

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

B663771062

<b>FACILITY:</b> Consumers Energy - St. Clair Compressor Station		<b>SRN / ID:</b> B6637
<b>LOCATION:</b> 10021 MARINE CITY HWY., IRA TWP		<b>DISTRICT:</b> Warren
<b>CITY:</b> IRA TWP		<b>COUNTY:</b> SAINT CLAIR
<b>CONTACT:</b> Amy D Kapuga , Principal Environmental Engineer		<b>ACTIVITY DATE:</b> 03/06/2024
<b>STAFF:</b> Noshin Khan	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> scheduled on-site inspection		
<b>RESOLVED COMPLAINTS:</b>		

On Wednesday, March 6, 2024, I, Noshin Khan, Michigan Department of Environment, Great Lakes, and Energy-Air Quality Division (EGLE-AQD) staff, performed a scheduled, on -site inspection of Consumers Energy St. Clair Compressor Station located at 10021 Marine City Highway, Ira Township, Michigan 48023 (SRN: B6637). The purpose of the inspection was to determine the facility's compliance status with the requirements of the federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended (Act 451); the AQD administrative rules, and the conditions of Renewable Operating Permit (ROP) Number MI-ROP-B6637-2021.

I arrived at the facility at 10AM and met with Amy Kapuga, Principal Environmental Engineer; Tom Fox, Field Environmental Coordinator; Bob McClaren, Station Supervisor; and Paige Eves, Station Administrator. St. Clair Compressor Station is a natural gas storage and transmission facility that processes gas through emission units including reciprocating internal combustion engines (RICE), turbines, boilers, and pipeline heaters. Natural gas is typically injected underground between April and October and withdrawn for distribution between November and March. According to Consumers staff, the facility has personnel on site from 6:30AM to 3:30PM, and otherwise operates unmanned. Alarms are programmed to sound if emissions near exceedance limits, and if an alert goes out to the gas monitoring station to call in staff if this occurs while the site is unmanned. The facility has about 12 employees for compression and transmission activities. Staff said that no changes have been made to their processes since the last inspection.

During my visit the site was performing gas withdrawal. Staff informed me that both turbine units (EUTURBINEC1-1 and EUTURBINEC1-2) were out of commission. Per Amy, EUTURBINEC1-2 has been out of commission since December 2022 and EUTURBINEC1-1 was last operated in June 2023 and out of commission since October 2023.

While I was on site, staff showed me maintenance records and maintenance plans for all units which require a malfunction abatement plan (MAP), indicating that the MAPs are followed and maintained. Details are provided below for each unit.

Below, I discuss compliance with permit conditions by emission unit (EU) and flexible group (FG) as organized in MI-ROP-B6637-2021. I requested all records for the period from March 2023 through January 2024.

### Source-Wide Conditions

Special Conditions (S.C.) I.1-I.2, VI.1-VI.2:

Conditions I.1 sets an individual hazardous air pollutant (HAP) emission limit of 9.9 tons per 12-month rolling time period as determined at the end of each calendar month. I.2 sets a total HAP emission limit of 24.9 tons per 12-month rolling time period. In accordance with

recordkeeping conditions VI.1 and VI.2, Amy provided monthly and 12-month rolling source-wide individual and total HAP emission calculations and a copy of the spreadsheet used to make the calculations. Amy said that AP-42 emission factors are used for these calculations: Table 3.1-3 for turbines; Tables 3.2-1, 3.2-2, and 3.2-3 for engines; and Table 1.4-3 for boilers and heaters. For FGDEHY, discussed later in this report, the GRI-GLYCalc software is used for calculating emissions. I verified that the calculations in the spreadsheet provided were accurate.

The records provided indicate that between January 2023 and February 2024, the highest monthly individual HAP emissions were 1.13 tons of formaldehyde in September 2023. The highest monthly total HAP emissions were 1.67 tons in September 2023. The highest 12-month rolling individual HAP emissions were 6.07 tons of formaldehyde as calculated in July 2023. The highest 12-month rolling total HAP emissions were 9.04 tons as calculated in July 2023. These values are below the permitted limits.

### EUEMERGEN3-1

This unit is a natural gas fired emergency generator, rated at 2000 HP or less, per the ROP. During the site walkthrough, I observed the unit and saw that the nameplate showed a rating of 1818 HP in accordance with the ROP description. I observed a non-resettable hour meter, as required by S.C. IV.1, which read 168 hours during the inspection.

