Consumers Energy
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August 11, 2021

Mr. Rex Lane, Supervisor
Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division
Kalamazoo District Office
7953 Adobe Road
Kalamazoo, MI 49009-5026

Re: PTI 202-19
Consumers Energy Company's Overisel Compressor Station (SRN: N5792)

Dear Mr. Lane:

Pursuant to the requirements of Permit to Install (PTI) 202-19 for Consumers Energy Company's Overisel Compressor Station, enclosed is the Preventative Maintenance/Malfunction Abatement Plan (PM/MAP) for EUDEHY. This small glycol dehydration system consists of two identical halves. Each half has two contact towers, a flash tank, a surge tank, a reboiler, and a thermal oxidizer.

If you have any questions, or require additional information, please feel free to contact me at 517-788-2201 or amy.kapuga@cmsenergy.com.

Sincerely,

Amy D. Kapuga

Amy D. Kapuga
Senior Environmental Engineer
Environmental Services-Air Quality

cc: Coleman Miller, Compression Project Engineering
Brent Keskine, Sr. Field Leader-Overisel Compressor Station
Overisel Compressor Station Compliance File

Consumers Energy
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Jackson, MI 49201
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Preventative Maintenance/Malfunction Abatement Plan (PM/MAP)

Overisel Compressor Station Glycol Dehydration System (EUDEHY)

Prepared by:
Coleman Miller
May 17, 2021

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1.0 PM/MAP Overview and Approval

Facility: Overisel Compressor Station

Physical Address: 4131 138th Ave
Hamilton, MI 49419

Plan Adoption Date: _____

Previous Revisions: None

Purpose of the PM/MAP:

The purpose of this PM/MAP is to describe the actions that will be taken at Overisel Compressor Station to prevent, detect, and correct malfunctions or equipment failures that could result in emissions exceeding any applicable limits. This plan is for the dehydration equipment associated with Overisel Compressor Station.

This PM/MAP and any revisions of this Plan will be maintained for a period of five (5) years and will be on file at Overisel Compressor Station. This PM/MAP does not contain proprietary information.

At Overisel Compressor Station, the field leader, or designee, is responsible for assuring that the most recent copy of this PM/MAP is made available to personnel involved with the affected operations. This individual is also responsible for ensuring that Station employees are aware of the procedures and requirements contains in this Plan.

All reports for the PM/MAP must be signed by a Responsible Official.

2.0 Equipment Covered by PM/MAP

This PM/MAP addresses the triethylene glycol (TEG) dehydration systems, and associated control and monitoring equipment, located at the Overisel Compressor Station (EUDEHY). EUDEHY is designed to lower the water content of natural gas being withdrawn from Overisel and Salem storage fields. The dehydration systems are normally operational during the winter withdrawal season on an as-needed basis.

EUDEHY consists of two redundant systems each containing (2) contact towers, regenerator, 3-phase flash separator, pumps, and filters. EUDEHY is also equipped with (2) redundant thermal oxidizers.

The thermal oxidizer units are the air emissions control devices for EUDEHY. The thermal oxidizers are redundant. Either or both regenerators may be operated with either or both thermal oxidizers. Each thermal oxidizer has a process logic control based local control panel. Natural gas will not be processed in the glycol dehydration system unless at least one thermal oxidizer is operating in a satisfactory manner.

3.0 Operating Variables to be Monitored for the Thermal Oxidizer

Temperatures will be maintained at 1400 ^{o}F or above on a daily average. Automated controls shall prevent the contactors and regenerator from operating without the thermal oxidizer in operation. There is also a combustion chamber temperature monitoring device with a continuous recorder that has an accuracy of ± 1 percent of the temperature being monitored. Operating variables for the thermal oxidizers which will be monitored automatically are listed below.

Combustion Chamber High Temperature Shutdown

- TO 1 – TIT-06045 – 1800°F
- TO 2 – TIT-06048 – 1800°F

Stack High Temperature Shutdown

- TO 1 – TSHH-06046 – 1800°F
- TO 2 – TSHH-06049 – 1800°F

Burner Blower Pressure Low Shutdown

- TO 1 – PSLL-06012 – 1.5" H_2O
- TO 2 – PSLL-06016 – 1.5" H_2O

Burner Flame Failure Shutdown (in BMS)

- TO 1 – FFSD-ARBW-1-10-3-01
- TO 2 – FFSD-ARBW-1-10-4-01

High Fuel Gas Pressure Shutdown

- TO 1 – PSHH-06010 – 40" H_2O
- TO 2 – PSHH-06014 – 40" H_2O

Low Fuel Gas Supply Pressure Shutdown

- TO 1 – PSLL-06009 – 10 psig
- TO 2 – PSLL-06014 – 10 psig

4.0 Malfunction Events & Procedures

In the event of a malfunction, the regenerator unit is programmed to automatically shut down. The unit can be manually stopped from the station control room, the unit's control panel HMI screen, the dehy system control panel HMI screen, or with any emergency shut down push button. Push buttons are located at each of the six (6) man doors. If this occurs, both the regenerator burner assembly and the glycol charge pump are shut down.

