0.0176	0.0773
Naphthalene	6.10E-04	5.98E-06	2.62E-05
Phenanthrene	1.70E-05	1.67E-07	7.30E-07
Pyrene	5.00E-06	4.90E-08	2.15E-07
Toluene	3.40E-03	3.33E-05	1.46E-04
Arsenic	2.00E-04	1.96E-06	8.59E-06
Beryllium	1.20E-05	1.18E-07	5.15E-07
Cadmium	1.10E-03	1.08E-05	4.72E-05
Chromium	1.40E-03	1.37E-05	6.01E-05
Cobalt	8.40E-05	8.24E-07	3.61E-06
Manganese	3.80E-04	3.73E-06	1.63E-05
Mercury	2.60E-04	2.55E-06	1.12E-05
Nickel	2.10E-03	2.06E-05	9.02E-05
Selenium	2.40E-05	2.35E-07	1.03E-06
Total HAP		0.0184	0.0807

^e AP-42 Table 1.4-3 "Emission Factors for Speciated Organic Compounds from Natural Gas Combustion" (7/98) and Table 1.4-4 "Emission Factors for Metals from Natural Gas Combustion" (7/98).

^f Emission Rate (lb/hr) = (Emission Factor, lb/MMscf) * (Maximum Hourly Fuel Consumption, scf/hr) * (MM/1,000,000)

^g Emission Rate (ton/yr) = (Emission Rate, lb/hr) * (Annual Operation, hrs/yr) * (1 ton/2000 lb)

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Unit ID No.: EUEXHTR-B
Description of Unit: Withdrawal Heater

Potential Greenhouse Gas (GHG) Emission Calculations^[2]

Pollutant	Uncontrolled Emission Factor ^[2]	Factor Units ^[2]	Emissions (lb/hr)	Emissions (TPY)	Global Warming Potential (GWP) ^[2]	CO2e Emissions (lb/hr)	CO2e Emissions (TPY)
CO ₂	53.06	kg CO ₂ /MMBtu	1169.77	5123.61	1	1169.77	5123.61
CH ₄	1.00E-03	kg CH ₄ /MMBtu	0.022	0.097	25	0.55	2.41
N ₂ O	1.00E-04	kg N ₂ O/MMBtu	2.20E-03	9.66E-03	298	0.66	2.88
TOTAL GHGs	--	--	1,169.80	5,123.71	--	--	--
TOTAL GHGs (CO₂e)	--	--	--	--	--	1,170.98	5,128.90

^[1] Heat input based on fuel consumption and permitted HP.

^[2] Based on 40 CFR 98 Subpart C, 98.33(a)(1)(i), Tier 1 Methodology, Equation C-1 and using source specific heat input.

$$\text{GHG Emissions (lb/hr)} = \text{EF}_{\text{GHG}} \text{ (kg/MMBtu)} * 2.204623 \text{ lb/kg} * \text{Source Specific Heat Input (MMBtu/hr)}$$

$$\text{GHG Emissions (TPY)} = \text{GHG Emissions (lb/hr)} * \text{Annual Hoperating Hours (hr/yr)} * 1 \text{ Ton}/2000 \text{ lb}$$

$$\text{CO}_2\text{e Emissions (TPY)} = \sum (\text{GHG Emissions (tpy)} * \text{GWP})$$

Where:

$$\text{EF}_{\text{GHG}} = \text{Table C-2 for CH}_4 \text{ and N}_2\text{O (Natural Gas) of 40 CFR Part 98, Subpart C (kg/MMBtu)}$$

$$\text{Heat Input} = \text{Btu/hp-hr} * \text{Site-rated hp} * (1 \text{ MMBtu}/1,000,000 \text{ Btu}) = \text{MMBtu/hr}$$

$$\text{GWP} = \text{Global Warming Potentials, 40 CFR 98, Subpart A, Table A-1}$$

**TITLE V RENEWABLE OPERATING PERMIT APPLICATION
ANR STORAGE COMPANY
EXCELSIOR COMPRESSOR STATION, MICHIGAN**

Title V Unit ID	Unit Description	VOC lb/hr	VOC tpy	HAP lb/hr	HAP tpy	Benzene lb/hr	Benzene tpy
EUEXGLYDEH	Excelsior Dehydration Unit						
	With Thermal Oxidizer	0.10	0.46	0.065	0.28	5.02E-03	0.022
	Flash Gas Emissions with Thermal Oxidizer	0.16	0.70	9.80E-03	0.043	5.02E-04	2.20E-03
	TOTAL EMISSIONS	0.26	1.16	0.075	0.33	5.53E-03	0.024
	With Condenser	2.08	9.09	1.32	5.79	0.10	0.45
	Flash Gas Emissions With Condenser	3.12	13.65	0.20	0.87	0.010	0.046
	TOTAL EMISSIONS	5.19	22.74	1.52	6.66	0.11	0.49

Based on 2011 Title V Renewal (GRI-GLYCalc Version 4.0 was used to calculate emissions from the Glycol Dehydration systems).

The Glycol Dehydration Systems cannot be operated unless the systems are equipped with a thermal oxidizer. However, if the thermal oxidizer malfunctions, the system can be operated with a condenser.

The main control for the glycol regenerator system is the thermal oxidizer. Condenser is used only if the thermal oxidizer is not operational.

The emissions are based on 8,760 hours per year for operations with the thermal oxidizer and 4500 hours per year for operations with the condenser.

Part of the flash tank off gas goes to the reboiler as fuel and what is not used as fuel goes to the thermal oxidizer or condenser for destruction.

Emissions provided are for representation purposes only; emission and operational rates are not intended to convey any limitations or restrictions

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Excelsior Condenser EF 2019

File Name: E:\TransCanada\TransCanada Michigan Glycol Dehydrators\2019\GlyCalc
Files\EXCondeF CY2019.ddf

Date: April 03, 2019

DESCRIPTION:

Description: This simulation was used to calculate condenser EF from 2019 data. It assumes the station is in dehydration mode with both pumps in operation. In actual practice, most of the time the station is in the glycol injection mode

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.1890	28.535	5.2077
Ethane	1.1893	28.543	5.2090
Propane	0.3065	7.355	1.3424
Isobutane	0.1003	2.408	0.4395
n-Butane	0.1395	3.348	0.6111
Isopentane	0.1022	2.452	0.4475
n-Pentane	0.0583	1.399	0.2553
n-Hexane	0.0523	1.254	0.2289
Cyclohexane	0.0491	1.178	0.2149
Other Hexanes	0.1199	2.878	0.5252
Heptanes	0.1088	2.611	0.4765
Benzene	0.1981	4.755	0.8677
Toluene	0.6376	15.303	2.7929
Ethylbenzene	0.0347	0.832	0.1519
Xylenes	0.1851	4.443	0.8109
C8+ Heavies	0.0005	0.013	0.0024
Total Emissions	4.4711	107.307	19.5836
Total Hydrocarbon Emissions	4.4711	107.307	19.5836
Total VOC Emissions	2.0929	50.230	9.1669
Total HAP Emissions	1.1078	26.588	4.8523
Total BTEX Emissions	1.0556	25.333	4.6233

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.1996	28.791	5.2544
Ethane	1.2448	29.875	5.4521
Propane	0.3899	9.358	1.7078
Isobutane	0.1570	3.769	0.6878
n-Butane	0.2479	5.951	1.0860
Isopentane	0.3261	7.825	1.4281
n-Pentane	0.2131	5.113	0.9332

n-Hexane	0.4326	10.382	1.8946
Cyclohexane	0.5422	13.014	2.3750
Other Hexanes	0.7009	16.822	3.0700
Heptanes	2.3120	55.488	10.1266
Benzene	3.1388	75.332	13.7481
Toluene	28.5959	686.301	125.2499
Ethylbenzene	5.0008	120.020	21.9037
Xylenes	30.7435	737.845	134.6567
C8+ Heavies	4.6479	111.549	20.3577

Total Emissions	79.8931	1917.434	349.9318
Total Hydrocarbon Emissions	79.8931	1917.434	349.9318
Total VOC Emissions	77.4487	1858.769	339.2253
Total HAP Emissions	67.9117	1629.880	297.4531
Total BTEX Emissions	67.4791	1619.498	295.5584

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	8.1038	194.490	35.4944
Ethane	2.2060	52.945	9.6624
Propane	0.4213	10.111	1.8453
Isobutane	0.1285	3.085	0.5629
n-Butane	0.1485	3.565	0.6506
Isopentane	0.1174	2.819	0.5144
n-Pentane	0.0620	1.487	0.2714
n-Hexane	0.0592	1.421	0.2592
Cyclohexane	0.0172	0.413	0.0754
Other Hexanes	0.1327	3.184	0.5811
Heptanes	0.1439	3.453	0.6301
Benzene	0.0159	0.382	0.0697
Toluene	0.0741	1.778	0.3246
Ethylbenzene	0.0053	0.128	0.0233
Xylenes	0.0248	0.595	0.1086
C8+ Heavies	0.0184	0.441	0.0806

Total Emissions	11.6790	280.296	51.1540
Total Hydrocarbon Emissions	11.6790	280.296	51.1540
Total VOC Emissions	1.3692	32.861	5.9972
Total HAP Emissions	0.1793	4.304	0.7854
Total BTEX Emissions	0.1201	2.883	0.5262

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	16.2075	388.980	70.9889
Ethane	4.4120	105.889	19.3248
Propane	0.8426	20.222	3.6905
Isobutane	0.2571	6.169	1.1259
n-Butane	0.2971	7.130	1.3011
Isopentane	0.2349	5.637	1.0288
n-Pentane	0.1239	2.974	0.5427
n-Hexane	0.1184	2.841	0.5185
Cyclohexane	0.0345	0.827	0.1509
Other Hexanes	0.2653	6.368	1.1622

Heptanes	0.2877	6.905	1.2602
Benzene	0.0318	0.764	0.1395
Toluene	0.1482	3.557	0.6491
Ethylbenzene	0.0106	0.255	0.0465
Xylenes	0.0496	1.190	0.2172
C8+ Heavies	0.0368	0.883	0.1611

Total Emissions	23.3580	560.592	102.3080

Total Hydrocarbon Emissions	23.3580	560.592	102.3080
Total VOC Emissions	2.7384	65.722	11.9943
Total HAP Emissions	0.3586	8.607	1.5708
Total BTEX Emissions	0.2403	5.766	1.0523

EQUIPMENT REPORTS:

CONDENSER

Condenser Outlet Temperature: 100.00 deg. F
 Condenser Pressure: 15.50 psia
 Condenser Duty: 1.80e-001 MM BTU/hr
 Hydrocarbon Recovery: 6.08 bbls/day
 Produced Water: 14.74 bbls/day
 VOC Control Efficiency: 97.30 %
 HAP Control Efficiency: 98.37 %
 BTEX Control Efficiency: 98.44 %
 Dissolved Hydrocarbons in Water: 471.35 mg/L

Component	Emitted	Condensed

Water	0.13%	99.87%
Carbon Dioxide	95.24%	4.76%
Nitrogen	97.66%	2.34%
Methane	99.11%	0.89%
Ethane	95.54%	4.46%
Propane	78.60%	21.40%
Isobutane	63.89%	36.11%
n-Butane	56.27%	43.73%
Isopentane	31.34%	68.66%
n-Pentane	27.35%	72.65%
n-Hexane	12.08%	87.92%
Cyclohexane	9.05%	90.95%
Other Hexanes	17.11%	82.89%
Heptanes	4.71%	95.29%
Benzene	6.31%	93.69%
Toluene	2.23%	97.77%
Ethylbenzene	0.69%	99.31%
Xylenes	0.60%	99.40%
C8+ Heavies	0.01%	99.99%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages: 1.25
 Calculated Dry Gas Dew Point: 1.55 lbs. H2O/MMSCF

 Temperature: 60.0 deg. F
 Pressure: 760.0 psig
 Dry Gas Flow Rate: 275.0000 MMSCF/day
 Glycol Losses with Dry Gas: 1.5792 lb/hr
 Wet Gas Water Content: Saturated
 Calculated Wet Gas Water Content: 20.32 lbs. H2O/MMSCF
 Calculated Lean Glycol Recirc. Ratio: 3.57 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	7.60%	92.40%
Carbon Dioxide	99.93%	0.07%
Nitrogen	100.00%	0.00%
Methane	100.00%	0.00%
Ethane	99.99%	0.01%
Propane	99.98%	0.02%
Isobutane	99.98%	0.02%
n-Butane	99.97%	0.03%
Isopentane	99.96%	0.04%
n-Pentane	99.95%	0.05%
n-Hexane	99.91%	0.09%
Cyclohexane	99.47%	0.53%
Other Hexanes	99.93%	0.07%
Heptanes	99.80%	0.20%
Benzene	96.16%	3.84%
Toluene	90.35%	9.65%
Ethylbenzene	85.79%	14.21%
Xylenes	82.21%	17.79%
C8+ Heavies	99.58%	0.42%

FLASH TANK

Flash Control: Combustion device
 Flash Control Efficiency: 50.00 %
 Flash Temperature: 100.0 deg. F
 Flash Pressure: 45.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.99%	0.01%
Carbon Dioxide	51.26%	48.74%
Nitrogen	6.60%	93.40%
Methane	6.89%	93.11%
Ethane	22.01%	77.99%
Propane	31.64%	68.36%
Isobutane	37.92%	62.08%
n-Butane	45.49%	54.51%
Isopentane	58.33%	41.67%
n-Pentane	63.41%	36.59%
n-Hexane	78.62%	21.38%
Cyclohexane	94.22%	5.78%
Other Hexanes	72.81%	27.19%
Heptanes	88.99%	11.01%
Benzene	99.05%	0.95%
Toluene	99.53%	0.47%
Ethylbenzene	99.81%	0.19%

Xylenes	99.86%	0.14%
C8+ Heavies	99.31%	0.69%

REGENERATOR

No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	45.54%	54.46%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.86%	99.14%
n-Pentane	0.79%	99.21%
n-Hexane	0.64%	99.36%
Cyclohexane	3.40%	96.60%
Other Hexanes	1.37%	98.63%
Heptanes	0.56%	99.44%
Benzene	5.05%	94.95%
Toluene	7.94%	92.06%
Ethylbenzene	10.43%	89.57%
Xylenes	12.95%	87.05%
C8+ Heavies	12.10%	87.90%

STREAM REPORTS:

WET GAS STREAM

Temperature: 60.00 deg. F
 Pressure: 774.70 psia
 Flow Rate: 1.15e+007 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.28e-002	2.33e+002
Carbon Dioxide	9.96e-001	1.32e+004
Nitrogen	7.24e-001	6.12e+003
Methane	9.25e+001	4.48e+005
Ethane	4.61e+000	4.18e+004
Propane	5.90e-001	7.86e+003
Isobutane	1.25e-001	2.19e+003
n-Butane	1.19e-001	2.09e+003
Isopentane	6.70e-002	1.46e+003
n-Pentane	3.10e-002	6.75e+002
n-Hexane	2.49e-002	6.48e+002
Cyclohexane	4.30e-003	1.09e+002
Other Hexanes	5.20e-002	1.35e+003
Heptanes	4.26e-002	1.29e+003
Benzene	3.50e-003	8.26e+001

Toluene	1.07e-002	2.98e+002
Ethylbenzene	1.10e-003	3.53e+001
Xylenes	5.40e-003	1.73e+002
C8+ Heavies	2.15e-002	1.11e+003

Total Components	100.00	5.29e+005

DRY GAS STREAM

 Temperature: 60.00 deg. F
 Pressure: 774.70 psia
 Flow Rate: 1.15e+007 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	3.26e-003	1.77e+001
Carbon Dioxide	9.95e-001	1.32e+004
Nitrogen	7.24e-001	6.12e+003
Methane	9.26e+001	4.48e+005
Ethane	4.61e+000	4.18e+004
Propane	5.90e-001	7.86e+003
Isobutane	1.25e-001	2.19e+003
n-Butane	1.19e-001	2.09e+003
Isopentane	6.70e-002	1.46e+003
n-Pentane	3.10e-002	6.75e+002
n-Hexane	2.49e-002	6.48e+002
Cyclohexane	4.28e-003	1.09e+002
Other Hexanes	5.20e-002	1.35e+003
Heptanes	4.25e-002	1.29e+003
Benzene	3.37e-003	7.94e+001
Toluene	9.67e-003	2.69e+002
Ethylbenzene	9.44e-004	3.03e+001
Xylenes	4.44e-003	1.42e+002
C8+ Heavies	2.14e-002	1.10e+003

Total Components	100.00	5.29e+005

LEAN GLYCOL STREAM

 Temperature: 60.00 deg. F
 Flow Rate: 1.28e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

DEG	9.74e+001	7.01e+003
Water	2.50e+000	1.80e+002
Carbon Dioxide	1.24e-011	8.92e-010
Nitrogen	3.63e-013	2.61e-011
Methane	8.12e-018	5.85e-016
Ethane	3.71e-008	2.67e-006
Propane	6.97e-010	5.01e-008
Isobutane	1.73e-010	1.24e-008
n-Butane	1.88e-010	1.35e-008
Isopentane	3.91e-005	2.82e-003
n-Pentane	2.35e-005	1.69e-003
n-Hexane	3.84e-005	2.77e-003
Cyclohexane	2.65e-004	1.91e-002
Other Hexanes	1.36e-004	9.76e-003

Heptanes	1.81e-004	1.31e-002
Benzene	2.32e-003	1.67e-001
Toluene	3.43e-002	2.47e+000
Ethylbenzene	8.09e-003	5.82e-001
Xylenes	6.35e-002	4.57e+000
C8+ Heavies	8.89e-003	6.40e-001

Total Components	100.00	7.20e+003

RICH GLYCOL STREAM

Temperature: 60.00 deg. F
 Pressure: 774.70 psia
 Flow Rate: 1.35e+001 gpm
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)