S.C. I.1-I.3, V.1, VI.2.d: Per S.C. I.1-I.3, the generator is subject to NO<sub>x</sub>, CO, and VOC emission limits of 2.0 g/HP-hr, 4.0 g/HP-hr, and 1.0 g/HP-hr, respectively. This generator is not a certified engine and is consequently required to undergo testing under S.C. V.1 and 40 CFR Part 60 Subpart JJJJ to compliance with these emission limits. This testing is required every 8,760 hours or three years. In accordance with S.C. VI.2.d, Amy provided a copy of the results summary with the last emissions test performed on July 13 and 17, 2023. The previous test was performed in 2020 in accordance with the required testing timeline. The table below summarizes the emission rate results and limits specified by Subpart JJJJ and the ROP.

Parameter	Units	Average Results of 3 Test Runs	Emission Limit	
			Subpart JJJJ	ROP
NO <sub>x</sub>	g/HP-hr	1.2	2.0	2.0
	ppmvd at 15% O <sub>2</sub>	91	160	NA
CO	g/HP-hr	2.6	4.0	4.0
	ppmvd at 15% O <sub>2</sub>	313	540	NA
VOC	g/HP-hr	0.4	1.0	1.0
	ppmvd at 15% O <sub>2</sub>	27	86	NA

The results from this test show compliance with the permitted emission limits.

S.C. II.1: According to Consumers staff, only natural gas is burned in this unit.

S.C. III.1, III.4, VI.1: In accordance with recordkeeping requirement VI.1, Amy provided a log of the monthly and 12-month rolling hours of operation for the generator, and the log

notes how many hours are spent for emergency or non-emergency purposes. The highest 12-month rolling hours of operation was 22.2 hours as calculated in July 2023. According to 40 CFR Part 60 Subpart JJJJ and as specified under S.C. III.4, the following conditions apply in order for the generator to be considered an emergency stationary ICE: the generator may be operated up to 50 hours per calendar year in non-emergency situations and up to 100 hours per calendar year for maintenance, testing, and emergency demand response. In calendar year 2023, the generator was used for 0 hours of emergency use and 20.45 hours of non-emergency use, so the facility meets the operating requirements.

S.C. III.2-III.3, VI.2: According to Amy, the engine is not certified and is consequently subject to periodic testing to show compliance with the emission standards in 40 CFR Part 60 Subpart JJJJ. As discussed, Amy provided a copy of the results from the test performed in 2023 that indicate compliance with emission limits. During my inspection, I reviewed work orders for maintenance done on the engine as required by S.C. VI.2.b. These records included 3-year, annual, monthly, and 6-month maintenance.

### EUBOILER3-1

This unit is a natural gas fired boiler for providing building heat, rated at 12.3 MMBtu/hr, according to the ROP. During my walkthrough I observed this unit and the nameplate read 12.246 MMBtu/hr, matching the rating in the ROP. I also observed the device which continuously monitors the natural gas flow through the boiler. The meter read 8331028.6 SCF during my inspection. Staff also pointed out that documentation of maintenance performed on the boiler is kept by the unit.

S.C. II.1, VI.3: Material limit II.1 requires that only natural gas is burned in EUBOILER3-1. Amy provided a natural gas tariff sheet that indicates that only pipeline quality natural gas is burned in the boiler.

S.C. III.1: This condition requires that the facility follow a preventative maintenance/malfunction abatement plan (PM/MAP) for the boiler, and Amy provided a copy of this plan. The MAP includes equipment covered by the plan, operating variables to be monitored, procedures for malfunction events, and supervisory personnel responsible for maintenance of the boiler. I observed the unit's maintenance schedule and an excel sheet detailing recent and upcoming work orders for the unit, indicating that regular maintenance is performed in accordance with the MAP.

S.C. IV.1, VI.1-VI.2: Based on my observations and the records provided, a device is operated to monitor the natural gas usage in the boiler on a monthly basis as required by S.C. IV.1. I observed the monitoring device during my walkthrough. I asked Amy to provide records for emissions and operating information required by 40 CFR Part 60 Subparts A and Dc, and she provided monthly fuel use records for the boiler. The record includes monthly and 12-month rolling natural gas usage in the boiler from March 2023 through February 2024. The highest monthly natural gas usage was 2085.91 Mscf in January 2024, and the highest 12-month rolling sum of natural gas usage was 17,757.95 Mscf as calculated in March 2023.

### EUGASHEATER3-1

This unit is a natural gas fired fuel gas heater rated at 0.75 MMBtu/hr, according to the ROP. During my walkthrough I observed this unit and the rating on the nameplate matched that in the ROP. The unit heats fuel gas prior to combustion in other natural gas fired equipment.