Diagnosis and troubleshooting will be performed in accordance to the manufacturer specifications to ensure that the dehydration system is within limits. Once the system is again operating per the manufacturer's specifications, the proper manufacturer specified procedures will be followed to bring the system back online.

5.0 Preventative Maintenance

Thermal oxidizer preventative maintenance will be performed to maintain the performance of the thermal oxidizer and to help prevent unscheduled outages. Maintenance that will be performed on the equipment will be executed per manufacturer recommendation. Any necessary maintenance that may arise during the operation of this equipment will be approached utilizing the manufacturer recommended steps for troubleshooting and maintaining the equipment.

SAP work orders will be issued in accordance with the glycol dehydration system preventative maintenance plan. Maintenance logs will be kept in the SAP system.

6.0 Parts and Inventory

The replacement parts that will be maintained in inventory for quick replacement will be determined after the equipment has been operated and life cycle duration can be determined. A preliminary list of recommend spare parts from the equipment manufacturer can be found in Appendix A.

7.0 Supervisory Personal Responsible for Maintenance of Control Equipment

Name:	*Brent Keskine*
Title:	*Senior Field Leader*
Location:	*Overisel Compressor Station* *4131 138th Ave* *Hamilton, MI 49419*
Phone:	*(269) 751-3052 (Office)*
Email:	*BRENT.KESKINE@cmsenergy.com*

8.0 Retention of Records

Records shall be maintained on file for a period of five years.

9.0 Updates/Revisions of PM/MAP

Periodically this PM/MAP may need to be revised. Copies of all PM/MAP revisions will be retailed for a period of five years.

Revisions must be completed within 45 days if the PM/MAP does not address – or inadequately addresses – an event that occurs and meets the characteristics of a malfunction. The revisions must include procedures to operate and maintain the source during similar malfunction events and a program of corrective action for similar malfunctions of the compressor engines or associated controls and monitoring equipment. The revised plan shall be submitted to the AQD District Supervisor may request modification of the plan to address those inadequacies. MDEQ recommends the PM/MAP be reviewed annually.

APPENDIX A. Manufacturer Recommended Spare Parts List

Instrumentation

Qty	Description
2	HONEYWELL C7027A-1049 MINI PEEPER
1	HONEYWELL ULTRAVIOLET AMPLIFIER, 3 SEC #R7849A1023
2	MAXON SPARK IGNITOR FOR OVENPAK LE 25
1	FNW VALVE w/ MERIDIAN ACTUATOR, & TOPWORXFNW311AMG, AD75SR12, DXPM21GNEB,FNW: 1" CS 1000# THD 3PC FP ISO BVMERIDIAN: PNEU SR ACT (SIZED FOR 100PSI AIR SUPPLY TO ACTUATOR, DESIGNED TO FAIL CLOSED UPON LOSS OF AIR SUPPLY & INCLUDES A MINIMUM 1.40 SAFETY FACTOR)TOPWORX: DXP 2 SPDT MECH EXP NMR ¾
1	ASCO SOLENOID VALVE, EF8320G202-120VAC 3 WAY DIRECT ACTING, 1/4" NPT CONNECTION, SS BODY
1	ASCO SOLENOID VALVE, EF8320G202-24VDC 3 WAY DIRECT ACTING, 1/4" NPT CONNECTION
1	NEO-DYN 142P8 ULTRA LOW VACUUM/PRESSURE SWITCH 142P 8 2 CC 6 4 4 3
1	NEO-DYN 132P PRESSURE SWITCH/INTERNAL ADJUSTMENT 132P 4 8 CC 6 G
1	FISHER I2P-100 ELECTRO-PNEUMATIC TRANSDUCER4-20mA INPUT SIGNAL, 6-30 PSIG OUTPUT PRESSURECSA - INTRINSICALLY SAFE, EXPLOSION PROOF, TYPE N, DUST-IGNITION PROOF
1	FISHER 67CFR INSTRUMENT SUPPLY REGULATOR0-125 PSIG SPRING RANGE, STANDARD CONSTRUCTION MATERIALS
1	FISHER 67CFR INSTRUMENT SUPPLY REGULATOR0-60 PSIG SPRING RANGE, STANDARD CONSTRUCTION MATERIALS
1	FISHER 67CFR INSTRUMENT SUPPLY REGULATOR0-20 PSIG SPRING RANGE, STANDARD CONSTRUCTION MATERIALS
1	FISHER PARTS KIT GE31289X012 FOR CS800 REGULATOR
1	FISHER PARTS KIT FOR 2" D4 w/ 3/8" STANDARD TRIM
1	FISHER PARTS KIT FOR 2" D4 w/ 1-1/4" STANDARD TRIM
1	FISHER PARTS KIT FOR 2" D4 w/ 1" STANDARD TRIM
1	FISHER PARTS KIT FOR 2" D4 w/ 1/2" STANDARD TRIM
1	ASHCROFT 1259 PROCESS PRESSURE GAUGE 45-1259-S-L-04-L- -2000#
1	ASHCROFT 1009 PRESSURE GAUGE 351009SWL04L100#
1	ASHCROFT 1259 PROCESS PRESSURE GAUGE 45-1259-S-L-04-L- -160#
2	MIDWEST DIFFERENTIAL PRESSURE GAUGE, 120 AA 00
1	BLANCET/BADGER CIRCUIT BOARD FOR B2900 (SN REQUIRED)
1	BLANCET/BADGER REPAIR KIT B253-112 FOR B131-100 FLOW TRANSMITTER
2	ROSEMOUNT 03144-3111-0007 CIRCUIT BOARD FOR 3144P TEMPERATURE TRANSMITTER
2	ROSEMOUNT 03031-0020-3100 CIRCUIT BOARD FOR 3051 PRESSURE TRANSMITTER
2	ROSEMOUNT 02130-7000-0004 RELAY OUTPUT, DPCO, GREEN LABLE FOR LEVEL SWITCH
1	WATLOW EZ-ZONE PM EXPRESS PM3 L3EJ-AAAABAA