DEG	9.31e+001	7.01e+003
Water	5.25e+000	3.95e+002
Carbon Dioxide	1.19e-001	8.92e+000
Nitrogen	3.48e-003	2.62e-001
Methane	2.31e-001	1.74e+001
Ethane	7.52e-002	5.66e+000
Propane	1.64e-002	1.23e+000
Isobutane	5.50e-003	4.14e-001
n-Butane	7.24e-003	5.45e-001
Isopentane	7.49e-003	5.64e-001
n-Pentane	4.50e-003	3.39e-001
n-Hexane	7.36e-003	5.54e-001
Cyclohexane	7.92e-003	5.96e-001
Other Hexanes	1.30e-002	9.76e-001
Heptanes	3.47e-002	2.61e+000
Benzene	4.44e-002	3.34e+000
Toluene	4.15e-001	3.12e+001
Ethylbenzene	7.43e-002	5.59e+000
Xylenes	4.70e-001	3.54e+001
C8+ Heavies	7.08e-002	5.32e+000

Total Components	100.00	7.52e+003

FLASH TANK OFF GAS STREAM

Temperature: 100.00 deg. F
 Pressure: 59.70 psia
 Flow Rate: 4.98e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	1.85e-001	4.37e-002
Carbon Dioxide	7.54e+000	4.35e+000
Nitrogen	6.66e-001	2.44e-001
Methane	7.71e+001	1.62e+001
Ethane	1.12e+001	4.41e+000
Propane	1.46e+000	8.43e-001
Isobutane	3.37e-001	2.57e-001
n-Butane	3.90e-001	2.97e-001
Isopentane	2.48e-001	2.35e-001
n-Pentane	1.31e-001	1.24e-001

n-Hexane	1.05e-001	1.18e-001
Cyclohexane	3.12e-002	3.45e-002
Other Hexanes	2.35e-001	2.65e-001
Heptanes	2.19e-001	2.88e-001
Benzene	3.11e-002	3.18e-002
Toluene	1.23e-001	1.48e-001
Ethylbenzene	7.63e-003	1.06e-002
Xylenes	3.56e-002	4.96e-002
C8+ Heavies	1.65e-002	3.68e-002

Total Components	100.00	2.80e+001

FLASH TANK GLYCOL STREAM

 Temperature: 100.00 deg. F
 Flow Rate: 1.34e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

DEG	9.35e+001	7.01e+003
Water	5.27e+000	3.95e+002
Carbon Dioxide	6.10e-002	4.57e+000
Nitrogen	2.30e-004	1.73e-002
Methane	1.60e-002	1.20e+000
Ethane	1.66e-002	1.24e+000
Propane	5.20e-003	3.90e-001
Isobutane	2.09e-003	1.57e-001
n-Butane	3.31e-003	2.48e-001
Isopentane	4.39e-003	3.29e-001
n-Pentane	2.86e-003	2.15e-001
n-Hexane	5.81e-003	4.35e-001
Cyclohexane	7.49e-003	5.61e-001
Other Hexanes	9.48e-003	7.11e-001
Heptanes	3.10e-002	2.33e+000
Benzene	4.41e-002	3.31e+000
Toluene	4.14e-001	3.11e+001
Ethylbenzene	7.45e-002	5.58e+000
Xylenes	4.71e-001	3.53e+001
C8+ Heavies	7.05e-002	5.29e+000

Total Components	100.00	7.50e+003

FLASH GAS EMISSIONS

 Flow Rate: 1.06e+003 scfh
 Control Method: Combustion Device
 Control Efficiency: 50.00

Component	Conc. (vol%)	Loading (lb/hr)

Water	4.80e+001	2.42e+001
Carbon Dioxide	3.02e+001	3.72e+001
Nitrogen	3.12e-001	2.44e-001
Methane	1.80e+001	8.10e+000
Ethane	2.62e+000	2.21e+000
Propane	3.41e-001	4.21e-001
Isobutane	7.90e-002	1.29e-001
n-Butane	9.13e-002	1.49e-001

Isopentane	5.81e-002	1.17e-001
n-Pentane	3.07e-002	6.20e-002
n-Hexane	2.45e-002	5.92e-002
Cyclohexane	7.31e-003	1.72e-002
Other Hexanes	5.50e-002	1.33e-001
Heptanes	5.13e-002	1.44e-001
Benzene	7.28e-003	1.59e-002
Toluene	2.87e-002	7.41e-002
Ethylbenzene	1.79e-003	5.31e-003
Xylenes	8.34e-003	2.48e-002
C8+ Heavies	3.86e-003	1.84e-002

Total Components	100.00	7.34e+001

REGENERATOR OVERHEADS STREAM

Temperature: 212.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 4.91e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	9.23e+001	2.15e+002
Carbon Dioxide	8.03e-001	4.57e+000
Nitrogen	4.76e-003	1.73e-002
Methane	5.77e-001	1.20e+000
Ethane	3.20e-001	1.24e+000
Propane	6.83e-002	3.90e-001
Isobutane	2.09e-002	1.57e-001
n-Butane	3.29e-002	2.48e-001
Isopentane	3.49e-002	3.26e-001
n-Pentane	2.28e-002	2.13e-001
n-Hexane	3.88e-002	4.33e-001
Cyclohexane	4.97e-002	5.42e-001
Other Hexanes	6.28e-002	7.01e-001
Heptanes	1.78e-001	2.31e+000
Benzene	3.10e-001	3.14e+000
Toluene	2.40e+000	2.86e+001
Ethylbenzene	3.64e-001	5.00e+000
Xylenes	2.24e+000	3.07e+001
C8+ Heavies	2.11e-001	4.65e+000

Total Components	100.00	3.00e+002

CONDENSER VENT GAS STREAM

Temperature: 100.00 deg. F
 Pressure: 15.50 psia
 Flow Rate: 9.78e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	6.21e+000	2.88e-001
Carbon Dioxide	3.84e+001	4.36e+000
Nitrogen	2.34e-001	1.69e-002
Methane	2.88e+001	1.19e+000
Ethane	1.53e+001	1.19e+000
Propane	2.70e+000	3.06e-001

Isobutane	6.70e-001	1.00e-001
n-Butane	9.31e-001	1.40e-001
Isopentane	5.49e-001	1.02e-001
n-Pentane	3.13e-001	5.83e-002
n-Hexane	2.35e-001	5.23e-002
Cyclohexane	2.26e-001	4.91e-002
Other Hexanes	5.40e-001	1.20e-001
Heptanes	4.21e-001	1.09e-001
Benzene	9.84e-001	1.98e-001
Toluene	2.68e+000	6.38e-001
Ethylbenzene	1.27e-001	3.47e-002
Xylenes	6.76e-001	1.85e-001
C8+ Heavies	1.23e-003	5.39e-004

Total Components	100.00	9.13e+000

CONDENSER PRODUCED WATER STREAM

 Temperature: 100.00 deg. F
 Flow Rate: 4.30e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)

Water	9.99e+001	2.15e+002	999087.
Carbon Dioxide	4.41e-002	9.50e-002	441.
Nitrogen	3.89e-006	8.36e-006	0.
Methane	5.55e-004	1.19e-003	6.
Ethane	6.69e-004	1.44e-003	7.
Propane	1.51e-004	3.25e-004	2.
Isobutane	2.76e-005	5.94e-005	0.
n-Butane	5.21e-005	1.12e-004	1.
Isopentane	2.78e-005	5.98e-005	0.
n-Pentane	1.72e-005	3.71e-005	0.
n-Hexane	1.34e-005	2.88e-005	0.
Cyclohexane	7.59e-005	1.63e-004	1.
Other Hexanes	2.44e-005	5.24e-005	0.
Heptanes	1.59e-005	3.42e-005	0.
Benzene	9.58e-003	2.06e-002	96.
Toluene	2.63e-002	5.67e-002	263.
Ethylbenzene	1.12e-003	2.40e-003	11.
Xylenes	8.46e-003	1.82e-002	85.
C8+ Heavies	4.43e-008	9.52e-008	0.

Total Components	100.00	2.15e+002	1000000.

CONDENSER RECOVERED OIL STREAM

 Temperature: 100.00 deg. F
 Flow Rate: 1.77e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

Water	4.77e-002	3.60e-002
Carbon Dioxide	1.63e-001	1.23e-001
Nitrogen	5.25e-004	3.96e-004
Methane	1.25e-002	9.47e-003
Ethane	7.16e-002	5.41e-002
Propane	1.10e-001	8.31e-002

Isobutane	7.50e-002	5.66e-002
n-Butane	1.44e-001	1.08e-001
Isopentane	2.97e-001	2.24e-001
n-Pentane	2.05e-001	1.55e-001
n-Hexane	5.04e-001	3.80e-001
Cyclohexane	6.53e-001	4.93e-001
Other Hexanes	7.70e-001	5.81e-001
Heptanes	2.92e+000	2.20e+000
Benzene	3.87e+000	2.92e+000
Toluene	3.70e+001	2.79e+001
Ethylbenzene	6.58e+000	4.96e+000
Xylenes	4.05e+001	3.05e+001
C8+ Heavies	6.16e+000	4.65e+000

Total Components	100.00	7.55e+001

GRI-GLYCalc VERSION 4.0 - AGGREGATE CALCULATIONS REPORT

Case Name: Excelsior-6 Theox EF 2019

File Name: E:\TransCanada\TransCanada Michigan Glycol Dehydrators\2019\GlyCalc Files\EXTheoxEF CY2019.ddf

Date: April 03, 2019

DESCRIPTION:

Description: This simulation was used to calculate thermal oxidizer EF from 2019 data. It assumes the station is in dehydration mode with both glycol pumps in operation. In actual practice, most of the time the station is in the glycol injection mode

Annual Hours of Operation: 8760.0 hours/yr

EMISSIONS REPORTS:

CONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.0594	1.427	0.2604
Ethane	0.0595	1.427	0.2605
Propane	0.0153	0.368	0.0671
Isobutane	0.0050	0.120	0.0220
n-Butane	0.0070	0.167	0.0306
Isopentane	0.0051	0.123	0.0224
n-Pentane	0.0029	0.070	0.0128
n-Hexane	0.0026	0.063	0.0114
Cyclohexane	0.0025	0.059	0.0107
Other Hexanes	0.0060	0.144	0.0263
Heptanes	0.0054	0.131	0.0238
Benzene	0.0099	0.238	0.0434
Toluene	0.0319	0.765	0.1396
Ethylbenzene	0.0017	0.042	0.0076
Xylenes	0.0093	0.222	0.0405
C8+ Heavies	<0.0001	0.001	0.0001
Total Emissions	0.2236	5.365	0.9792
Total Hydrocarbon Emissions	0.2236	5.365	0.9792
Total VOC Emissions	0.1046	2.511	0.4583
Total HAP Emissions	0.0554	1.329	0.2426
Total BTEX Emissions	0.0528	1.267	0.2312

UNCONTROLLED REGENERATOR EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	1.1996	28.791	5.2544
Ethane	1.2448	29.875	5.4521
Propane	0.3899	9.358	1.7078
Isobutane	0.1570	3.769	0.6878
n-Butane	0.2479	5.951	1.0860
Isopentane	0.3261	7.825	1.4281
n-Pentane	0.2131	5.113	0.9332

n-Hexane	0.4326	10.382	1.8946
Cyclohexane	0.5422	13.014	2.3750
Other Hexanes	0.7009	16.822	3.0700
Heptanes	2.3120	55.488	10.1266
Benzene	3.1388	75.332	13.7481
Toluene	28.5959	686.301	125.2499
Ethylbenzene	5.0008	120.020	21.9037
Xylenes	30.7435	737.845	134.6567
C8+ Heavies	4.6479	111.549	20.3577

Total Emissions	79.8931	1917.434	349.9318
Total Hydrocarbon Emissions	79.8931	1917.434	349.9318
Total VOC Emissions	77.4487	1858.769	339.2253
Total HAP Emissions	67.9117	1629.880	297.4531
Total BTEX Emissions	67.4791	1619.498	295.5584

FLASH GAS EMISSIONS

Component	lbs/hr	lbs/day	tons/yr
Methane	0.4052	9.725	1.7747
Ethane	0.1103	2.647	0.4831
Propane	0.0211	0.506	0.0923
Isobutane	0.0064	0.154	0.0281
n-Butane	0.0074	0.178	0.0325
Isopentane	0.0059	0.141	0.0257
n-Pentane	0.0031	0.074	0.0136
n-Hexane	0.0030	0.071	0.0130
Cyclohexane	0.0009	0.021	0.0038
Other Hexanes	0.0066	0.159	0.0291
Heptanes	0.0072	0.173	0.0315
Benzene	0.0008	0.019	0.0035
Toluene	0.0037	0.089	0.0162
Ethylbenzene	0.0003	0.006	0.0012
Xylenes	0.0012	0.030	0.0054
C8+ Heavies	0.0009	0.022	0.0040

Total Emissions	0.5839	14.015	2.5577
Total Hydrocarbon Emissions	0.5839	14.015	2.5577
Total VOC Emissions	0.0685	1.643	0.2999
Total HAP Emissions	0.0090	0.215	0.0393
Total BTEX Emissions	0.0060	0.144	0.0263

FLASH TANK OFF GAS

Component	lbs/hr	lbs/day	tons/yr
Methane	16.2075	388.980	70.9889
Ethane	4.4120	105.889	19.3248
Propane	0.8426	20.222	3.6905
Isobutane	0.2571	6.169	1.1259
n-Butane	0.2971	7.130	1.3011
Isopentane	0.2349	5.637	1.0288
n-Pentane	0.1239	2.974	0.5427
n-Hexane	0.1184	2.841	0.5185
Cyclohexane	0.0345	0.827	0.1509
Other Hexanes	0.2653	6.368	1.1622

Heptanes	0.2877	6.905	1.2602
Benzene	0.0318	0.764	0.1395
Toluene	0.1482	3.557	0.6491
Ethylbenzene	0.0106	0.255	0.0465
Xylenes	0.0496	1.190	0.2172
C8+ Heavies	0.0368	0.883	0.1611

Total Emissions	23.3580	560.592	102.3080
Total Hydrocarbon Emissions	23.3580	560.592	102.3080
Total VOC Emissions	2.7384	65.722	11.9943
Total HAP Emissions	0.3586	8.607	1.5708
Total BTEX Emissions	0.2403	5.766	1.0523

EQUIPMENT REPORTS:

CONDENSER AND COMBUSTION DEVICE

Condenser Outlet Temperature: 100.00 deg. F
 Condenser Pressure: 15.50 psia
 Condenser Duty: 2.29e-002 MM BTU/hr
 Hydrocarbon Recovery: 6.08 bbls/day
 Produced Water: 14.74 bbls/day
 Ambient Temperature: 30.00 deg. F
 Excess Oxygen: 20.00 %
 Combustion Efficiency: 95.00 %
 Supplemental Fuel Requirement: 2.29e-002 MM BTU/hr

Component	Emitted	Destroyed
Methane	4.96%	95.04%
Ethane	4.78%	95.22%
Propane	3.93%	96.07%
Isobutane	3.19%	96.81%
n-Butane	2.81%	97.19%
Isopentane	1.57%	98.43%
n-Pentane	1.37%	98.63%
n-Hexane	0.60%	99.40%
Cyclohexane	0.45%	99.55%
Other Hexanes	0.86%	99.14%
Heptanes	0.24%	99.76%
Benzene	0.32%	99.68%
Toluene	0.11%	99.89%
Ethylbenzene	0.03%	99.97%
Xylenes	0.03%	99.97%
C8+ Heavies	0.00%	100.00%

ABSORBER

NOTE: Because the Calculated Absorber Stages was below the minimum allowed, GRI-GLYCalc has set the number of Absorber Stages to 1.25 and has calculated a revised Dry Gas Dew Point.

Calculated Absorber Stages: 1.25
 Calculated Dry Gas Dew Point: 1.55 lbs. H2O/MMSCF

Temperature: 60.0 deg. F
 Pressure: 760.0 psig
 Dry Gas Flow Rate: 275.0000 MMSCF/day
 Glycol Losses with Dry Gas: 1.5792 lb/hr
 Wet Gas Water Content: Saturated
 Calculated Wet Gas Water Content: 20.32 lbs. H2O/MMSCF
 Calculated Lean Glycol Recirc. Ratio: 3.57 gal/lb H2O

Component	Remaining in Dry Gas	Absorbed in Glycol
Water	7.60%	92.40%
Carbon Dioxide	99.93%	0.07%
Nitrogen	100.00%	0.00%
Methane	100.00%	0.00%
Ethane	99.99%	0.01%
Propane	99.98%	0.02%
Isobutane	99.98%	0.02%
n-Butane	99.97%	0.03%
Isopentane	99.96%	0.04%
n-Pentane	99.95%	0.05%
n-Hexane	99.91%	0.09%
Cyclohexane	99.47%	0.53%
Other Hexanes	99.93%	0.07%
Heptanes	99.80%	0.20%
Benzene	96.16%	3.84%
Toluene	90.35%	9.65%
Ethylbenzene	85.79%	14.21%
Xylenes	82.21%	17.79%
C8+ Heavies	99.58%	0.42%

FLASH TANK

Flash Control: Combustion device
 Flash Control Efficiency: 97.50 %
 Flash Temperature: 100.0 deg. F
 Flash Pressure: 45.0 psig

Component	Left in Glycol	Removed in Flash Gas
Water	99.99%	0.01%
Carbon Dioxide	51.26%	48.74%
Nitrogen	6.60%	93.40%
Methane	6.89%	93.11%
Ethane	22.01%	77.99%
Propane	31.64%	68.36%
Isobutane	37.92%	62.08%
n-Butane	45.49%	54.51%
Isopentane	58.33%	41.67%
n-Pentane	63.41%	36.59%
n-Hexane	78.62%	21.38%
Cyclohexane	94.22%	5.78%
Other Hexanes	72.81%	27.19%
Heptanes	88.99%	11.01%
Benzene	99.05%	0.95%
Toluene	99.53%	0.47%
Ethylbenzene	99.81%	0.19%
Xylenes	99.86%	0.14%
C8+ Heavies	99.31%	0.69%

REGENERATOR

 No Stripping Gas used in regenerator.