S.C. II.1: According to Consumers staff, only natural gas is burned in this unit.

S.C. III.1: This condition requires that the facility follow a preventative maintenance/malfunction abatement plan (PM/MAP) for the gas heater and Amy provided a copy of this plan. The MAP includes equipment covered by the plan, operating variables to be monitored, procedures for malfunction events, and supervisory personnel responsible for maintenance of the heater. While on site, I reviewed the 2023 annual maintenance work order and an upcoming inspections list for the unit, indicating compliance with the MAP.

## FGDEHY

This conditions of this flexible group are applicable to two natural gas glycol dehydration systems (EUDEHY1 and EUDEHY2) and their common thermal oxidizer (TO). The ROP describes each of the systems as consisting of an absorber, flash tank, glycol regenerator, and 3 MMBtu/hr natural gas fired regenerator boiler. The ROP describes that the TO is rated at 6 MMBtu/hr. I observed these units during my walkthrough but was not able to locate the nameplate on the TO to verify the heat input capacity. The TO and glycol dehydration systems were operating during my inspection, and I observed a TO operating temperature of 1443°F as required by S.C. III.2. I also observed the gas meter on the TO which read 1548.8 SCFH, and the blower associated with the TO on the outside of the building.

S.C. I.1, IV.1, V.1, VI.3, VI.5: During my inspection, Consumers staff confirmed that flash tank exhaust gases from each dehydrator are routed either to the regenerator boiler as fuel or to the thermal oxidizer, as required by S.C. IV.1.

The flexible group is subject to a VOC emission limit of 7.4 tpy based on a 12-month rolling time period as determined each calendar month. As required by recordkeeping condition VI.3, Amy provided monthly and 12-month rolling VOC emissions calculations for the dehydration systems.

GRI-GLYCalc is used to determine VOC emissions. Amy confirmed that the results from the most recent wet gas analysis are used as inputs in the software, as required by S.C. VI.3. Testing is done annually, as required by S.C. V.1; the 2023 wet gas analysis was performed on February 9, 2023, and the 2024 wet gas analysis was performed on January 17, 2024. Amy provided copies of the results for these analyses as required by S.C. VI.5.

The emissions records provided indicate that from January 2023 through February 2024, the highest monthly VOC emissions were 68.45 lbs in March 2023, and the highest 12-month rolling emissions were 0.30 tons as calculated in January 2023. This is below the 7.4 tpy limit.

S.C. III.1: Consumers staff informed me during my inspection that stripping gas is not used in either dehydrator in FGDEHY.

S.C. III.2, IV.2, VI.2, VI.4, VI.6: As required by recordkeeping requirements, Amy provided thermal oxidizer combustion chamber temperature records. The facility maintains a thermocouple to monitor the temperature of the thermal oxidizer combustion zone continuously and record the temperature every 15 minutes, as required by S.C. VI.2 and VI.6. Amy provided samples of these continuous temperature records kept in accordance with these conditions.

Satisfactory operation of the thermal oxidizer is defined maintaining a daily average minimum combustion chamber temperature of 1400°F and a minimum retention time of 0.5 seconds. I reviewed the daily average temperature records provided from March 2023 through February 2024 and all daily average combustion temperatures were above 1400°F, indicating compliance.

While reviewing records during my previous inspection, I saw that the daily average temperature on January 19, 2023 was recorded as 1196°F. I followed up with the company since this was not noted in semiannual reporting, and staff informed me that the calculated temperature was incorrect. Per Bob McClaren, on January 19, 2023, the station was only withdrawing gas from storage fields and processing it through the dehydration system from 11:45AM until 7:00PM, with the average TO temperature during that time at 1443.19°F. Bob also provided the temperature data to support this.

S.C. III.3: This condition requires that the facility follow a preventative maintenance/malfunction abatement plan (PM/MAP) for the glycol dehydration systems, and Amy provided a copy of this plan. The MAP includes equipment covered by the plan, operating variables to be monitored, procedures for malfunction events, and supervisory personnel responsible for maintenance of the glycol dehydration systems.

During my inspection, staff informed me that monthly inspections and maintenance are performed on the dehydration units. Daily checks are also performed. I reviewed records for 2023 annual burner and blower inspections, and the annual TO temperature monitor calibration performed in May 2023. I also reviewed work orders for filter, valve, and glycol reboiler maintenance and inspections. The facility maintains these records physically on site. Based on these records, the facility maintains and follows the MAP.