Filters

Qty	Description
1	BAG FILTER PE-10-P02E-WW-30L (BOX OF 30) 10 MICRON BAG
28	CHARCOAL FILTER 1122-C

TEG Pumps

Qty	Description
2	02819247, Seal, radial shaft 4.250 x 3.250 x 0.438 CR32397, A.5 (Design)
3	01720745, Seal, 4.600 x 5.130 x .262 NBR DM, B.7 (Design)
12	01720747, Wiper, oil W60-W80, A.3 (Design)
3	01720748, Rod, intermediate W60-W80 TTC 17-4 base, B.12 (Design)
1	01720754, Gasket, cover rear W60-W80, B.8 (Design)
2	01720751, Gasket, cover top W60-W80, B.8 (Design)
1	01720754, Gasket, cover rear W60-W80, B.8 (Design)
2	01825095, Valve, complete cage SP W60-W80H, A.4 (Design)
2	01825923, SPRING, CAGE SP VALVE, W60-W80H, A.2 (Design)
3	01750036, Seal, 1.875 x 1.600 x .310 NBR DM, B.3 (Design)
1	01782139, Seal, 2.381 x 1.975 x .200 NBR DM, B.6 (Design)
1	02025051, Set, packing 1.000 x 1.750 x 2.250 858 style, A.3 (Design)
3	01748404, Plunger, W60-W80 1.000 THD TC SST base, C.12 (Design)
1	02256647, Gasket, inspection cover gear reducer W60/W80, A.4 (Design)
1	02817947, Seal, radial shaft 3.000 x 2.250 x 0.438 CR22359, A.3 (Design)

EUDEHY
Closed-Vent System Inspection Plan

Consumers Energy Overisel Compressor Station No Detectable Emissions Testing - Regenerator 1						
Location Description	**Device Type**	**Time Inspected**	**VOC Readings (ppmv)**	**Leak Detected (Y/N)**	**Repair Order**	**Difficult to Inspect***
Reflux Condenser (COND-1-10-1-01) lower flange	Flange					X
Reflux Condenser (COND-1-10-1-01) upper flange	Flange					X
Still Column Temp Element (TW-06020/TE-06020)	Thermowell					X
Still Column Temp Indicator (TW-06050/TE-06050)	Thermowell					X
Flame arrestor (FA-2000) 4" inlet flange	Flange					X
Flame arrestor (FA-2000) 4" outlet flange	Flange					X
Superheater (HEXC-1-10-1-05) 4" inlet flange	Flange					
Superheater (HEXC-1-10-1-05) 4" outlet flange	Flange					
Notes						
	Initials		Date			
Completed By						

*Items marked as "Difficult to Inspect" are monitored initially and every 5 years. All other items are monitored initially and annually.