Component	Remaining in Glycol	Distilled Overhead
Water	45.54%	54.46%
Carbon Dioxide	0.00%	100.00%
Nitrogen	0.00%	100.00%
Methane	0.00%	100.00%
Ethane	0.00%	100.00%
Propane	0.00%	100.00%
Isobutane	0.00%	100.00%
n-Butane	0.00%	100.00%
Isopentane	0.86%	99.14%
n-Pentane	0.79%	99.21%
n-Hexane	0.64%	99.36%
Cyclohexane	3.40%	96.60%
Other Hexanes	1.37%	98.63%
Heptanes	0.56%	99.44%
Benzene	5.05%	94.95%
Toluene	7.94%	92.06%
Ethylbenzene	10.43%	89.57%
Xylenes	12.95%	87.05%
C8+ Heavies	12.10%	87.90%

STREAM REPORTS:

WET GAS STREAM

 Temperature: 60.00 deg. F
 Pressure: 774.70 psia
 Flow Rate: 1.15e+007 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	4.28e-002	2.33e+002
Carbon Dioxide	9.96e-001	1.32e+004
Nitrogen	7.24e-001	6.12e+003
Methane	9.25e+001	4.48e+005
Ethane	4.61e+000	4.18e+004
Propane	5.90e-001	7.86e+003
Isobutane	1.25e-001	2.19e+003
n-Butane	1.19e-001	2.09e+003
Isopentane	6.70e-002	1.46e+003
n-Pentane	3.10e-002	6.75e+002
n-Hexane	2.49e-002	6.48e+002
Cyclohexane	4.30e-003	1.09e+002
Other Hexanes	5.20e-002	1.35e+003
Heptanes	4.26e-002	1.29e+003
Benzene	3.50e-003	8.26e+001
Toluene	1.07e-002	2.98e+002

Ethylbenzene	1.10e-003	3.53e+001
Xylenes	5.40e-003	1.73e+002
C8+ Heavies	2.15e-002	1.11e+003

Total Components	100.00	5.29e+005
------------------	--------	-----------

 DRY GAS STREAM

Temperature: 60.00 deg. F
 Pressure: 774.70 psia
 Flow Rate: 1.15e+007 scfh

Component	Conc. (vol%)	Loading (lb/hr)
Water	3.26e-003	1.77e+001
Carbon Dioxide	9.95e-001	1.32e+004
Nitrogen	7.24e-001	6.12e+003
Methane	9.26e+001	4.48e+005
Ethane	4.61e+000	4.18e+004
Propane	5.90e-001	7.86e+003
Isobutane	1.25e-001	2.19e+003
n-Butane	1.19e-001	2.09e+003
Isopentane	6.70e-002	1.46e+003
n-Pentane	3.10e-002	6.75e+002
n-Hexane	2.49e-002	6.48e+002
Cyclohexane	4.28e-003	1.09e+002
Other Hexanes	5.20e-002	1.35e+003
Heptanes	4.25e-002	1.29e+003
Benzene	3.37e-003	7.94e+001
Toluene	9.67e-003	2.69e+002
Ethylbenzene	9.44e-004	3.03e+001
Xylenes	4.44e-003	1.42e+002
C8+ Heavies	2.14e-002	1.10e+003
Total Components	100.00	5.29e+005

 LEAN GLYCOL STREAM

Temperature: 60.00 deg. F
 Flow Rate: 1.28e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)
DEG	9.74e+001	7.01e+003
Water	2.50e+000	1.80e+002
Carbon Dioxide	1.24e-011	8.92e-010
Nitrogen	3.63e-013	2.61e-011
Methane	8.12e-018	5.85e-016
Ethane	3.71e-008	2.67e-006
Propane	6.97e-010	5.01e-008
Isobutane	1.73e-010	1.24e-008
n-Butane	1.88e-010	1.35e-008
Isopentane	3.91e-005	2.82e-003
n-Pentane	2.35e-005	1.69e-003
n-Hexane	3.84e-005	2.77e-003
Cyclohexane	2.65e-004	1.91e-002
Other Hexanes	1.36e-004	9.76e-003
Heptanes	1.81e-004	1.31e-002

Benzene	2.32e-003	1.67e-001
Toluene	3.43e-002	2.47e+000
Ethylbenzene	8.09e-003	5.82e-001
Xylenes	6.35e-002	4.57e+000
C8+ Heavies	8.89e-003	6.40e-001

Total Components	100.00	7.20e+003

RICH GLYCOL STREAM

Temperature: 60.00 deg. F
 Pressure: 774.70 psia
 Flow Rate: 1.35e+001 gpm
 NOTE: Stream has more than one phase.

Component	Conc. (wt%)	Loading (lb/hr)

DEG	9.31e+001	7.01e+003
Water	5.25e+000	3.95e+002
Carbon Dioxide	1.19e-001	8.92e+000
Nitrogen	3.48e-003	2.62e-001
Methane	2.31e-001	1.74e+001
Ethane	7.52e-002	5.66e+000
Propane	1.64e-002	1.23e+000
Isobutane	5.50e-003	4.14e-001
n-Butane	7.24e-003	5.45e-001
Isopentane	7.49e-003	5.64e-001
n-Pentane	4.50e-003	3.39e-001
n-Hexane	7.36e-003	5.54e-001
Cyclohexane	7.92e-003	5.96e-001
Other Hexanes	1.30e-002	9.76e-001
Heptanes	3.47e-002	2.61e+000
Benzene	4.44e-002	3.34e+000
Toluene	4.15e-001	3.12e+001
Ethylbenzene	7.43e-002	5.59e+000
Xylenes	4.70e-001	3.54e+001
C8+ Heavies	7.08e-002	5.32e+000

Total Components	100.00	7.52e+003

FLASH TANK OFF GAS STREAM

Temperature: 100.00 deg. F
 Pressure: 59.70 psia
 Flow Rate: 4.98e+002 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	1.85e-001	4.37e-002
Carbon Dioxide	7.54e+000	4.35e+000
Nitrogen	6.66e-001	2.44e-001
Methane	7.71e+001	1.62e+001
Ethane	1.12e+001	4.41e+000
Propane	1.46e+000	8.43e-001
Isobutane	3.37e-001	2.57e-001
n-Butane	3.90e-001	2.97e-001
Isopentane	2.48e-001	2.35e-001
n-Pentane	1.31e-001	1.24e-001
n-Hexane	1.05e-001	1.18e-001

Cyclohexane	3.12e-002	3.45e-002
Other Hexanes	2.35e-001	2.65e-001
Heptanes	2.19e-001	2.88e-001
Benzene	3.11e-002	3.18e-002
Toluene	1.23e-001	1.48e-001
Ethylbenzene	7.63e-003	1.06e-002
Xylenes	3.56e-002	4.96e-002
C8+ Heavies	1.65e-002	3.68e-002

Total Components	100.00	2.80e+001

FLASH TANK GLYCOL STREAM

 Temperature: 100.00 deg. F
 Flow Rate: 1.34e+001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

DEG	9.35e+001	7.01e+003
Water	5.27e+000	3.95e+002
Carbon Dioxide	6.10e-002	4.57e+000
Nitrogen	2.30e-004	1.73e-002
Methane	1.60e-002	1.20e+000
Ethane	1.66e-002	1.24e+000
Propane	5.20e-003	3.90e-001
Isobutane	2.09e-003	1.57e-001
n-Butane	3.31e-003	2.48e-001
Isopentane	4.39e-003	3.29e-001
n-Pentane	2.86e-003	2.15e-001
n-Hexane	5.81e-003	4.35e-001
Cyclohexane	7.49e-003	5.61e-001
Other Hexanes	9.48e-003	7.11e-001
Heptanes	3.10e-002	2.33e+000
Benzene	4.41e-002	3.31e+000
Toluene	4.14e-001	3.11e+001
Ethylbenzene	7.45e-002	5.58e+000
Xylenes	4.71e-001	3.53e+001
C8+ Heavies	7.05e-002	5.29e+000

Total Components	100.00	7.50e+003

FLASH GAS EMISSIONS

 Flow Rate: 1.60e+003 scfh
 Control Method: Combustion Device
 Control Efficiency: 97.50

Component	Conc. (vol%)	Loading (lb/hr)

Water	6.22e+001	4.72e+001
Carbon Dioxide	3.69e+001	6.85e+001
Nitrogen	2.07e-001	2.44e-001
Methane	5.99e-001	4.05e-001
Ethane	8.70e-002	1.10e-001
Propane	1.13e-002	2.11e-002
Isobutane	2.62e-003	6.43e-003
n-Butane	3.03e-003	7.43e-003
Isopentane	1.93e-003	5.87e-003
n-Pentane	1.02e-003	3.10e-003

n-Hexane	8.15e-004	2.96e-003
Cyclohexane	2.43e-004	8.61e-004
Other Hexanes	1.83e-003	6.63e-003
Heptanes	1.70e-003	7.19e-003
Benzene	2.42e-004	7.96e-004
Toluene	9.54e-004	3.70e-003
Ethylbenzene	5.94e-005	2.66e-004
Xylenes	2.77e-004	1.24e-003
C8+ Heavies	1.28e-004	9.20e-004

Total Components	100.00	1.16e+002

REGENERATOR OVERHEADS STREAM

 Temperature: 212.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 4.91e+003 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	9.23e+001	2.15e+002
Carbon Dioxide	8.03e-001	4.57e+000
Nitrogen	4.76e-003	1.73e-002
Methane	5.77e-001	1.20e+000
Ethane	3.20e-001	1.24e+000
Propane	6.83e-002	3.90e-001
Isobutane	2.09e-002	1.57e-001
n-Butane	3.29e-002	2.48e-001
Isopentane	3.49e-002	3.26e-001
n-Pentane	2.28e-002	2.13e-001
n-Hexane	3.88e-002	4.33e-001
Cyclohexane	4.97e-002	5.42e-001
Other Hexanes	6.28e-002	7.01e-001
Heptanes	1.78e-001	2.31e+000
Benzene	3.10e-001	3.14e+000
Toluene	2.40e+000	2.86e+001
Ethylbenzene	3.64e-001	5.00e+000
Xylenes	2.24e+000	3.07e+001
C8+ Heavies	2.11e-001	4.65e+000

Total Components	100.00	3.00e+002

CONDENSER PRODUCED WATER STREAM

 Temperature: 100.00 deg. F
 Flow Rate: 4.30e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)	(ppm)

Water	9.99e+001	2.15e+002	999087.
Carbon Dioxide	4.41e-002	9.50e-002	441.
Nitrogen	3.89e-006	8.36e-006	0.
Methane	5.55e-004	1.19e-003	6.
Ethane	6.69e-004	1.44e-003	7.
Propane	1.51e-004	3.25e-004	2.
Isobutane	2.76e-005	5.94e-005	0.
n-Butane	5.21e-005	1.12e-004	1.
Isopentane	2.78e-005	5.98e-005	0.

n-Pentane	1.72e-005	3.71e-005	0.
n-Hexane	1.34e-005	2.88e-005	0.
Cyclohexane	7.59e-005	1.63e-004	1.
Other Hexanes	2.44e-005	5.24e-005	0.
Heptanes	1.59e-005	3.42e-005	0.
Benzene	9.58e-003	2.06e-002	96.
Toluene	2.63e-002	5.67e-002	263.
Ethylbenzene	1.12e-003	2.40e-003	11.
Xylenes	8.46e-003	1.82e-002	85.
C8+ Heavies	4.43e-008	9.52e-008	0.

Total Components	100.00	2.15e+002	1000000.

CONDENSER RECOVERED OIL STREAM

 Temperature: 100.00 deg. F
 Flow Rate: 1.77e-001 gpm

Component	Conc. (wt%)	Loading (lb/hr)

Water	4.77e-002	3.60e-002
Carbon Dioxide	1.63e-001	1.23e-001
Nitrogen	5.25e-004	3.96e-004
Methane	1.25e-002	9.47e-003
Ethane	7.16e-002	5.41e-002
Propane	1.10e-001	8.31e-002
Isobutane	7.50e-002	5.66e-002
n-Butane	1.44e-001	1.08e-001
Isopentane	2.97e-001	2.24e-001
n-Pentane	2.05e-001	1.55e-001
n-Hexane	5.04e-001	3.80e-001
Cyclohexane	6.53e-001	4.93e-001
Other Hexanes	7.70e-001	5.81e-001
Heptanes	2.92e+000	2.20e+000
Benzene	3.87e+000	2.92e+000
Toluene	3.70e+001	2.79e+001
Ethylbenzene	6.58e+000	4.96e+000
Xylenes	4.05e+001	3.05e+001
C8+ Heavies	6.16e+000	4.65e+000

Total Components	100.00	7.55e+001

CONDENSER VENT STREAM

 Temperature: 100.00 deg. F
 Pressure: 15.50 psia
 Flow Rate: 9.78e+001 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Water	6.21e+000	2.88e-001
Carbon Dioxide	3.84e+001	4.36e+000
Nitrogen	2.34e-001	1.69e-002
Methane	2.88e+001	1.19e+000
Ethane	1.53e+001	1.19e+000
Propane	2.70e+000	3.06e-001
Isobutane	6.70e-001	1.00e-001
n-Butane	9.31e-001	1.40e-001

Isopentane	5.49e-001	1.02e-001
n-Pentane	3.13e-001	5.83e-002
n-Hexane	2.35e-001	5.23e-002
Cyclohexane	2.26e-001	4.91e-002
Other Hexanes	5.40e-001	1.20e-001
Heptanes	4.21e-001	1.09e-001
Benzene	9.84e-001	1.98e-001
Toluene	2.68e+000	6.38e-001
Ethylbenzene	1.27e-001	3.47e-002
Xylenes	6.76e-001	1.85e-001
C8+ Heavies	1.23e-003	5.39e-004

Total Components	100.00	9.13e+000

COMBUSTION DEVICE OFF GAS STREAM

Temperature: 1000.00 deg. F
 Pressure: 14.70 psia
 Flow Rate: 2.70e+000 scfh

Component	Conc. (vol%)	Loading (lb/hr)

Methane	5.21e+001	5.94e-002
Ethane	2.78e+001	5.95e-002
Propane	4.89e+000	1.53e-002
Isobutane	1.21e+000	5.02e-003
n-Butane	1.69e+000	6.98e-003
Isopentane	9.96e-001	5.11e-003
n-Pentane	5.68e-001	2.91e-003
n-Hexane	4.27e-001	2.61e-003
Cyclohexane	4.10e-001	2.45e-003
Other Hexanes	9.79e-001	6.00e-003
Heptanes	7.64e-001	5.44e-003
Benzene	1.78e+000	9.91e-003
Toluene	4.87e+000	3.19e-002
Ethylbenzene	2.30e-001	1.73e-003
Xylenes	1.23e+000	9.26e-003
C8+ Heavies	2.22e-003	2.69e-005

Total Components	100.00	2.24e-001

TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Appendix C Mark-Up of Current Title V Permit, Excelsior Compressor Station ROP NO. MI-ROP-B7196-2017

**Appendix C MARK-UP OF CURRENT TITLE V PERMIT,
EXCELSIOR COMPRESSOR STATION ROP NO.
MI-ROP-B7196-2017**



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

EFFECTIVE DATE: April 3, 2017

ISSUED TO:

ANR Storage Company - Excelsior Compressor Station

State Registration Number (SRN): B7196

LOCATED AT:

4963 State Road Northeast, Kalkaska, Kalkaska County, Michigan 49649

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-B7196-2017

Expiration Date: April 3, 2022

Administratively Complete ROP Renewal Application Due Between:
October 3, 2020 and October 3, 2021

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Michigan Air Pollution Control Rule 210(1), this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-B7196-2017

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

Shane Nixon, Cadillac District Supervisor

(Rev. 04-26-16)

TABLE OF CONTENTS

AUTHORITY AND ENFORCEABILITY	3
A. GENERAL CONDITIONS	4
Permit Enforceability	4
General Provisions	4
Equipment & Design	5
Emission Limits	5
Testing/Sampling	5
Monitoring/Recordkeeping	6
Certification & Reporting	6
Permit Shield	7
Revisions	8
Reopenings	8
Renewals	8
Stratospheric Ozone Protection	9
Risk Management Plan	9
Emission Trading	9
Permit To Install (PTI)	9
B. SOURCE-WIDE CONDITIONS	11
C. EMISSION UNIT CONDITIONS	11
EMISSION UNIT SUMMARY TABLE	11
EUEXGEN-B	12
EUEXGLYDEH	15
D. FLEXIBLE GROUP CONDITIONS	25
FLEXIBLE GROUP SUMMARY TABLE	25
FGEXCOMP	26
FG MACT DDDDD	28
E. NON-APPLICABLE REQUIREMENTS	4132
APPENDICES	4233
Appendix 1. Acronyms and Abbreviations	4233
Appendix 2. Schedule of Compliance	4233
Appendix 3. Monitoring Requirements	4334
Appendix 4. Recordkeeping	4334
Appendix 5. Testing Procedures	4334
Appendix 6. Permits to Install	4334
Appendix 7. Emission Calculations	4334
Appendix 8. Reporting	4435

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

AUTHORITY AND ENFORCEABILITY

For the purpose of this permit, the **permittee** is defined as any person who owns or operates an emission unit at a stationary source for which this permit has been issued. The **department** is defined in Rule 104(d) as the Director of the Michigan Department of Environmental Quality (MDEQ) or his or her designee.

The permittee shall comply with all specific details in the permit terms and conditions and the cited underlying applicable requirements. All terms and conditions in this ROP are both federally enforceable and state enforceable unless otherwise footnoted. Certain terms and conditions are applicable to most stationary sources for which an ROP has been issued. These general conditions are included in Part A of this ROP. Other terms and conditions may apply to a specific emission unit, several emission units which are represented as a flexible group, or the entire stationary source which is represented as a Source-Wide group. Special conditions (SC) are identified in Parts B, C, D and/or the appendices.