S.C. VI.7: This condition requires that records be made and maintained when a bypass line is utilized, and the record should indicate the length of time that a bypass line is opened for. According to Amy, if the thermal oxidizer temperature drops below 1400°F, then liquids from the glycol regenerators are sent to a knockout tank and not vented to the atmosphere through a bypass, so these records are not generated.

S.C. VI.8: This condition requires that the temperature monitor for the combustion chamber of the thermal oxidizer be calibrated at least annually. While I was on site I reviewed the 2023 work order for the calibration. According to Consumers staff, two thermocouples are maintained in case one fails. The calibration is done using a previously calibrated heat pack. The thermocouples are adjusted to match the heat pack value.

## FGENGINES-P3

The conditions of this flexible group apply to four natural gas fired compressor engines, each rated at 4835 HP according to the ROP. During the inspection, I observed these units and saw that the nameplate for EUENGINE3-1 showed a rating not exceeding 4835 HP, as



required by S.C. IV.1. The four engines are identical and are equipped with oxidation catalyst for control.

S.C. I.1-I.6, VI.1, VI.3, V.1-V.3: According to Amy, the engines are not certified and are consequently subject to periodic testing to show compliance with the emission standards in 40 CFR Part 60 Subpart JJJJ. Amy provided copies of the results from testing performed in 2023. EUENGINE3-1 EUENGINE3-2, and EUENGINE3-3 were tested on September 12 and 13, 2023. EUENGINE3-4 was tested on November 14 and 15, 2023. The facility received approval from the AQD for delaying testing for EUENGINE3-4 because the unit was experiencing operational issues.

The results from testing, summarized below, indicate compliance with Subpart JJJJ and with the emission limits established in S.C. I.1-I.6. Testing is required every 8,760 hours or three years. Previous testing was performed in 2020 in accordance with this timeline.

Engine	NOx		CO		VOC	
	(g/hp-hr)	ppmvd @ 15% O2	(g/hp-hr)	ppmvd @ 15% O2	(g/hp-hr)	ppmvd @ 15% O2
EUENGINE3 —	0.5	41	0.04	5	0.04	3
EUENGINE3 —	0.6	45	0.06	7	0.1	7
EUENGINE3 —	0.5	39	0.1	10	0.03	2
EUENGINE3 —	0.5	39	0.05	6	0.03	3
<b>JJJJ Limits</b>	<b>1.0</b>	<b>82</b>	<b>2.0</b>	<b>270</b>	<b>0.7</b>	<b>60</b>
<b>ROP Limits</b>	<b>0.6</b>		<b>0.36</b>		<b>0.2</b>	

S.C. II.1, VI.4: Material limit II.1 requires that only natural gas is burned in the engines. Amy provided a natural gas tariff sheet that indicates that only pipeline quality natural gas is burned in the engines.

S.C. III.1, III.4, IV.2: These conditions require that the facility follow a preventative maintenance/malfunction abatement plan (PM/MAP) for the engines, and Amy provided a copy of this plan. The MAP includes equipment covered by the plan, operating variables to be monitored, a maintenance schedule, procedures for malfunction events, oxidation catalyst maintenance and operating parameters, and supervisory personnel responsible for maintenance of the glycol dehydration systems. Satisfactory operation of the oxidation catalyst for each engine, as defined by S.C. IV.2, includes operating and maintaining each oxidation catalyst in accordance with the MAP. While on site, I reviewed 2023 inspection and maintenance records for the units indicating that the units are maintained for satisfactory operation.

S.C. VI.2: This condition requires fuel use records for the purposes of demonstrating compliance with the individual and total HAP limits in FGFACILITY of MI-ROP-B6637-2010. The facility maintains fuel use records which were provided to me. The highest monthly fuel use in the engines from March 2023 through February 2024 was 42,982 MCF in September 2023.

## FGTURBINES

The conditions of this flexible group apply to two natural gas fired combustion turbine compressors, EUTURBINEC1-1 and EUTURBINEC1-2. I observed these units during my inspection. Neither were operating, and both are out of commission as previously discussed. I observed work being done on unit 1-2 to redo the piping associated with the unit.

S.C. I.1-I.6, V.1-V.2: The permittee is required to perform testing to confirm compliance with NOx and CO emission rates listed in S.C. I.1-I.6 and establish the range of gas producer speeds (GPS) within which the turbines should operate to be in compliance with emission limits. Amy provided copies of test reports from the tests performed on December 16, 2020 for EUTURBINEC1-1 and March 30, 2021 for EUTURBINEC1-2. Testing is required at least once every five years for each turbine. The results provided are summarized below.