Consumers Energy
Overisel Compressor Station
No Detectable Emissions Testing - Thermal Oxidizer 1

Location Description	Device Type	Time Inspected	VOC Readings (ppmv)	Leak Detected (Y/N)	Repair Order	Difficult to Inspect*
4" 13DISTV-001	Valve					
4" 13DISTV-002	Valve					
4" 13DISTV-003	Valve					
4" Thermal Oxidizer Skid 1 Edge flange	Flange					
4" FCV-06001	Valve					
TO Rundown Knockout Tank (TANK-1-10-3-01) 4" inlet flange	Flange					
TO Rundown Knockout Tank (TANK-1-10-3-01) 4" outlet flange	Flange					
TO Rundown Knockout Tank Level Switch High-High (LSHH-06041)	Level Switch					
TO Rundown Knockout Tank Level Switch High (LSH-06042)	Level Switch					
TO Rundown Knockout Tank Level Switch Low (LSL-06043)	Level Switch					
TO Rundown Knockout Tank Level Gauge (LG-06015)	Level Gauge					
13DISTV-055 TO Rundown Knockout drain valve	Valve					
TO Upset Knockout Tank (TANK-1-10-3-02) 4" inlet flange	Flange					
TO Upset Knockout Tank (TANK-1-10-3-02) 4" outlet flange	Flange					
TO Upset Knockout Tank Level Switch High-High (LSHH-06044)	Level Switch					
TO Upset Knockout Tank Level Switch High (LSH-06045)	Level Switch					
TO Upset Knockout Tank Level Switch Low (LSL-06046)	Level Switch					
TO Upset Knockout Tank Level Gauge (LG-06016)	Level Gauge					
13DISTV-059 TO Upset Knockout drain valve	Valve					
Still vapor inlet at Thermal Oxidizer (THER-1-10-3-01)	Flange					
Notes						

Completed By	Initials	Date

*Items marked as "Difficult to Inspect" are monitored initially and every 5 years. All other items are monitored initially and annually.

Consumers Energy
Overisel Compressor Station
No Detectable Emissions Testing - Regenerator 2

Location Description	Device Type	Time Inspected	VOC Readings (ppmv)	Leak Detected (Y/N)	Repair Order	Difficult to Inspect*
Reflux Condenser (COND-1-10-2-01) lower flange	Flange					X
Reflux Condenser (COND-1-10-2-01) upper flange	Flange					X
Still Column Temp Element (TW-06025/TE-06025)	Thermowell					X
Still Column Temp Indicator (TW-06051/TE-06051)	Thermowell					X
Flame arrestor (FA-2000) 4" inlet flange	Flange					X
Flame arrestor (FA-2000) 4" outlet flange	Flange					X
Superheater (HEXC-1-10-2-05) 4" inlet flange	Flange					
Superheater (HEXC-1-10-2-05) 4" outlet flange	Flange					
Notes						
	Initials		Date			
Completed By						

*Items marked as "Difficult to Inspect" are monitored initially and every 5 years. All other items are monitored initially and annually.

Consumers Energy
Overisel Compressor Station
No Detectable Emissions Testing - Thermal Oxidizer 2

Location Description	Device Type	Time Inspected	VOC Readings (ppmv)	Leak Detected (Y/N)	Repair Order	Difficult to Inspect*
4" 14DISTV-001	Valve					
4" 14DISTV-002	Valve					
4" 14DISTV-003	Valve					
4" Thermal Oxidizer Skid 2 Edge flange	Flange					
4" FCV-06002	Valve					
TO Rundown Knockout Tank (TANK-1-10-4-01) 4" inlet flange	Flange					
TO Rundown Knockout Tank (TANK-1-10-4-01) 4" outlet flange	Flange					
TO Rundown Knockout Tank Level Switch High-High (LSHH-06047)	Level Switch					
TO Rundown Knockout Tank Level Switch High (LSH-06048)	Level Switch					
TO Rundown Knockout Tank Level Switch Low (LSL-06049)	Level Switch					
TO Rundown Knockout Tank Level Gauge (LG-06017)	Level Gauge					
14DISTV-055 TO Rundown Knockout drain valve	Valve					
TO Upset Knockout Tank (TANK-1-10-4-02) 4" inlet flange	Flange					
TO Upset Knockout Tank (TANK-1-10-4-02) 4" outlet flange	Flange					
TO Upset Knockout Tank Level Switch High-High (LSHH-06050)	Level Switch					
TO Upset Knockout Tank Level Switch High (LSH-06051)	Level Switch					
TO Upset Knockout Tank Level Switch Low (LSL-06052)	Level Switch					
TO Upset Knockout Tank Level Gauge (LG-06018)	Level Gauge					
14DISTV-059 TO Upset Knockout drain valve	Valve					
Still vapor inlet at Thermal Oxidizer (THER-1-10-4-01)	Flange					

Notes		
Completed By	Initials	Date

*Items marked as "Difficult to Inspect" are monitored initially and every 5 years. All other items are monitored initially and annually.