In accordance with Rule 213(2)(a), all underlying applicable requirements are identified for each ROP term or condition. All terms and conditions that are included in a PTI are streamlined, subsumed and/or are state-only enforceable will be noted as such.

In accordance with Section 5507 of Act 451, the permittee has included in the ROP application a compliance certification, a schedule of compliance, and a compliance plan. For applicable requirements with which the source is in compliance, the source will continue to comply with these requirements. For applicable requirements with which the source is not in compliance, the source will comply with the detailed schedule of compliance requirements that are incorporated as an appendix in this ROP. Furthermore, for any applicable requirements effective after the date of issuance of this ROP, the stationary source will meet the requirements on a timely basis, unless the underlying applicable requirement requires a more detailed schedule of compliance.

Issuance of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

1. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**
2. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**
3. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**
4. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities **(R 336.1213(1)(d))**:
 - a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
 - c. Inspect, at reasonable times, any of the following:
 - i. Any stationary source.
 - ii. Any emission unit.
 - iii. Any equipment, including monitoring and air pollution control equipment.
 - iv. Any work practices or operations regulated or required under the ROP.
 - d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.
5. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

6. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**
7. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**
8. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

9. Any collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2).² **(R 336.1370)**
10. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

11. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"² **(R 336.1301(1))**
 - a. A 6 minute average of 20% opacity, except for one 6 minute average per hour of not more than 27% opacity.
 - b. A limit specified by an applicable federal new source performance standard.

The grading of visible emissions shall be determined in accordance with Rule 303.

12. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
 - a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.¹ **(R 336.1901(a))**
 - b. Unreasonable interference with the comfortable enjoyment of life and property.¹ **(R 336.1901(b))**

Testing/Sampling

13. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).² **(R 336.2001)**
14. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**
15. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

Monitoring/Recordkeeping

16. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate. **(R 336.1213(3)(b))**
- The date, location, time, and method of sampling or measurements.
 - The dates the analyses of the samples were performed.
 - The company or entity that performed the analyses of the samples.
 - The analytical techniques or methods used.
 - The results of the analyses.
 - The related process operating conditions or parameters that existed at the time of sampling or measurement.
17. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

18. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**
19. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604. **(R 336.1213(4)(c))**
20. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**
21. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP. **(R 336.1213(3)(c))**
- For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
 - For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
 - For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

22. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following **(R 336.1213(3)(c))**:
- Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.
 - Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that, "based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete". The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.
23. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**
24. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**
25. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.² **(R 336.1912)**

Permit Shield

26. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance, if either of the following provisions is satisfied. **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
- The applicable requirements are included and are specifically identified in the ROP.
 - The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.
- Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.
27. Nothing in this ROP shall alter or affect any of the following:
- The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
 - The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
 - The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**
 - The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

28. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
- a. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
 - b. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**
 - c. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
 - d. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
 - e. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**
29. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

30. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**
31. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**
32. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**
33. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

34. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
- a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
 - b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
 - c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
 - d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

Renewals

35. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(8))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

Stratospheric Ozone Protection

36. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.
37. If the permittee is subject to 40 CFR Part 82, and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

38. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).
39. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
 - a. June 21, 1999,
 - b. Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
 - c. The date on which a regulated substance is first present above a threshold quantity in a process.
40. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.
41. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c). **(40 CFR Part 68)**

Emission Trading

42. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

Permit To Install (PTI)

43. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.² **(R 336.1201(1))**
44. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.² **(R 336.1201(8), Section 5510 of Act 451)**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

45. The terms and conditions of a PTI shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI will be amended to reflect the change of ownership or operational control. The request must include all of the information required by Subrules (1)(a), (b) and (c) of Rule 219. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.² **(R 336.1219)**
46. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P. O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.² **(R 336.1201(4))**

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

ROP No: MI-ROP-B7196-2017
 Expiration Date: April 3, 2022
 PTI No: MI-PTI-B7196-2017

B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

C. EMISSION UNIT CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EUEXCOMP-A	Compressor engine A, a natural gas fired, reciprocating, internal combustion Ingersoll Rand 410-KVR-TE engine rated at 3750 HP.	10/28/1981, 1997	FGEXCOMP
EUEXCOMP-B	Compressor engine B, a natural gas fired, reciprocating, internal combustion Ingersoll Rand 410-KVR-TE engine rated at 3750 HP.	10/28/1981, 1997	FGEXCOMP
EUEXGEN-B	Generator engine B, a natural gas fired, reciprocating, internal combustion Caterpillar G399 engine rated at 490 HP. Used to power an electrical generator for emergency power.	10/28/1981	NA
EUEXGLYDEH	Glycol dehydration unit	09/01/1989	NA
EUEXBOILER	Cleaver Brooks Natural gas boiler, 2.51 MMBtu/hr	10/28/1981	FG MACT DDDDD \leq 10 MMBtu/hr
EUEXHTR-A	Sivalls Natural Gas fired withdrawal heater, 10 MMBtu	1980	FG MACT DDDDD \geq 10 MMBtu/hr
EUEXHTR-B	Sivalls Natural Gas fired withdrawal heater, 10 MMBtu	1980	FG MACT DDDDD \geq 10 MMBtu/hr

**EUEXGEN-B
 EMISSION UNIT CONDITIONS**

DESCRIPTION

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 electrical generator.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee may operate EUEXGEN-B as necessary during emergencies with no time limit. **(40 CFR 63.6640(f)(1))**
2. The permittee may operate EUEXGEN-B for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the engine manufacturer or vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year. **(40 CFR 63.6640(f)(2)(i))**
3. The permittee may operate EUEXGEN-B for up to 50 hours per year in non-emergency situations. The 50 hours are counted as part of the 100 hours of operation allowed under SC III.2. The 50 hours cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. **(40 CFR 63.6640(f)(3))**
4. The permittee must operate and maintain EUEXGEN-B according to the manufacturer's emission-related written instructions or develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 63.6625(e))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

5. The permittee must comply with the following operational requirements:
 - a. Change oil and filter every 500 hours of operation or annually, whichever comes first, except as allowed in SC III.6;
 - b. Inspect spark plugs every 1,000 hours of operation or annually, whichever comes first;
 - c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

If EUEXGEN-B is being operated during an emergency and it is not possible to shut down an engine to perform the work practice standards on the schedule required, the work practice standard can be delayed until the emergency is over. The work practice should be performed as soon as practicable after the emergency has ended. The permittee must report any failure to perform the work practice on the schedule required. **(40 CFR 63.6602, 40 CFR Part 63, Subpart ZZZZ, Table 2c, Item 6)**

6. The permittee has the option of utilizing an oil analysis program in order to extend the specified oil change requirement in SC III.5. The oil analysis must be performed at the same frequency specified for changing the oil in SC III.5. The oil analysis shall test for the following limits:
 - a. Total Acid Number has increased by more than 3.0 mg of potassium hydroxide (KOH) per gram from Total Acid Number of the oil when new;
 - b. Viscosity of the oil has changed by more than 20 % from the viscosity of the oil when new; or
 - c. Percent water content (by volume) is greater than 0.5 %.

If any of the limits are exceeded, the permittee must change the oil within 2 days of receiving the results of the analysis. If the engine is not in operation when the results of the analysis are received, the permittee must change the oil within 2 days or before commencing operation, whichever is later. The analysis program must be part of the maintenance plan for EUEXGEN-B. **(40 CFR 63.6625(j))**

7. The permittee shall minimize EUEXGEN-B's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. **(40 CFR 63.6625(h))**
8. The permittee must be in compliance with the emission limitations and operating limitations in this subpart that apply to EUEXGEN-B at all times. **(40 CFR 63.6605(a))**
9. The permittee at all times must operate and maintain EUEXGEN-B in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of EUEXGEN-B. **(40 CFR 63.6605(b))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip EUEXGEN-B with a non-resettable hour meter. **(40 CFR 63.6625(f))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall keep the following records: (40 CFR 63.6655)
 - a. A copy of each notification and report submitted to comply with 40 CFR Part 63, Subpart ZZZZ, including all documentation supporting any Initial Notification or Notification of Compliance status, according to the requirements of 40 CFR 63.10(b)(2)(xiv).
 - b. Records of the occurrence and duration of each malfunction of the engines of EUEXGEN-B.
 - c. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning equipment to its normal or usual manner of operation.
 - d. Records to demonstrate continuous compliance with operating limitations in SC III.5.
 - e. Keep records of the maintenance conducted on EUEXGEN-B in order to demonstrate that EUEXGEN-B is operated and maintained according to the maintenance plan.
 - f. Records of hours of operation recorded through the non-resettable hour meter. The permittee shall document how many hours were spent during emergency operation; including what classified the operation as emergency and how many hours were spent during non-emergency operation.
2. The permittee must keep records of the parameters that are analyzed as part of the oil analysis program in SC III.6, the results of the analysis, and the oil changes for the engine. (40 CFR 63.6625(j))

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable requirements of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63, Subparts A and ZZZZ for Stationary Reciprocating Internal Combustion Engines. (40 CFR Part 63, Subparts A and ZZZZ)

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**EUEXGLYDEH
 EMISSION UNIT CONDITIONS**

DESCRIPTION

Glycol Dehydration Unit with maximum process capacity of 11,458 MMscf/hr of natural gas. The glycol dehydration unit includes a natural gas fired reboiler with a heat input capacity of 0.5 MMBtu/Hr. The Glycol Dehydration Unit has previously been permitted under Permit to Install Nos. 77-97, 3-01, and 6-12.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Thermal Oxidizer and Condenser

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. VOC	108.0 pounds ²	Daily	EUEXGLYDEHY	SC VI.6	R 336.1205(1) R 336.1702(a) R 336.1901
2. VOC	18.3 tons ²	12 month rolling time period as determined at the end of each calendar month	EUEXGLYDEHY	SC VI.7	R 336.1205(1) R 336.1702(a) R 336.1901
3. Benzene	Less than 0.9 megagrams (0.992 Tons) ²	Calendar year	EUEXGLYDEHY	SC V.1, SC V.2, SC VI.7	R 336.1205(1) 40 CFR 63.1275(b)(1)(ii)
4. BTEX	Calculated using the equation in Appendix 7	Calendar year	EUEXGLYDEHY	SC V.3, SC V.5, SC V.6	40 CFR 63.1275(b)(1)(iii)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

- The natural gas used as fuel in the glycol dehydration unit shall not contain more than 20 grains of total sulfur per 100 cubic feet of natural gas. The permittee may also incinerate emissions from the glycol separator in the glycol reboiler burner.² (R 336.1301(1)(a), R 336.1205(1), R 336.1702(a), R 336.1901)
- The glycol dehydration unit shall not be operated unless the glycol separator is installed and operating properly. A properly operating glycol separator will volatilize organic compounds out of the rich glycol stream and route them to the glycol regenerator reboiler burner or thermal oxidizer.² (R 336.1205(1), R 336.1702(a), R 336.1901)
- The glycol dehydration unit shall not be operated while the thermal oxidizer is malfunctioning for more than 4,500 hours per 12 month rolling time period as determined at the end of each calendar month.² (R 336.1205(1), R 336.1702(a), R 336.1910)

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

4. The permittee shall not use stripping gas in the glycol dehydration unit.² (R 336.1702(a))
5. The permittee shall not operate the glycol dehydration system unless the thermal oxidizer is operating at a temperature of at least 760 °C (1400 °F), and the VOC destruction efficiency is at least 95 % by weight, except during a thermal oxidizer malfunction event.² (R 336.1205(1), R 336.1702(a), R 336.1901)
6. The permittee shall not operate the glycol dehydration system during a thermal oxidizer malfunction event unless the condenser exhaust temperature is 48.9 °C (120 °F) or less.² (R 336.1205(1), R 336.1702(a), R 336.1901)
7. The process vents from EUEXGLYDEH shall be vented to a control device or a combination of control devices through a closed-vent system. (40 CFR 63.1275(b)(1)(iii)(A))
8. The control device(s) shall be one of those specified below and must be designed and operated in accordance with the following requirements: (40 CFR 63.1281(f)(1))
 - a. A thermal oxidizer that reduces the concentration of BTEX to meet the emission limit in SC I.4, or the TOC or total HAP concentration in the exhaust gases at the outlet of the incinerator is reduced to a level equal to or less than 20 ppmv on a dry basis corrected to 3 % oxygen.
 - b. A condenser or other non-destructive control device that is designed and operated to reduce the mass content of BTEX in the gases vented by 95 %.
9. The permittee shall control HAP emissions from each GCG separator (flash tank) vent unless BTEX emissions from the reboiler vent and the flash tank are reduced to a level less than the limit in SC I.4. (40 CFR 63.1275(c)(3))
10. The permittee shall operate and maintain EUEXGLYDEH, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.² (40 CFR 63.1274(h))
11. The permittee shall operate each control device in accordance with the requirements specified below: (40 CFR 63.1281(f)(2))
 - a. Each control device used to comply with 40 CFR Part 63, Subpart HHH shall be operating at all times.
 - b. For each control device monitored in accordance with the requirements of SC VI.14-19 (40 CFR 63.1283(d)), the permittee shall demonstrate compliance according to the requirements of SC VI.9 (40 CFR 63.1282(e)).
12. When using a condenser to demonstrate continuous compliance with emission limits the control device shall be operated at or below the maximum operating temperature established in accordance with the requirements of SC VI.14 or a maximum of 48.9 °C (120 °F). When using a thermal oxidizer to demonstrate continuous compliance with emission limits the control device shall be operated at or above the minimum operating temperature established in accordance with the requirements of SC VI.14 or a minimum of 760 °C (1400 °F). (40 CFR 63.1282(e)(1))

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The glycol dehydration unit shall be equipped with any combination of glycol pump(s) that have a combined capacity no greater than 12.8 gpm.² (R 336.1205(1), R 336.1702(a), R 336.1901)
2. The permittee shall not operate the glycol dehydration system unless the glycol regenerator still is equipped with a properly installed and operating thermal oxidizer except as specified in SC III.6.² (R 336.1205(1), R 336.1702(a), R 336.1901)
3. The thermal oxidizer shall be designed to maintain a minimum retention time of 0.5 seconds.² (R 336.1205(1), R 336.1702(a), R 336.1901)

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

4. The closed vent system shall be designed and operated in accordance with the following requirements: **(40 CFR 63.1281(c), 40 CFR 63.1283(c)(2)(iii))**
 - a. The closed-vent system shall route all gases, vapors, and fumes emitted from the material in an emission unit to a control device that meets the requirements specified in SC III.8.
 - b. The closed-vent system shall be designed and operated with no detectable emissions.
 - c. Any bypass devices in the closed-vent system that could divert emissions from entering the control device shall be equipped with a flow indicator at the inlet to the bypass device that takes readings every 15 minutes, and that sounds an alarm when the bypass device is open; or the bypass device valve at the inlet to the bypass device shall be secured using a car-seal or lock and key.
5. Each continuous parameter monitoring system (CPMS) shall meet the following specifications and requirements: **(40 CFR 63.1283(d)(1))**
 - a. Each CPMS shall measure data values at least once every hour and record either:
 - i. Each measured data value; or
 - ii. Each block average value for each 1 hour period or shorter periods calculated from all measured data values during each period. If values are measured more frequently than once per minute, a single value for each minute may be used to calculate the hourly (or shorter period) block average instead of all measured values.
6. The permittee shall install a device equipped with a continuous recorder to measure the values of operating parameters appropriate for the control device as specified below.² **(40 CFR 63.1283(d)(3), R 336.1205(1), R 336.1702(a), R 336.1901)**
 - a. For a thermal oxidizer, the temperature monitoring device shall have a minimum accuracy of $\pm 2\%$ of the temperature being monitored in $^{\circ}\text{C}$, or $\pm 2.5^{\circ}\text{C}$, whichever value is greater. The temperature sensor shall be installed at a location representative of the combustion zone temperature
 - b. For a condenser, the temperature monitoring device shall have a minimum accuracy of $\pm 2\%$ of the temperature being monitored in $^{\circ}\text{C}$, or $\pm 2.5^{\circ}\text{C}$, whichever value is greater. The temperature sensor shall be installed at a location in the exhaust vent stream from the condenser.

See Appendix 7

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall determine the composition, including the VOC and benzene content, of the natural gas processed in the glycol dehydration system at least once every five calendar years. The natural gas composition shall be determined by a method or methods which are standard in the natural gas industry, subject to approval by the Air Quality Division.² **(R 336.1205(1), R 336.1702(a), R 336.1901)**
2. Determination of the actual flow rate of natural gas to EUEXGLYDEH shall be made using either of the following procedures: **(40 CFR 63.1282(a)(1))**
 - a. Install and operate a monitoring instrument that directly measures natural gas flowrate to EUEXGLYDEH with an accuracy of $\pm 2\%$ or better. The annual natural gas flowrate shall be converted to a daily average by dividing the annual flowrate by the number of days per year each EU processed natural gas.
 - b. Document to the AQD's satisfaction, the actual annual average natural gas flowrate to EUEXGLYDEH.
3. Determination of the actual average BTEX emissions from EUEXGLYDEH with thermal oxidizer control device and/or condenser shall be made using the following procedure as specified in Appendix 7: **(40 CFR 63.1282(a)(2), R 336.1205(1), R 336.1702(a), R 336.1901)**
 - a. Use GRI-GLYCalc™, Version 3.0 or higher. Inputs to the model shall be representative of actual operating conditions of each glycol dehydration unit.
4. The permittee shall perform "no detectable emissions" testing for closed vent systems using the test methods and procedures specified in 40 CFR 63.1282(b). **(40 CFR 63.1282(b))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

5. If the permittee chooses to conduct a performance test to demonstrate that a control device meets the requirements of SC III.8 (40 CFR 1281(f)(1)) the permittee shall conduct emissions testing for compliance with the BTEX emission limit calculated using Equation 1 or the 20 ppmv TOC or Total HAP exhaust gas concentration reduction requirement using the following test methods and procedures: **(40 CFR 63.1282(d)(3))**
 - a. 40 CFR Part 60, Appendix A, Method 1 or 1A, as appropriate, shall be used for selection of the sampling sites. The sampling site shall be located at the outlet of the combustion device.
 - b. The gas volumetric flowrate shall be determined using 40 CFR, Part 60, Appendix A, Method 2, 2A, 2C, or 2D, as appropriate.
 - c. To determine compliance with the BTEX emission limit or the 20 ppmv TOC or Total HAP exhaust gas concentration reduction requirement, the permittee shall use one of the following methods: Method 18, 40 CFR Part 60, Appendix A; ASTM D6420-99 (Reapproved 2004); or any other method or data that have been validated according to the applicable procedures in 40 CFR Part 63, Appendix A, Method 301.
 - d. The permittee shall conduct performance tests according to the following schedule:
 - i. The first periodic performance test shall be conducted not later than 60 months after February 18, 2015. Subsequent periodic performance tests shall be conducted at intervals no longer than 60 months following the previous periodic performance test or whenever a source desires to establish a new operating limit. Combustion control devices meeting either of the following criteria are not required to conduct periodic performance tests:
 - A. A combustion control device whose model is tested under, and meets the criteria of manufacturers performance test in 40 CFR 63.1282(g).
 - B. A combustion control device demonstrating during the performance test that combustion zone temperature is an indicator of destruction efficiency and operates at a minimum temperature of 760 °C (1400 °F).
6. For condenser control devices, the permittee may use the procedures documented in the GRI report entitled "Atmospheric Rich/Lean method for Determining Glycol Dehydrator Emissions". (GRI-95/0368.1) as inputs for the model GRI-GLYCalc™, version 3.0 or higher, to generate a condenser performance curve as an alternative to the performance testing required in SC V.5. **(40 CFR 63.1282(d)(5))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(iii))**

1. The permittee shall monitor and record the thermal oxidizer operating temperature on a daily basis when the glycol dehydration system is operating except during times of thermal oxidizer malfunction.² **(R 336.1205(1), R 336.1702(a), R 336.1901)**
2. The permittee shall monitor and record the condenser exhaust gas temperature on a daily basis when the glycol dehydration system is operating during times of thermal oxidizer malfunction.² **(R 336.1205(1), R 336.1702(a), R 336.1901)**
3. The permittee shall monitor and record the total hours of operation of the glycol dehydration system for each calendar month and each 12 month rolling time period.² **(R 336.1205(1), R 336.1702(a), R 336.1901)**
4. The permittee shall monitor and record the total hours of operation of the glycol dehydration system when the thermal oxidizer is malfunctioning for each calendar month and each 12 month rolling time period. **(R 336.1213(3)(a))**
5. The permittee shall monitor and record the amount of natural gas processed by the glycol dehydration system on a daily basis and maintain records of the annual glycol natural gas throughput each year.² **(R 336.1205(1), R 336.1702(a), R 336.1901, 40 CFR 63.1270(a)(3))**
6. The permittee shall calculate and record the VOC emissions from the glycol dehydration system each calendar day, using the method specified in Appendix 7 of this permit. The VOC emission records shall be available to the AQD upon request no later than the 15th of the next calendar month. **(R 336.1205(1), R 336.1702(a), R 336.1901)**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

7. The permittee shall calculate and record VOC and benzene emissions for the glycol dehydration system on a monthly and 12 month rolling time period basis in tons and tons per year, respectively. Monthly and 12 month rolling time period records shall be made available to the AQD upon request no later than the 15th of the month for the previous calendar month.² (R 336.1205(1), R 336.1702(a))
8. The permittee shall retain calculations, for the thermal oxidizer when controlling the glycol dehydration unit, showing the VOC destruction efficiency is at least 95 % by weight. The calculations shall be retained and performed in a manner acceptable to the Air Quality Division.² (R 336.1205(1), R 336.1702(a), R 336.1901)
9. The permittee shall continuously monitor and record the temperature on the thermal oxidizer or condenser and calculate the daily average temperature for each operating day. Compliance with the control device performance requirements specified in SC III.8 shall be demonstrated using the requirements in SC 9.a-c. (40 CFR 63.1282(e), 40 CFR 63.1283(d)(4))
 - a. Establish a site specific maximum (condenser) or minimum (thermal oxidizer) temperature to define the conditions at which the control device must be operated to continuously achieve compliance with the emission limit.
 - b. Calculate the daily average of the condenser or thermal oxidizer temperature readings in accordance with SC VI.14.
 - c. Compliance is achieved when the daily average of the temperature readings calculated under SC VI.9.b. is either equal to or greater than the minimum or equal to or less than the maximum monitoring value established under SC VI.9.a.
10. When using a condenser as the control device the permittee may demonstrate compliance with BTEX emission reductions by complying with the following requirements: (40 CFR 63.1282(f))
 - a. The permittee shall establish a site-specific condenser performance curve according to the procedures specified in SC VI.15.d and shall identify the minimum percent reduction necessary to meet the BTEX limit.
 - b. The permittee must calculate the daily average condenser outlet temperature in accordance with SC VI.14.
 - c. The permittee shall determine the condenser efficiency for the current operating day using the daily average condenser outlet temperature and the condenser performance curve.
 - d. At the end of each operating day the permittee shall calculate the 30 day average BTEX emission reduction from the condenser efficiencies for the preceding 30 operating days.
 - e. Compliance is achieved if the average BTEX emission reduction is equal to or greater than the minimum percent reduction established in SC VI.10.a.
11. For each closed-vent system, the permittee shall comply with the following requirements: (40 CFR 63.1283(c)(2-4))
 - a. Except for parts of the closed-vent system that are designated unsafe to inspect or difficult to inspect, each closed-vent system and each bypass device shall be inspected according to the procedures specified below according the following schedule:
 - i. For each closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of hard piping or a bolted or gasketed ducting flange):
 - A. Conduct an initial inspection to demonstrate that the closed-vent system operates with no detectable emissions.
 - B. Conduct annual visual inspections for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in piping; loose connections; or broken or missing caps or other closure devices.
 - ii. For closed-vent system components other than those specified in SC VI.11.a.i above:
 - A. Conduct an initial inspection to demonstrate that the closed-vent system operates with no detectable emissions.
 - B. Conduct annual inspections to demonstrate that the components or connections operate with no detectable emissions.
 - C. Conduct annual visual inspections for defects that could result in air emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in ductwork; loose connections; or broken or missing caps or other closure devices.

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

- iii. For each bypass device, except low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and safety devices, the permittee shall either:
 - A. At the inlet to the bypass device that could divert the steam away from the control device to the atmosphere, set the flow indicator to take a reading at least once every 15 minutes; or
 - B. If the bypass device valve installed at the inlet to the bypass device is secured in the non-diverting position using a car-seal or a lock-and-key type configuration, visually inspect the seal or closure mechanism at least once every month to verify that the valve is maintained in the non-diverting position and the vent stream is not diverted through the bypass device.
 - b. In the event that a leak or defect is detected, the permittee shall repair the leak or defect as soon as practicable, except as provided in SC VI.11.c.
 - i. A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.
 - ii. Repair shall be completed no later than 15 calendar days after the leak is detected.
 - c. Delay of repair of a closed-vent system for which leaks or defects have been detected is allowed if the repair is technically infeasible without a shutdown, as defined in 40 CFR 63.1271, or if the permittee determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be completed by the end of the next shutdown.
12. Any parts of the closed-vent system that are designated, as described below, as unsafe to inspect are exempt from the inspection requirements of SC VI.11 if: **(40 CFR 63.1283(c)(5))**
- a. The permittee determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with SC VI.11.a.i or ii.
 - b. The permittee has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.
13. Any parts of the closed-vent system that are designated, as described below, as difficult to inspect are exempt from the inspection requirements of SC VI.11 if: **(40 CFR 63.1283(c)(6))**
- a. The permittee determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and
 - b. The permittee has a written plan that requires inspection of the equipment at least once every 5 years.
14. Using the data recorded by the monitoring system, except for inlet gas flowrate, the permittee must calculate the daily average value for each monitored operating parameter for each operating day. If the emissions unit operation is continuous, the operating day is a 24 hour period. If the emissions unit operation is not continuous, the operating day is the total number of hours of control device operation per 24 hour period. Valid data points must be available for 75 % of the operating hours in an operating day to compute the daily average. **(40 CFR 63.1283(d)(4))**
15. For the control devices used to comply with 40 CFR Part 63, Subpart HHH, the permittee shall establish a minimum operating parameter value or a maximum operating parameter value, as appropriate for the control device, to define the conditions at which the control device must be operated to continuously achieve the emission limits in Section I of EUEXGLYDEH. Each minimum or maximum operating parameter value shall be established as follows: **(40 CFR 63.1283(d)(5)(i), 40 CFR 63.1283(d)(5)(ii))**
- a. If the permittee conducts performance tests to demonstrate that the control device achieves the applicable performance requirements, then the minimum operating parameter value or the maximum operating parameter value shall be established based on values measured during the performance test and supplemented, as necessary, by a condenser design analysis or control device manufacturer's recommendations or a combination of both.
 - b. If the permittee uses a condenser design analysis to demonstrate that the control device achieves the applicable performance requirements, then the minimum operating parameter value or the maximum operating parameter value shall be established based on the condenser design analysis and may be supplemented by the condenser manufacturer's recommendations.
 - c. If the permittee operates a control device where the performance test requirement was met under manufacturers' performance test to demonstrate that the control device achieves the applicable performance requirements, then the maximum inlet gas flowrate shall be established based on the performance test and supplemented, as necessary, by the manufacturer recommendations.
 - d. When using condensers as the control device the permittee shall also establish a condenser performance curve showing the relationship between condenser outlet temperature and condenser control efficiency. The

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

curve shall be established using the procedures documented in the GRI report entitled, "Atmospheric Rich/Lean Method for Determining Glycol Dehydrator Emissions" (GRI-95/0368.1) as inputs for the model GRI-GLYCalc™, Version 3.0 or higher, to generate a condenser performance curve.

16. A deviation for a control device is determined to have occurred when the monitoring data or lack of monitoring data result in any one of the criteria specified below being met. When multiple operating parameters are monitored for the same control device and during the same operating day, and more than one of these operating parameters meets an excursion criterion specified below, then a single excursion is determined to have occurred for the control device for that operating day. **(40 CFR 63.1283(d)(6)(i-iii))**
 - a. When the daily average value of a monitored operating parameter is less than the minimum operating parameter limit (or, if applicable, greater than the maximum operating parameter limit) established for the operating parameter.
 - b. When the 30 day average condenser efficiency calculated according to the requirements of SC VI.15.d is less than the identified 30 day required percent reduction.
 - c. When the monitoring data are not available for at least 75 % of the operating hours in a day.
17. A deviation occurs for a closed-vent system containing one or more bypass devices that could be used to divert all or a portion of the gases, vapors, or fumes from entering the control device when: **(40 CFR 63.1283(d)(6)(iv))**
 - a. The flow indicator indicates that flow has been detected and that the stream has been diverted away from the control device to the atmosphere.
 - b. If the seal or closure mechanism has been broken, the bypass line valve position has a changed, the key for the lock-and-key type lock has been checked out, or the car-seal has broken.
18. For each deviation, the permittee shall be deemed to have failed to have applied control in a manner that achieves the required operating parameter limits. Failure to achieve the required operating parameter limits is a violation of this standard. **(40 CFR 63.1283(d)(7))**
19. Nothing in SCs VI.14-19 shall be construed to allow or excuse a monitoring parameter deviation caused by any activity that violates other applicable provisions of this subpart. **(40 CFR 63.1283(d)(9))**
20. The permittee shall maintain the records specified in 40 CFR 63.10(b)(2). **(40 CFR 63.1284(b)(2))**
21. The permittee shall maintain the following records: **(40 CFR 63.1284(b)(4), 40 CFR 63.1284(g))**
 - a. Continuous records of the equipment operating parameters specified to be monitored in SCs VI.14-19.
 - b. Records of the daily average value of each continuously monitored parameter for each operating day determined according to the procedures specified in SC VI.14.
 - c. For condensers using reduction efficiency for compliance, records of the annual 30 day rolling average condenser efficiency determined in SC VI.12.d shall be kept in addition to the daily averages.
 - d. The following records for a control device whose model is tested under the manufacturers' performance test:
 - i. All visible emission readings and flowrate calculations made during the compliance determination
 - ii. All hourly records and other recorded periods when the pilot flame is absent.
 - e. Hourly records of the times and durations of all periods when the vent stream is diverted from the control device or the device is not operating.
 - f. Where a seal or closure mechanism is used to comply with the closed vent bypass, hourly records of flow are not required. In such cases, the owner or operator shall record that the monthly visual inspection of the seals or closure mechanism has been done, and shall record the duration of all periods when the seal mechanism is broken, the bypass line valve position has changed, or the key for a lock-and-key type lock has been checked out, and records of any car-seal that has broken.
22. The permittee shall maintain records identifying all parts of the closed-vent system that are designated as unsafe to inspect in accordance with SC VI.12, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment. **(40 CFR 63.1284(b)(5))**
23. The permittee shall maintain records identifying all parts of the closed-vent system that are designated as difficult to inspect in accordance with SC VI.13, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment. **(40 CFR 63.1284(b)(6))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

24. The permittee shall maintain the following records for each inspection conducted in accordance with SC VI.11 during which a leak or defect is detected. **(40 CFR 63.1284(b)(7))**
 - a. The instrument identification numbers, operator name or initials, and identification of the equipment.
 - b. The date the leak or defect was detected and the date of the first attempt to repair the leak or defect.
 - c. Maximum instrument reading measured by the method specified in condition SC V.4 after the leak or defect is successfully repaired or determined to be non-repairable.
 - d. "Repair delayed" and the reason for the delay if a leak or defect is not repaired within 15 calendar days after discovery of the leak or defect.
 - e. The name, initials, or other form of identification of the permittee (or designee) whose decision it was that repair could not be affected without a shutdown.
 - f. The expected date of successful repair of the leak or defect if a leak or defect is not repaired within 15 calendar days.
 - g. Dates of shutdowns that occur while the equipment is unrepaired.
 - h. The date of successful repair of the leak or defect.
25. For each inspection conducted in accordance with SC VI.11 during which no leaks or defects are detected, the permittee shall maintain a record that the inspection was performed, the date of the inspection, and a statement that no leaks or defects were detected. **(40 CFR 63.1284(b)(8))**
26. The permittee shall maintain records of the occurrence and duration of each malfunction of process equipment or the air pollution control equipment and monitoring equipment. The permittee shall maintain records of actions taken during periods of malfunction to minimize emissions in accordance with SC III.10, including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. **(40 CFR 63.1284(f), R 336.1702(a))**

See Appendix 7

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**
4. The permittee shall submit the notification of the planned date of a performance test and site-specific test plan at least 60 days before the test. **(40 CFR 63.1285(b)(3))**
5. The permittee shall prepare Periodic Reports in accordance with a. and b. below and submit them to the Administrator. **(40 CFR 63.1285(e))**
 - a. The permittee shall submit Periodic Reports semiannually. The reports shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. The report shall include certification by a responsible official of truth, accuracy, and completeness.
 - b. The permittee shall include the following information and any other information as applicable in 40 CFR 63.1285(e)(2).
 - i. A description of all deviations as defined in SC VI.16-17 that have occurred during the 6 month reporting period, and the information described in 40 CFR 63.1285(e)(2)(ii).
 - ii. For each inspection conducted in accordance with SC VI.11 during which a leak or defect is detected, the records described in SC VI.26 must be included in the next Periodic Report.
 - iii. For each closed-vent system with a bypass line, records required under SC VI.21.e-f.
 - iv. A statement identifying if there were no deviations during the reporting period.
 - v. Any change in compliance methods as described in 40 CFR 63.1282(e).

ROP No: MI-ROP-B7196-2017
 Expiration Date: April 3, 2022
 PTI No: MI-PTI-B7196-2017

- vi. The results of any periodic test conducted during the reporting period.
- 6. Whenever a process change is made, or a change in any of the information submitted in the Notification of Compliance Status Report, the permittee shall submit a report within 180 days after the process change is made or as a part of the next Periodic Report, whichever is sooner. The report shall include: **(40 CFR 63.1285(f))**
 - a. A brief description of the process change;
 - b. A description of any modification to standard procedures or quality assurance procedures;
 - c. Revisions to any of the information reported in the original Notification of Compliance Status Report;
 - d. Information required by the Notification of Compliance Status Report for changes involving the addition of processes or equipment.
- 7. Within 60 days after the date of completing a performance test (defined in 40 CFR 63.2) you must submit the results of the performance tests to EPA's WebFIRE database by using the Compliance and Emissions Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). Performance test data must be submitted in the file format generated through use of EPA's Electronic Reporting Tool (ERT) (see <http://www.epa.gov/ttn/chief/ert/index.html>). Only data collected using test methods on the ERT Web site are subject to this requirement for submitting reports electronically to WebFIRE. All reports required by this subpart not subject to the above electronic reporting requirements must be sent to the Administrator at the appropriate address. The Administrator may request a report in any form suitable for the specific case (e.g., by commonly used electronic media such as Excel spreadsheet, on CD or hard copy). The Administrator retains the right to require submittal of reports in paper format. **(40 CFR 63.1285(g))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVEX008 (condenser)	2'	20'	R 336.1901
2. SVEX009 (oxidizer)	NA	20'	R 336.1901

IX. OTHER REQUIREMENT(S)

- 1. The permittee shall comply with all applicable requirements of 40 CFR Part 63, Subpart A and Subpart HHH, National Emission Standards for Hazardous Air Pollutants (NESHAP) from Natural Gas Transmission and Storage Facilities. **(40 CFR Part 63, Subpart HHH, 40 CFR 63.1274(d)(2))**
- 2. The permittee shall determine major source status using the maximum annual facility natural gas throughput calculated according to 40 CFR 63.1270(a)(1)(i-iv). As an alternative to calculating the maximum natural gas throughput, the owner or operator of a new or existing source may use the facility design maximum natural gas throughput to estimate the maximum potential emissions. **(40 CFR 63.1270(a)(1))**
- 3. The permittee shall determine the maximum values for other parameters used to calculate potential emissions as the maximum over the same period for which maximum throughput is determined. These parameters shall be based on an annual average or the highest single measured value. For estimating maximum potential emissions from glycol dehydration units, the glycol circulation rate used in the calculation shall be the unit's maximum rate under its physical and operational design consistent with the definition of potential to emit in 40 CFR 63.2. **(40 CFR 63.1270(a)(4))**

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

4. A site-specific monitoring plan must be prepared that addresses the monitoring system design, data collection, and the quality assurance and quality control elements. Each CPMS must be installed, calibrated, operated, and maintained in accordance with the procedures in the approved site-specific monitoring plan. The permittee may request approval of monitoring system quality assurance and quality control procedures alternative to those specified below and in the site-specific monitoring plan. **(40 CFR 63.1283(d)(1)(ii-iv))**
- a. The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations;
 - b. Sampling interface (e.g., thermocouple) location such that the monitoring system will provide representative measurements;
 - c. Equipment performance checks, system accuracy audits, or other audit procedures;
 - d. Ongoing operation and maintenance procedures in accordance with provisions in 40 CFR 63.8(c)(1) and 40 CFR 63.8(c)(3);
 - e. Ongoing reporting and recordkeeping procedures in accordance with provisions in 40 CFR 63.10(c), 40 CFR 63.10(e)(1), and 40 CFR 63.10(e)(2)(i).
 - f. The permittee must conduct the CPMS equipment performance checks, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan at least once every 12 months.
 - g. The permittee must conduct a performance evaluation of each CPMS in accordance with the site-specific monitoring plan.

Footnotes:

¹This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

D. FLEXIBLE GROUP CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGEXCOMP	Compressor engines A and B, natural gas fired, reciprocating, internal combustion, Ingersoll Rand 410-KVR-TE engines, each rated at 3750 HP.	EUEXCOMP-A, EUEXCOMP-B
FG MACT DDDDD < 10 MMBtu/hr	(1) 2.51 MMBtu/hr Cleaver Brooks, Natural Gas Boiler and (2) 10 MMBtu/hr, Sivalls withdrawal heaters.	EUEXBOILER, EUEXHTR-A EUEXHTR-B
FG MACT DDDDD > 10 MMBtu/hr	Natural Gas Boiler and (2) 10 MMBtu/hr, Sivalls withdrawal heaters.	EUEXHTR-A EUEXHTR-B
FGRULE285(2)(m m)	Routine and emergency venting of natural gas from transmission and distribution systems or field gas from gathering lines, exempt from the requirements of Rule 201 pursuant to Rule 278, Rule 278a and Rule 285(2)(mm)	EUEXPIPEMAINT, EUEXFIELDMAINT

Formatted Table

Formatted: Centered, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

Formatted: Left, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

**FGEXCOMP
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

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.

Emission Units: EUEXCOMP-A, EUEXCOMP-B

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NO _x	99.2 lbs/hr ²	NA	Each compressor engine	SC V.1	40 CFR 52.21

II. MATERIAL LIMIT(S)

1. The natural gas used as fuel for the compressor engines shall not contain more than 20 grains of total sulfur per 100 cubic feet of natural gas.² (R 336.1301(1)(a), R 336.1403(1))

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall maintain an AQD approved Preventative Maintenance Plan for FGEXCOMP. (R 336.1213(3), R 336.1911)

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The compressor engines shall be designed so that each engine does not emit more than 12 grams of NO_x per brake horsepower hour at 100 % speed and 100 % torque.² (40 CFR 52.21)

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The NO_x emissions from each engine shall be tested once every five years. The testing shall be performed in accordance with reference methods approved by the AQD. (R 336.1213(3))
2. The permittee shall determine the composition, including total sulfur, of the natural gas burned in the compressor engines at least once every five calendar years. The natural gas composition shall be determined by a method or methods which are standard in the natural gas industry, subject to approval by the Air Quality Division. (R 336.1213(3)(a))

See Appendix 5

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee shall maintain records of the preventative maintenance performed in accordance with an AQD approved Preventative Maintenance Plan. (R 336.1213(3), R336.1911)

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))
4. The permittee shall submit two complete test protocols to the AQD, one to the Technical Programs Unit Supervisor and one to the District Supervisor for approval at least 30 days prior to the anticipated test date. The protocol shall describe the test method(s) and the maximum routine operating conditions, including targets for key operational parameters associated with air pollution control equipment to be monitored and recorded during testing. (R 336.12001(3))
5. The permittee shall notify the AQD Technical Programs Unit Supervisor and the District Supervisor no less than 7 days prior to the anticipated test date. (R 336.2001(4))
6. The permittee shall submit two complete test reports of the test results to the AQD, one to the Technical Programs Unit Supervisor and one to the District Supervisor, within 60 days following the last date of the test. (R 336.2001(5))

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVEX001	30 ¹	49.2 ¹	R 336.1901
2. SVEX002	30 ¹	49.2 ¹	R 336.1901

IX. OTHER REQUIREMENT(S)

1. The permittee shall maintain the engines in accordance with an AQD approved Preventative Maintenance Plan. (R 336.1213(3), R 336.1911)

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

ROP No: MI-ROP-B7196-2017
 Expiration Date: April 3, 2022
 PTI No: MI-PTI-B7196-2017

**FG MACT DDDDD
 EMISSION UNIT CONDITIONS**

DESCRIPTION

Requirements for existing Gas 1, (Natural Gas only) for existing Boilers and Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These existing boilers or process heaters must comply with this subpart no later than January 31, 2016, except as provided in 40 CFR 63.6(i).

Emission Units: EUEXBOILER, EUEXHTR-A, EUEXHTR-B

The collection at a major source of all existing industrial, commercial, and institutional boilers and process heaters within the units designed to burn gas 1 fuel subcategory as defined in 40 CFR 63.7575.

Less than 5 MMBtu/hr	(1) Cleaver Brooke natural gas boiler, 2.51 MMBtu/hr
Equal to or greater than 5 MMBtu/hr and less than 10 MMBtu/hr	NA
Equal to or greater than 10 MMBtu/hr	(2) Sivalls natural gas fired withdrawal heaters 10MMbtu each.

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

**FG MACT DDDDD < 10MMBtu/hr
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Requirements for existing Gas 1, (Natural Gas only) for existing Boilers and Process Heaters at major sources of Hazardous Air Pollutants per 40 CFR Part 63, Subpart DDDDD. These existing boilers or process heaters must comply with this subpart no later than January 31, 2016, except as provided in 40 CFR 63.6(i).

Emission Units:

Less than 5 MMBtu/hr	EUEXBOILER (2.51 MMBtu/hr)
----------------------	----------------------------

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee must, for boilers or process heaters with a heat input capacity of less than or equal to 5 MMBTU/hr, conduct a 5-year tune-up according to 40 CFR 63.7540(a)(12). Each 5-year tune-up must be conducted no more than 61 months after the previous tune-up. The burner inspection may be delayed until the next scheduled or unscheduled unit shutdown, but each burner must be inspected at least once every 72 months. The permittee shall conduct the 5-year tune-up of each boiler or process heater as specified below. (40 CFR 63.7500(d) or (e), 40 CFR 63.7515(d), 40 CFR 63.7540(a)(12), 40 CFR Part 63, Subpart DDDDD, Table 3.1)
 - a. As applicable, inspect the burner, and clean or replace any components of the burner as necessary. The permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown. Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment. (40 CFR 63.7540(a)(10)(i))
 - b. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. (40 CFR 63.7540(a)(10)(ii))
 - c. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. (40 CFR 63.7540(a)(10)(iii))
 - d. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_x requirement to which the unit is subject. (40 CFR 63.7540(a)(10)(iv))
 - e. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. (40 CFR 63.7540(a)(10)(v))
6. If the unit is not operated on the required date for the tune-up, the tune-up must be conducted within 30 calendar days of startup. (40 CFR 63.7540(a)(13))
7. At all times, the permittee must operate and maintain each existing gas 1 boiler or process heater, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. (40 CFR 63.7500(a)(3))

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

1. The permittee must keep a copy of each notification and report that the permittee submitted to comply with 40 CFR Part 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or annual compliance report that the permittee submitted. (40 CFR 63.7555(a)(1))
2. If the permittee uses an alternative fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart under 40 CFR Part 63, Other Gas 1 fuel, or gaseous fuel subject to another subpart of 40 CFR Part 60 or Part 61, or Part 65, the permittee must keep records of the total hours per calendar year that alternative fuel is burned and the total hours per calendar year that the unit operated during periods of gas curtailment or gas supply emergencies. (40 CFR 63.7555(h))
3. The permittee shall maintain on-site and submit, if requested by the AQD, an annual tune-up report containing the information listed below.
 - a. The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater. (40 CFR 63.7540(a)(10)(vi)(A))
 - b. A description of any corrective actions taken as a part of the tune-up. (40 CFR 63.7540(a)(10)(vi)(B))
 - c. The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit. (40 CFR 63.7540(a)(10)(vi)(C))
4. The permittee's records must be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1). (40 CFR 63.7560(a))
5. As specified in 40 CFR 63.10(b)(1), the permittee must keep each record for 5-years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. (40 CFR 63.7560(b))
6. The permittee must keep each record on site, or they must be accessible from on-site (for example, through a computer network), for at least 2-years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. The permittee can keep the records off site for the remaining 3-years. (40 CFR 63.7560(c))

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(iii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))
4. If the permittee intends to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of 40 CFR Part 63, Part 60, Part 61, or Part 65, or Other Gas 1 fuel to fire the affected unit during a period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575, the permittee must submit a notification of alternative fuel use within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575. The notification must include the information as listed below.
 - a. Company name and address. (40 CFR 63.7545(f)(1))
 - b. Identification of the affected unit. (40 CFR 63.7545(f)(2))
 - c. Reason the permittee is unable to use natural gas or equivalent fuel, including the date when the natural gas curtailment was declared, or the natural gas supply interruption began. (40 CFR 63.7545(f)(3))
 - d. Type of alternative fuel that the permittee intends to use. (40 CFR 63.7545(f)(4))
 - e. Dates when the alternative fuel use is expected to begin and end. (40 CFR 63.7545(f)(5))

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

5. The permittee must submit boiler and process heater tune-up compliance reports to the appropriate AQD District Office. The reports must be postmarked or submitted by March 15th and must cover the period of January 1 through December 31 of the reporting year. For new units, the first report should cover the period of startup to December 31 of the reporting year. Compliance reports must also be submitted to EPA using the Compliance and Emissions Data Reporting Interface (CEDRI) which is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). (40 CFR 63.7550(b))
6. The permittee must submit a compliance report containing the following information.
 - a. Company and Facility name and address. (40 CFR 63.7550(c)(5)(i))
 - b. Process unit information, emissions limitations, and operating parameter limitations. (40 CFR 63.7550(c)(5)(ii))
 - c. Date of report and beginning and ending dates of the reporting period. (40 CFR 63.7550(c)(5)(iii))
 - d. Include the date of the most recent tune-up for each unit. Include the date of the most recent burner inspection if it was not done annually and was delayed until the next scheduled or unscheduled unit shutdown. (40 CFR 63.7550(c)(5)(xiv))
 - e. Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. (40 CFR 63.7550(c)(5)(xvii))
7. The permittee must submit all reports required by Table 9 of this subpart electronically using CEDRI that is accessed through the EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, submit the report to the EPA Region V at the appropriate address listed in 40 CFR 63.13 and to the appropriate AQD District Office. (40 CFR 63.7550(h)(3))

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters as specified in 40 CFR Part 63, Subparts A and DDDDD. (40 CFR Part 63, Subparts A and DDDDD)

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

FG MACT DDDDD > 10MMBtu/hr
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Requirements for 2 existing process heaters that are designed to burn gas 1 subcategory fuel with a heat input capacity of 10 MMBTU/hr or greater at major sources of HAP emissions per 40 CFR Part 63, Subpart DDDDD (Boiler MACT). Units designed to burn gas 1 subcategory fuels include boilers or process heaters that burn only natural gas, refinery gas, and/or Other Gas 1 fuels. Units that burn liquid fuel for testing or maintenance purposes for less than a total of 48 hours per year, or that burn liquid fuel during periods of curtailment or supply interruptions are included in this definition.

Emission Units:

<u>Equal to or greater than 10 MMBtu/hr</u>	<u>EUEXHTR-A (10 MMBtu/hr), EUEXHTR-B (10 MMBtu/hr)</u>
---	---

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

2. The permittee shall conduct an annual tune up of each boiler or process heater as specified below. The annual tune-up shall be no more than 13 months after the previous tune-up. (40 CFR 63.7500(a)(1), 40 CFR 63.7515(d), Table 3 of 40 CFR Part 63, Subpart DDDDD)
 - f. As applicable, inspect the burner, and clean or replace any components of the burner as necessary. The permittee may perform the burner inspection any time prior to the tune-up or delay the burner inspection until the next scheduled unit shutdown. Units that produce electricity for sale may delay the burner inspection until the first outage, not to exceed 36 months from the previous inspection. At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment. (40 CFR 63.7540(a)(10)(i))
 - g. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. (40 CFR 63.7540(a)(10)(ii))
 - h. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. (40 CFR 63.7540(a)(10)(iii))
 - i. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_x requirement to which the unit is subject. (40 CFR 63.7540(a)(10)(iv))
 - j. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as

ROP No: MI-ROP-B7196-2017

Expiration Date: April 3, 2022

PTI No: MI-PTI-B7196-2017

long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. (40 CFR 63.7540(a)(10)(v))

8. If the unit is not operated on the required date for the tune-up, the tune-up must be conducted within 30 calendar days of startup. (40 CFR 63.7540(a)(13))

9. At all times, the permittee must operate and maintain each existing gas 1 boiler or process heater, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. (40 CFR 63.7500(a)(3))

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

7. The permittee must keep a copy of each notification and report that the permittee submitted to comply with 40 CFR Part 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or annual compliance report that the permittee submitted. (40 CFR 63.7555(a)(1))

8. If the permittee uses an alternative fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart under 40 CFR Part 63, Other Gas 1 fuel, or gaseous fuel subject to another subpart of 40 CFR Part 60 or Part 61, or Part 65, the permittee must keep records of the total hours per calendar year that alternative fuel is burned and the total hours per calendar year that the unit operated during periods of gas curtailment or gas supply emergencies. (40 CFR 63.7555(h))

9. The permittee shall maintain on-site and submit, if requested by the AQD, an annual tune-up report containing the information listed below.

d. The concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater. (40 CFR 63.7540(a)(10)(vi)(A))

e. A description of any corrective actions taken as a part of the tune-up. (40 CFR 63.7540(a)(10)(vi)(B))

f. The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit. (40 CFR 63.7540(a)(10)(vi)(C))

10. The permittee's records must be in a form suitable and readily available for expeditious review, according to 40 CFR 63.10(b)(1). (40 CFR 63.7560(a))

11. As specified in 40 CFR 63.10(b)(1), the permittee must keep each record for 5-years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. (40 CFR 63.7560(b))

12. The permittee must keep each record on site, or they must be accessible from on-site (for example, through a computer network), for at least 2-years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. The permittee can keep the records off site for the remaining 3-years. (40 CFR 63.7560(c))

Formatted: Font: Not Bold

VII. REPORTING

8. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**
9. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
10. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))
11. If the permittee intends to use a fuel other than natural gas, refinery gas, gaseous fuel subject to another subpart of 40 CFR Part 63, Part 60, Part 61, or Part 65, or Other Gas 1 fuel to fire the affected unit during a period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575, the permittee must submit a notification of alternative fuel use within 48 hours of the declaration of each period of natural gas curtailment or supply interruption, as defined in 40 CFR 63.7575. The notification must include the information as listed below.
- f. Company name and address. (40 CFR 63.7545(f)(1))
 - g. Identification of the affected unit. (40 CFR 63.7545(f)(2))
 - h. Reason the permittee is unable to use natural gas or equivalent fuel, including the date when the natural gas curtailment was declared, or the natural gas supply interruption began. (40 CFR 63.7545(f)(3))
 - i. Type of alternative fuel that the permittee intends to use. (40 CFR 63.7545(f)(4))
 - j. Dates when the alternative fuel use is expected to begin and end. (40 CFR 63.7545(f)(5))
12. The permittee must submit boiler and process heater tune-up compliance reports to the appropriate AQD District Office. The reports must be postmarked or submitted by March 15th and must cover the period of January 1 through December 31 of the reporting year. For new units, the first report should cover the period of startup to December 31 of the reporting year. Compliance reports must also be submitted to EPA using the Compliance and Emissions Data Reporting Interface (CEDRI) which is accessed through EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). (40 CFR 63.7550(b))
13. The permittee must submit a compliance report containing the following information.
- f. Company and Facility name and address. (40 CFR 63.7550(c)(5)(i))
 - g. Process unit information, emissions limitations, and operating parameter limitations. (40 CFR 63.7550(c)(5)(ii))
 - h. Date of report and beginning and ending dates of the reporting period. (40 CFR 63.7550(c)(5)(iii))
 - i. Include the date of the most recent tune-up for each unit. Include the date of the most recent burner inspection if it was not done annually and was delayed until the next scheduled or unscheduled unit shutdown. (40 CFR 63.7550(c)(5)(xiv))
 - j. Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report. (40 CFR 63.7550(c)(5)(xvii))
14. The permittee must submit all reports required by Table 9 of this subpart electronically using CEDRI that is accessed through the EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). However, if the reporting form specific to this subpart is not available in CEDRI at the time that the report is due, submit the report to the EPA Region V at the appropriate address listed in 40 CFR 63.13 and to the appropriate AQD District Office. (40 CFR 63.7550(h)(3))

VIII. STACK/VENT RESTRICTION(S)

NA

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

IX. OTHER REQUIREMENT(S)

2. The permittee shall comply with all applicable provisions of the National Emissions Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters as specified in 40 CFR Part 63, Subparts A and DDDDD. (40 CFR Part 63, Subparts A and DDDDD)

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

II. MATERIAL LIMIT(S)

1. ~~The permittee shall only burn natural gas. (40 CFR 63.7499(l))~~

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. ~~The permittee must meet the tune up and Energy Assessment work practice standards for each applicable boiler or process heater at the source. (40 CFR 63.7500(a)(1), 40 CFR Part 63, Subpart DDDDD, Table 3, 1-4)~~
2. ~~The permittee must operate and maintain affected sources, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. (40 CFR 63.7500(a)(3))~~
3. ~~The permittee may obtain approval from the Administrator to use an alternative to the work practice standards noted in SC III.1 and SC III.2. (40 CFR 63.7500(b))~~

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

4. The permittee must:
- a. Complete a tune-up every 5 years (61 months) for boilers/process heaters less than or equal to 5 MMBTU/hr (Cleaver Brooks boiler). ~~(40 CFR 63.7500(e), 40 CFR 63.7515(d))~~
 - b. Complete a tune-up annually (13 months) for boilers/process heaters greater than 10 MMBTU/hr (Sivalle withdrawal heaters). ~~(40 CFR 63.7540(a)(10), 40 CFR 63.7515(d))~~
 - c. Conduct the tune-up within 30 calendar days of startup, if the unit is not operating on the required date for a tune-up. ~~(40 CFR 63.7540(a)(13))~~
 - d. Follow the procedures described in SC III 6.a.f for all initial and subsequent tune ups. ~~(40 CFR 63.7540(a)(10), 40 CFR Part 63, Subpart DDDDD, Table 3)~~
5. For affected sources (as defined in 40 CFR 63.7490) that have not operated since the previous compliance demonstration and more than one year has passed since the previous compliance demonstration, the permittee must complete a subsequent tune-up within 30 days of startup by following the procedures described in SC III 6.a.f. ~~(40 CFR 63.7515(g))~~
6. The permittee must demonstrate continuous compliance with the tune-up requirement by completing the following: ~~(40 CFR 63.7540(a))~~
- a. Inspect the burner, and clean or replace any components of the burner as necessary (the permittee may delay the burner inspection until the next scheduled unit shutdown). At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment. ~~(40 CFR 63.7540(a)(10)(i))~~
 - b. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available. ~~(40 CFR 63.7540(a)(10)(iii))~~
 - c. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly (the permittee may delay the inspection until the next scheduled unit shutdown). Units that produce electricity for sale may delay the inspection until the first outage, not to exceed 36 months from the previous inspection. ~~(40 CFR 63.7540(a)(10)(iii))~~
 - d. Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NO_x requirement to which the unit is subject. ~~(40 CFR 63.7540(a)(10)(iv))~~
 - e. Measure the concentrations in the effluent stream of CO in ppm by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. ~~(40 CFR 63.7540(a)(10)(v))~~
 - f. Maintain on site and submit, if requested by the Administrator, the most recent periodic report containing the information as listed below. ~~(40 CFR 63.7540(a)(10)(vi))~~
 - i. The concentrations of CO in the effluent stream in ppm by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater. ~~(40 CFR 63.7540(a)(10)(vi)(A))~~
 - ii. A description of any corrective actions taken as a part of the tune-up. ~~(40 CFR 63.7540(a)(10)(vi)(B))~~
 - iii. The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel used by each unit. ~~(40 CFR 63.7540(a)(10)(vi)(C))~~
7. For the Cleaver Brooks boiler that has a heat input capacity of less than or equal to 5 MMBTU/hr, the permittee may delay the burner inspection specified in SC III 6.a. ~~(40 CFR 63.7540(a)(10)(i))~~ until the next scheduled or unscheduled unit shutdown, but the permittee must inspect each burner at least once every 72 months. ~~(40 CFR 63.7540(a)(12))~~

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. ~~(R 336.1213(3)(b)(ii))~~

- ~~1. The permittee must keep a copy of each notification and report submitted to comply with 40 CFR Part 63, Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status or semiannual compliance report that the permittee submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv). ~~(40 CFR 63.7555(a)(1))~~~~
- ~~2. The permittee must keep each record on site, or they must be accessible from on-site (for example, through a computer network), for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record. The permittee can keep the records off site for the remaining 3 years. ~~(40 CFR 63.7560(a-c))~~~~

VII. REPORTING

- ~~1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. ~~(R 336.1213(3)(c)(ii))~~~~
- ~~2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. ~~(R 336.1213(3)(c)(i))~~~~
- ~~3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. ~~(R 336.1213(4)(e))~~~~
- ~~4. The permittee must submit boiler tune up compliance reports. The first compliance report for EUEXHTR-A and EUEXHTR-B shall cover the period January 31, 2016 thru December 31, 2016 and must be postmarked or submitted no later than March 15th of 2017. The first compliance report for EUEXBOILER shall cover the period January 31, 2016 thru December 31, 2020 and must be postmarked or submitted no later than March 15th of 2021. Subsequent compliance reports must be postmarked or submitted by March 15th of the year following the tune up and must cover the applicable 1 or 5 year period starting from January 1 of the year following the previous tune up to December 31 (of the latest tune up year). Compliance reports must be submitted using the Compliance and Emissions Data Reporting Interface (CEDRI) which is accessed through the EPA's Central Data Exchange (CDX) (www.epa.gov/cdx). If the reporting form is not available in CEDRI at the time the compliance report is due, a hardcopy of the compliance report shall be submitted to the state and EPA Region 5. At the discretion of the Administrator, the permittee must submit these reports, in the format specified by the Administrator. ~~(40 CFR 63.7550(b), 40 CFR 63.10(a)(5), 40 CFR 63.7550(h)(3))~~~~
- ~~5. The permittee must include the following information in the compliance report. ~~(40 CFR 63.7550(e), 40 CFR 63.7550(c)(1))~~~~
 - ~~a. Company and Facility name and address. ~~(40 CFR 63.7550(c)(5)(i))~~~~
 - ~~b. Process unit information, emissions limitations, and operating parameter limitations. ~~(40 CFR 63.7550(c)(5)(ii))~~~~
 - ~~c. Date of report and beginning and ending dates of the reporting period. ~~(40 CFR 63.7550(c)(5)(iii))~~~~
 - ~~d. The total operating time during the reporting period. ~~(40 CFR 63.7550(c)(5)(iv))~~~~
 - ~~e. Include the date of the most recent tune up for each unit. Include the date of the most recent burner inspection if it was not done annually, biennially, or on a 5 year period and was delayed until the next scheduled or unscheduled unit shutdown. ~~(40 CFR 63.7550(c)(5)(xiv))~~~~

See Appendix 8

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. ~~The permittee must comply with all applicable requirements of 40 CFR Part 63, Subpart DDDDD, for existing boilers and process heaters, unless an extension has been granted per 40 CFR 63.6(i). (40 CFR 63.7495(b))~~
2. ~~The permittee must be in compliance with the applicable work practice standards. (40 CFR 63.7505(a))~~

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

FGRULE285(2)(mm)
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rule 278, Rule 278a and Rule 285(2)(mm).

Emission Unit: EUEXPIPEMAINT, EUEXFIELDMAINT

POLLUTION CONTROL EQUIPMENT

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. For venting of natural gas for routine maintenance or relocation of transmission and distribution systems in amounts greater than 1,000,000 standard cubic feet, the permittee shall, at a minimum, implement measures to assure safety of employees and the public and minimize impacts to the environment. (R 336.1285(2)(mm)(ii)(B))
2. For venting of field gas for routine maintenance or relocation of gathering pipelines in amounts greater than 1,000,000 standard cubic feet, the permittee shall, at a minimum, implement measures to assure safety of employees and the public and minimize impacts to the environment. (R 336.1285(2)(mm)(iii)(B))

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

NA

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))
2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))
3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

4. For venting of natural gas for routine maintenance or relocation of transmission and distribution systems in amounts greater than 1,000,000 standard cubic feet, the permittee shall notify the AQD District Supervisor prior to a scheduled pipeline venting. (R 336.1285(2)(mm)(ii)(A))
5. For venting of natural gas for routine maintenance or relocation of transmission and distribution systems in amounts greater than 1,000,000 standard cubic feet, the permittee shall provide necessary notification in accordance with the Michigan gas safety standards, the federal pipeline and hazardous materials safety administration standards, and the federal energy regulatory commission standards, as applicable. The permittee is not required to copy the AQD on the notifications. (R 336.1285(2)(mm)(ii)(B))
6. For venting of field gas for routine maintenance or relocation of gathering pipelines in amounts greater than 1,000,000 standard cubic feet, the permittee shall notify the AQD District Supervisor prior to a scheduled pipeline venting. (R 336.1285(2)(mm)(iii)(A))
7. For venting of field gas for routine maintenance or relocation of gathering pipelines in amounts greater than 1,000,000 standard cubic feet, the permittee shall provide necessary notification in accordance with the Michigan Department of Environmental Quality, Office of Geological Survey, and the Michigan Public Service Commission Standards, as applicable. The permittee is not required to copy the AQD on the notifications. (R 336.1285(2)(mm)(iii)(B))
8. For emergency venting of natural gas or field gases in amounts greater than 1,000,000 standard cubic feet per event, the permittee shall notify the pollution emergency alert system (PEAS) within 24 hours of an emergency pipeline venting. For purposes of this requirement, an emergency is considered an unforeseen event that disrupts normal operating conditions and poses a threat to human life, health, property, or the environment if not controlled immediately. (R 336.1285(2)(mm)(iv))

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

¹This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

²This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

ROP No: MI-ROP-B7196-2017
Expiration Date: April 3, 2022
PTI No: MI-PTI-B7196-2017

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO ₂ e	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfuction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM _{2.5}	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
BTEX	Benzene Toluene Ethylbenzene Xylene	µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. (R 336.1213(4)(a), R 336.1119(a)(ii))

ROP No: MI-ROP-B7196-2017
 Expiration Date: April 3, 2022
 PTI No: MI-PTI-B7196-2017

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-B7196-2012. Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.

Source-Wide PTI No MI-PTI-B7196-2012a is being reissued as Source-Wide PTI No. MI-PTI-B7196-2017.

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
6-12	201200091/ June 28, 2013	Incorporate Permit to Install (PTI) No. 6-12. PTI No. 6-12 changed the sampling frequency for EXGLYDEH from one year to five years. Also, for EUGLYDEH and FGEXCOMP, the fuel requirements were changed from sweet natural gas to natural gas containing less than or equal to 20 grains of total sulfur per 100 cubic feet of natural gas.	EUGLYDEH, FGEXCOMP
NA	201200100/ June 28, 2013	The facility has decided to permanently change to commercial purchase power. This change affects how the two generator engines (EUEXGEN-A and EUEXGEN-B) are utilized. Units will be used to power an emergency electricity generator.	EUEXGEN-B

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EUEXGLYDEH. Alternative calculations shall be approved by the District Supervisor.

Glycol Dehydration Unit

Non-methane VOC emissions from the glycol dehydrator shall be calculated by using an emission factor derived by the GRI-GLYCalc™ computer model Version 3.0 or later. Inputs to the model shall be representative of actual operating conditions of the glycol dehydrator. Non-methane VOC composition of the natural gas which is input into the model shall be as determined by the most recent analysis. The permittee shall recalculate the emission factor each time the natural gas is analyzed to determine its non-methane VOC content.

EUEXGLYDEH SC VI.6.

$$VOC = N_{Gas} * EF$$

Where:

- VOC** is the pounds of volatile organic compounds emitted in a 24 hour period from midnight to midnight.
- N_{Gas}*** is the amount, in million standard cubic feet, of natural gas processed through the system in a 24 hour period from midnight to midnight.
- EF** is an emission factor expressed as pounds of VOC emitted per million cubic feet of gas processed.

EF is based on calculations from the GRI GlyCalc (tm) computer model. EF shall be periodically recalculated, using GRI GlyCalc, (tm), as more current data becomes available. The calculated EF is subject to approval by the AQD District Supervisor.

Glycol Dehydrator System, EUEXGLYDEH SC I.3

Determine amount of benzene emitted (refer to 40 CFR 63.1282(a)(2), Subpart HHH for current language). The procedures of this paragraph shall be used by an owner or operator to determine glycol dehydration unit benzene emissions to meet the criteria for the exemption from control requirements under 40 CFR 63.1274(d) (also listed in EUGLYCDEHY SC I.3.) The owner or operator shall determine actual average benzene emissions using the model GRI-GLYCalc, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc Technical Reference Manual. Inputs to the model shall be representative of actual operating conditions of the glycol dehydration unit and may be determined using the procedures documented in the Gas Research Institute (GRI) report entitled "Atmospheric Rich/Lean Method for Determining Glycol Dehydrator Emissions" (GRI-95/0368.1). Alternatively the owner or operator shall determine an average mass rate of benzene emissions in kilograms per hour through direct measurement by performing three runs of Method 18 in 40 CFR Part 60, Appendix A (or an equivalent method), and averaging the results of the three runs. Annual emissions in kilograms per year shall be determined by multiplying the mass rate by the number of hours the unit is operated per year. This result shall be converted to megagrams per year. Emissions shall be determined either uncontrolled or with federally enforceable controls in place.

Glycol Dehydration System, EUEXGLYDEH SC I.4

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in EUEXGLYDEH (40 CFR 63.1275, equation 1).

$$EL_{BTEX} = 3.10 \times 10^{-4} * Throughput * C_{i,BTEX} * 365 \frac{days}{yr} * \frac{1 Mg}{1 \times 10^6 grams} \quad \text{Equation 1}$$

Where:

- EL_{BTEX} = Unit-specific BTEX emission limit, megagrams per year;
- 3.10 × 10⁻⁴ = BTEX emission limit, grams BTEX/standard cubic meter-ppmv;
- Throughput = Annual average daily natural gas throughput, standard cubic meters per day;
- C_{i,BTEX} = Annual average BTEX concentration of the natural gas at the inlet to the glycol dehydration unit, ppmv

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

TITLE V RENEWABLE OPERATING PERMIT APPLICATION

Appendix D Plans Referenced within the ROP

Appendix D PLANS REFERENCED WITHIN THE ROP

Preventive Maintenance / Malfunction Abatement Plan
40 CFR Part 63 Subpart HHH Site Monitoring Plan



ANR Storage Company – Excelsior Preventive Maintenance / Malfunction Abatement Plan

1.0 Introduction

The ANR Excelsior Station is located at 4963 State Road Northeast, Kalkaska, MI 49649. The station maintains pressure (recompression) in pipelines supporting natural gas to and from storage facilities located in Michigan, to industrial customers or to local distribution companies. This plan provides preventative maintenance and malfunction abatement measures for two (2) compressor engines at the ANR Excelsior Station.

1.1 Contact Person

Any questions in regard to this PM/MAP should be directed to Chris Waltman:

Name: Chris Waltman
 Title: Analyst – US Environmental Permitting
 Phone: (715) 701-3659
 E-mail: Chris_Waltman@TCEnergy.com
 Address: TC Energy
 N4956 Oakcrest Dr
 Bonduel, WI 54107

Supervisory Personnel

Station Technicians are responsible for inspection and maintenance.

2.0 Compressor Engines

Excelsior has two Ingersoll Rand Model 410-KVR-TE four-cycle, lean burn, spark ignition, natural gas-fired reciprocating internal combustion engines rated at 3,750 horsepower each.

Engine ID	Manufacturer	Model	Engine Type	Add-On Control	Air to Fuel Ratio Controller
EUEXCOMP-A	Ingersoll-Rand	410-KVR-TE	4 cycle Lean Burn	None	Bristol 3335 - Engines HMI Panel
EUEXCOMP-B	Ingersoll-Rand	410-KVR-TE	4 cycle Lean Burn	None	Bristol 3335 - Engines HMI Panel

2.1 Engine Maintenance Log

PREVENTATIVE MAINTENANCE TASK	FREQUENCY	PM Task Code
Engine Balancing	Not to exceed 500 Engine Hours	A
Replace Spark Plugs	Not to exceed 2500 Engine Hours	B
Replace Oil Filters	Annually or as required	C
Replace Air Intake Filters	As required	D
Control Panel Calibrations	Annually	E
Engine Fuel Meter Calibration	Annually	F
Mechanical Inspection	Not to exceed 16,500 Engine Hours	G
Adjust AFRC Timing	As required	n/a
Calibrate Fuel Pressure Transmitters	Annually	n/a
Calibrate Air Manifold Pressure Transmitter	Annually	n/a

5.0 Major Parts Inventory and Replacement

Major Parts are ordered as needed through the vendors and not kept on site.

6.0 Responsible Person for Inspection, Maintenance and Repair of Add-On Equipment

N/A – no add-on equipment

7.0 Retention of Records

All Records shall be retained for 5 years.

8.0 Updates of PM/MAP

The PM/MAP will be reviewed annually, and any updates shall be submitted to the AQD District Supervisor for approval.



**ANR Storage Company
Excelsior Compressor Station
Kalkaska County, Michigan**

**40 CFR Part 63 Subpart HHH
Site Monitoring Plan**

Effective Date: December 21, 2015

Version: 01

Status: Issued

Driver: Regulatory

ANR Storage Company
700 Louisiana Street, Suite 700
Houston, TX 77002



TABLE OF CONTENTS

1.0	PURPOSE	1
2.0	SCOPE	1
3.0	REFERENCES	1
4.0	PROCEDURE	2
4.1	Affected Source(s) and Associated CPMS Equipment	2
4.1.1	<i>Affected Source(s) Description</i>	2
4.1.2	<i>System Design Considerations</i>	2
4.1.3	<i>Temperature Measurement Device Specifications</i>	3
4.1.4	<i>Wiring</i>	3
4.1.5	<i>Data Acquisition System</i>	3
4.1.6	<i>Reporting System</i>	4
4.2	Temperature Monitoring System Performance Evaluation & QA/QC	4
4.2.1	<i>Periodicity</i>	4
4.2.2	<i>Methodology</i>	4
4.2.3	<i>Notification</i>	4
4.2.4	<i>Troubleshooting a Malfunctioning CPMS</i>	4
4.3	CPMS Operation and Maintenance	4
4.3.1	<i>CPMS Operation</i>	4
4.3.2	<i>CPMS Maintenance</i>	5
4.4	Data Management	6
4.4.1	<i>Valid Data</i>	6
4.4.2	<i>Data Review</i>	6
5.0	DOCUMENTATION/REPORTING REQUIREMENTS	6
5.1	Recordkeeping	7
5.2	Compliance Reports	7
6.0	DEFINITIONS	8
7.0	LATEST REVISIONS	8

40 CFR Part 63 Subpart HHH Site Monitoring Plan ANR Compressor Stations: Excelsior

1.0 Purpose

The purpose of this Procedure is to describe the continuous parameter monitoring system (CPMS) to be used at Excelsior Compressor Station to meet the requirements for National Emission Standards for Hazardous Air Pollutants (NESHAPS) from Natural Gas Transmission and Storage Facilities Maximum Achievable Control Technology (MACT), Subpart HHH of 40 CFR part 63. These regulations require the control and continuous parameter monitoring of air pollution control equipment associated with glycol dehydration systems, such as condensers and thermal oxidizers. This Facility Monitoring Procedure must be available for review if requested by the EPA or delegated state or local air quality agencies.

Contact Person

Any questions in regard to this Site Monitoring Plan should be directed to Melinda Holdsworth, Senior Air Specialist with TransCanada.

Name: Melinda Holdsworth, Senior Air Specialist
Phone: (832) 320-5665
E-mail: Melinda_Holdsworth@TransCanada.com
Address: TransCanada
700 Louisiana Street, Suite 700
Houston, TX 77002

2.0 Scope

This Procedure applies to the TransCanada ANR Excelsior Compressor Station located at 4936 State Road NE, Kalkaska, MI, 49646 which is wholly owned and operated by TransCanada.

3.0 References

CS&E and all other TOP documents can be accessed from the TOPs database using this link [TOPs](#).

Note: TOP documents referenced in this document will have their titles underlined and can be opened up by using the hyperlink below or going to the TOPs database using the above TOPs link.

- [Thermal Oxidizer Inspection and Maintenance](#) (EDMS No. 009423217)
- [Glycol Dehydration Exchanger Condenser Inspection and Maintenance](#) (EDMS No. 005249224)
- Temperature Measurement Device Specifications (EDMS No. 003834760)

4.0 Procedure

<u>4.1</u>	Affected Source(s) and Associated CPMS Equipment
<u>4.2</u>	Temperature Monitoring System Performance Evaluation and Periodic QA/QC Procedures
<u>4.3</u>	CPMS Operation and Maintenance
<u>4.4</u>	Data Management
<u>5.0</u>	Documentation/Reporting Requirements
<u>6.0</u>	Definitions

Notes:

- Each Activity should be performed after reviewing the appropriate CS&E TOPs (Procedures).

Special Resources: N/A

Qualification Requirement(s): N/A.

4.1 Affected Source(s) and Associated CPMS Equipment

Note: This section provides information on the affected air pollution control equipment across TransCanada’s Glycol Dehydration Systems and their associated CPMS. Per §63.1283(d)(1)(ii-iv), the Site Monitoring Plan must include design specification and equipment performance criteria for the pollution control system equipment; including but not limited to sample interface, detector signal analyzer, data acquisition and calculations.

4.1.1 Affected Source(s) Description

TransCanada Pipelines uses a Condenser and Thermal Oxidizer at Excelsior CS for air emission control. As such, it is subject to limitations and control requirements per MACT HHH. See table 1 below for details.

Table 1 – Glycol Dehydration System to MACT HHH & Provisions of this Plan

Station	State	Unit ID	Control Device	CPMS Metric	CPMS Value	Device Manufacturer	Device Model
Excelsior	MI	EUEXGLYDEH	Condenser	Temp	120 °F (95% BTEX Control)	Rosemount Transmitter	3144(DD)
Excelsior	MI	EUEXGLYDEH	Thermal Oxidizer	Temp	Min 1400 °F	Omron	E5CK

4.1.2 System Design Considerations

The purpose of the CPMS is to ensure that across TransCanada’s Pipelines, temperature data of air pollution control equipment in glycol dehydration systems are:

- Continuously monitored (or at a minimum, take temperature readings every 15 minutes and average hourly, not including periods of startup, shutdown or malfunction).

- Average the temperature data on a daily basis
- Average the temperature data on 12 month rolling basis.
- Ensure the air pollution control device(s) operating temperature is maintained within the established temperature range specified by manufacturer (for thermal oxidizers) and below the maximum operating temperature specified by manufacturer (for condensers).

4.1.3 Temperature Measurement Device Specifications

The following specifications apply to the temperature measurement device:

Thermal Oxidizer Control Device:

Parameter	Specification
Location	The temperature sensor shall be installed at a location representative of the combustion zone temperature.
Device Type	A temperature monitoring device equipped with a continuous recorder.
Tolerance	The monitoring device shall have a minimum accuracy of ± 2 percent of the temperature being monitored in $^{\circ}\text{C}$, or ± 2.5 $^{\circ}\text{C}$, whichever value is greater. [§63.1283(d)(3)(A)]

Condenser Control Device:

Parameter	Specification
Location	For a condenser, a temperature monitoring device equipped with a continuous recorder. The temperature monitoring device shall have a minimum accuracy of ± 2 percent of the temperature being monitored in $^{\circ}\text{C}$, or ± 2.5 $^{\circ}\text{C}$, whichever value is greater. The temperature sensor shall be installed at a location in the exhaust vent stream from the condenser that provides a representative measurement.
Device Type	A temperature monitoring device equipped with a continuous recorder.
Tolerance	The monitoring device shall have a minimum accuracy of ± 2 percent of the temperature being monitored in $^{\circ}\text{C}$, or ± 2.5 $^{\circ}\text{C}$, whichever value is greater. [§63.1283(d)(3)(E)]

4.1.4 Wiring

Conduit cable will be installed per the appropriate edition of the National Electric Code and TransCanada standards reflective of the time of installation.

4.1.5 Data Acquisition System

The Data Acquisition System (DAS, aka PLC) shall be in continuous operation and will provide the operator with the following local readouts: [§63.8(c) (2) (ii)]

- Instantaneous readings of control device exhaust gas temperature.
- 15-minute snapshot temperature readings.
- 1-hour average temperatures.
- Readout or other indication of operation must be readily accessible on site.

Data will be retained for at least five (5) years in the DAS for retrieval in the event of a failure reporting system. Additionally, the operator will have the capability of generating a screen print from the DAS in the event of a failure of the reporting system.

4.1.6 Reporting System

A PC with reporting software installed will be connected to the DAS for data retention and report generation. The software is used to collect the data from the DAS, collate into a report formatted for printing and for long term retention of the data.

4.2 Temperature Monitoring System Performance Evaluation & QA/QC

4.2.1 Periodicity

An initial verification of the CPMS was performed upon original equipment installation. [§63.8(c)(3)] Annual QA/QC evaluations of the CPMS shall be conducted as described below. [§63.1283(d)(1)]

4.2.2 Methodology

One of the following methods shall be used for performance evaluations:

RTD Replacement

The RTD shall be replaced with a factory calibrated unit meeting the design requirements listed above. The calibration certification sheets or other appropriate documentation shall be retained demonstrating factory calibration.

Concurrently, a calibrated RTD simulator shall be used to test the remaining elements of the CPMS system in accordance with manufacturer's recommendations and company policies and procedures. A written work plan or SAP work order documenting steps to be followed shall be used. [§63.8(d)(2) – (3)]

Calibration

The calibration of the RTD shall be checked in place in accordance with manufacturer's recommendations and company policies and procedures. The methods used shall address both the RTD and the DAS. A written work plan or SAP work order documenting steps to be followed shall be used. [§63.8(d)(2) – (3)]

4.2.3 Notification

Notification to MDEQ prior to conducting the performance evaluation or with results after testing is required.

4.2.4 Troubleshooting a Malfunctioning CPMS

Malfunctioning CPMS shall be evaluated and repaired in accordance with manufacturer's recommendations, company policy and procedures and good operating practices.

4.3 CPMS Operation and Maintenance

4.3.1 CPMS Operation

The CPMS will be in operation whenever the monitored control device (condenser or thermal oxidizer) is in service and exhaust gases are being vented to the atmosphere with the exception of monitoring malfunctions, associated repairs, and required quality assurance or control activities. Data will be collected as follows:

- Sample the control device exhaust gas temperature at least once every 15 minutes.
- Average the 15-minute samples on an hourly basis. Average the hourly average on a daily basis and the daily basis on a monthly and 12 month rolling basis.
- An hour is defined as a 60 minute period beginning at the o-clock (i.e. 1:00, 2:00 etc.).
- If the system starts midway through an hour, record 15-minute data points but begin averaging only if there are at least two data points for the first clock based 60 minute period. Each of the two data points should represent a 15-minute period.
- If a unit stops midway through an hour, the 15-minute data points will be monitored and recorded; however, the average for that last clock based 60 minute period should only be computed if at least two data points are available. Each of the two data points should represent a 15-minute period.
- Each daily average calculation will include all hourly averages starting with the hour of 9:00 a.m. Central US Time Zone and concluding 24 hours later (i.e., 8:59 p.m.).
- The CPMS shall alarm, at a minimum, when the control device exhaust gas temperature hourly average approaches 10% of the permitted limit.
- The CPMS shall divert exhaust gas flow to the secondary control device (i.e., condenser vent) and record temperature infraction from the lower limit (i.e., 1400 °F for Thermal Oxidizer and 135°F for the condenser).
- Alarms shall be disabled as follows:
 - Thermal Oxidizer Low Temperature: Never.
 - Condenser Exhaust High Temperature: Never

4.3.2 CPMS Maintenance

Preventive Maintenance

CPMS Maintenance will be conducted in accordance with company policy and procedures [§63.8(d)(2)(iii)]. Alternately, the RTDs may be replaced annually with a concurrent performance evaluation as described above. Additionally, station walk downs take place at least weekly (when the station is manned) to check on obvious signs of physical failure of the equipment.

Corrective Maintenance

Corrective maintenance will be conducted according to manufacturer's recommendations, company policy and procedures and good operating practices in a manner consistent with safety and good air pollution control practices for minimizing emissions in the event of a CPMS malfunction, impending malfunction, or out-of-control CPMS. In lieu of conducting immediate corrective maintenance, Operations may shutdown the dehy system until such time as corrective maintenance can be performed as per above.

Corrective Maintenance actions taken will be documented in SAP. To the extent practical, a written plan will be used when conducting corrective maintenance. [63.8(d)(2)(vi)]

4.4 Data Management

4.4.1 Valid Data

Valid data is defined as data not “recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities.” [§63.6635] Specifically, valid data is comprised of:

- 15-minute readings not recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities.
- Hourly averages consisting of two (2) valid 15-minute readings.
- Daily averages consisting of a single (1) valid hourly average.
- Monthly averages consisting of at least one (1) valid daily averages.
- 12 Month rolling averages consisting of the current month and prior eleven (11) months.

4.4.2 Data Review

Operations shall review the CPMS data daily reports to: [§63.8(c)(6)]

- Confirm all required data was collected.
- Identify any data collected that was not valid data as defined above.
- Confirm that no exceedances of temperature limits occurred. Missing data may be recovered by:
 - Calling the Automation group to assist in recovering data from the DAS/PLC.
 - Generating a screen print from the HMI panel.

If missing data is unrecoverable (e.g., due to power failure), exceedances are identified, or non-valid data is identified, the Environment Department shall be notified immediately. Additionally, in the event of repeated instances of missing data, whether recoverable or unrecoverable, over a short duration of time, the Environment Department shall be notified such that an investigation as to the causes can be conducted.

5.0 DOCUMENTATION/REPORTING REQUIREMENTS

1. Closeout of the SAP work order shall be considered sufficient documentation provided field readings and/or other results as appropriate are included in the closeout comments or attached to the work order.
2. Logs documenting the malfunction of the CPMS, immediate actions and corrective actions shall be taken in accordance with Section 5.1.1 of this plan. Additionally the Environment Department shall be notified immediately of the malfunction. The Environment Department is responsible for reporting the malfunction in accordance with Section 5.1.2 of this plan.
3. The Environment Department shall review the data prior to filing Quarterly Deviation Reports, Semiannual Reports, or Annual Compliance Certifications as appropriate.
4. Revisions to this monitoring plan must be retained for 5 years from the date of the revision per §63.8(d) (2).

5.1 Recordkeeping

The following records collected by the CPMS are required to be retained for a period of five years. At minimum the most recent two year data shall be available on site. The other three years data may be stored off site but should be accessible within a reasonable time. [§63.10(b)(1) and §63.6660] These records can be retained either electronically, via hard copy or both and shall be easily accessible.

- 12-month rolling average. (COMET/File 1.5.5)
- Monthly average BTEX. (COMET/File 1.5.5)
- Each daily average. (COMET/File 1.5.5)
- Each hourly average used to calculate the daily average values. (COMET/File 1.5.5)
- Each 15-minute data point used to calculate hourly average values, as well as 15-minute data points during start-up and shutdowns. [§63.10(b)(2)(vii)] (COMET/File 1.5.5)
- The algorithm/calculation procedure used to reduce data. (this document)
- All readings taken during periods of CPMS breakdowns and out-of-control periods. (File 1.5.5) Additionally, the following records shall be created and retained by Operations regarding the CPMS:
 - The date and time identifying each period during which the CPMS was inoperative except for zero (low-level) and high-level checks. (File 1.5.5)
 - The date and time identifying each period during which the CMS was out of control. (File 1.5.5)
 - The date and time of commencement and completion of each time period of where the CPMS 4-hour rolling temperature was out of the specified limits in this plan other than during periods other than startups, shutdowns, and malfunctions of the affected source. (File 1.5.5)
 - The nature and cause of any malfunction (if known). (File 1.5.5)
 - The corrective action taken or preventive measures adopted. (File 1.5.5)
 - The nature of the repairs or adjustments to the CPMS that was inoperative or out of control. (File 1.5.5)
 - The total process operating time during the reporting period. (File 1.5.5)
 - Documentation of any QA/QC procedures performed for CPMS.

5.2 Compliance Reports

The Environment Department is responsible for compiling all compliance reports to be sent to regulatory agencies, including, but not limited to:

- Immediate notifications of non-compliance where required by state rules.
- Quarterly deviation reports where required by state rules.
- Semiannual Reports and Annual Compliance Reports.
- Notification of malfunctioning and out-of-control CPMS events.
- Notification of intent to conduct performance tests.
- Notification of Compliance Status at the completion of performance tests.

- Notification within 2 working days if an action taken during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) is not consistent with this Procedure and the source exceeds any applicable emission limitation per §63.6(e)(3)(iv).

6.0 Definitions

Malfunction:	Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. This definition is provided for information only. Operations should consult with the Environmental Coordinator to determine whether or not a malfunction has occurred due to any unit alarm or shutdown for purposes related to the MACT rules.
Out-of-Control:	A CPMS is out-of-control if the zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or The CPMS fails a performance test audit, relative accuracy audit, relative accuracy test audit, or linearity test audit.

7.0 Latest Revisions

Description:	Revision 01: Section 4.1.1 – Updated CPMS values
Rationale Statement:	Updated to account for the 95% BTEX control
Impact Assessment Summary:	The update provided more precise limitations and control requirements for the station’s Condenser.

Attachment A
Regulatory Cross Reference (40 CFR Part 63, Subpart HHH)

NESHAP From Natural Gas Transmission and Storage Facilities (40 CFR 63 Subpart HHH)	Description of Section	Plan Section
§ 63.1283(d)(ii)(A)	Performance and design criteria for monitoring system requirement	Sections 4.2 and 4.4
§63.1283(d)(ii)(B)	Sampling location	Section 4.1
§63.1283(d)(ii)(C)	Audit procedures	Sections 4.2.2(2) and 4.3.2(2)
§63.1283(d)(ii)(D)	Ongoing operational and maintenance procedures	Section 4.3.2(2)
§63.1283(d)(ii)(D)(i)	Operating CMS with good air pollution control practices	Section 4.3.2(2)
§63.1283(d)(ii)(E)	Ongoing reporting and recordkeeping procedures	Section 5.0
§63.1283(d)(ii)(E)(i)	Required CMS measurements	Section 5.1.1
§63.1283(d)(ii)(E)(ii)	Identifying inoperative periods for CMS	Section 5.1.1
§63.1283(d)(ii)(E)(iii)	Identifying each period when the CMS was out of control	Section 5.1.1
§63.1283(d)(ii)(E)(iv)	Specific identification	Section 4.1
§63.1283(d)(ii)(E)(vi)	Corrective actions and preventative measures	Section 4.3.1
§63.1283(d)(ii)(E)(vii)	Corrective actions and preventative measures	Section 4.3.1
§63.1283(d)(ii)(E)(viii)	Operating time during reporting period	Section 4.3.1
§63.1283(d)(ii)(E)(x)	Results of CMS performance evaluation	Section 4.2.2(2)
§63.1283(d)(ii)(E)(xi)	Duration of each malfunction	Section 4.2.4
§63.1283(d)(ii)(E)(xvi)	Measurements to comply with standards	Section 4.1.2(3)
§63.1283(d)(ii)(E)(xvii)	Results of performance tests and emission observations	Section 5.1.2(1)
§63.1283(d)(ii)(E)(xix)	CMS calibration checks	Section 4.2.2(2)
§63.1283(d)(ii)(E)(xx)	CMS maintenance	Section 4.3

NESHAP From Natural Gas Transmission and Storage Facilities (40 CFR 63 Subpart HHH)	Description of Section	Plan Section
§63.1283(d)(ii)(E)(xxii)	Notification of compliance status	Section 5.1.2(1)
§63.1283(d)(iii)	CPMS equipment performance check	Section 4.3
§63.1283(d)(iiv)	CPMS equipment performance check	Section 4.3