Parameter	Units	90% GPS Result	100% GPS Result	Emission Limit	Applicability
NOx	lb/hr	7.3	10.4	12.6	Both turbines combined
	tpy	22.7	32.0	39.0	Both turbines combined
	ppmvd at 15% O2	31.4	40.4	150	EUTURBINEC1-1
	ppmvd at 15% O2	27.6	24.6	150	EUTURBINEC1-2
CO	lb/hr	1.0	0.7	20.7	Both turbines combined
	tpy	3.2	2.3	90.6	Both turbines combined
	g/HP-hr corrected to 15% O2 on a dry basis	0.16	0.05	1.09	EUTURBINEC1-1
	g/HP-hr corrected to 15% O2 on a dry basis	0.11	0.05	1.09	EUTURBINEC1-2

S.C. III.1, VI.4: These conditions require that the fuel burned in FGTURBINES is natural gas, as defined in 40 CFR 60.331(u). Amy provided a natural gas tariff sheet which specifies that the total sulfur content of the gas shall not contain more than 5.0 grains of total sulfur per 100 cubic feet, which is less than the 20.0 grains/100 scf specified in VI.4.a.

S.C. III.3, VI.1: As required by recordkeeping requirements, Amy provided monthly records for the hours of operation, accumulated horsepower hours, and fuel consumption for each turbine, and 12-month rolling hours of operation. From March 2023 through February 2024, the highest monthly hours of operation was 470.6 hours for EUTURBINEC1-1 in May 2023. EUTURBINEC1-2 did not operate at all during this period since it has been out of commission. The highest 12-month rolling hours for both turbines combined was 1,049 hours as calculated in June 2023. This is below the limit of 12,380 hours per year established by S.C. III.3.

S.C. VI.3: Amy provided records that track when units are in or out of service, as required by S.C. VI.3.a.

S.C. VI.5: The permittee is required to calculate yearly emission rates for NO<sub>x</sub>, CO, and VOC for each turbine. Amy provided emissions calculations for 2023. For EUTURBINEC1-1, the NO<sub>x</sub> emissions were 2.66 tons; CO emissions were 0.325 tons; and VOC emissions were 0.0385 tons. EUTURBINEC1-2 did not operate in 2023 and had no emissions. According to this document, the CO and NO<sub>x</sub> emissions are calculated using the results from emissions tests; SO<sub>2</sub> calculations are done using an emission factor from AP-42; and calculations for PM<sub>10</sub>, PM<sub>2.5</sub>, and VOCs are done using MAERS emission factors.

S.C. IX.2: This condition requires that the facility follow a preventative maintenance plan (PMP) for the turbines, and Amy provided a copy of this plan. The PMP specifies the GPS range (90%-100%) that the turbines should operate at, as required by the condition. While reviewing inspection and maintenance records, staff explained that the facility has not performed annual panel board testing since the units have been out of order. This testing will be done once the units return to service. I reviewed records for April 2023 maintenance done on EUTURBINEC1-1 and yearly inspections which were done in 2022. Based on these records, the facility maintains and follows its PMP.

### FGPIPEHEATERS-P3

The conditions of this flexible group apply to two natural gas fired pipeline heaters, each rated at 15 MMBtu/hr according to the ROP. I observed these units during my inspection and confirmed that the rating on the nameplates are consistent with the description in the ROP. These heaters are not subject to the Code of Federal Regulations (CFR) Part 63 (MACT) Subpart JJJJJJ pursuant to §63.11195(e), since they are gas-fired boilers. The heaters are subject to CFR Part 60 (NSPS) Subpart Dc since they are steam generating units with a rated heat input capacity between 10 and 100 MMBtu/hr. The facility submits excess emissions reports, performs daily inspections on the units, and tracks the fuel usage through the heaters, indicating compliance with the applicable federal regulation.

S.C. II.1: Consumers staff confirmed that only natural gas is burned in these units.

S.C. III.1: This condition requires that the facility follow a preventative maintenance/malfunction abatement plan (PM/MAP) for the pipeline heaters, and Amy provided a copy of this plan. The MAP includes equipment covered by the plan, operating variables to be monitored, procedures for malfunction events, and supervisory personnel responsible for maintenance of the pipeline heaters. I reviewed the 2023 annual inspection record for the heaters during my inspection. Staff also informed me that daily operator inspections are performed, but records are not kept for these. Based on this information the facility maintains and follows its MAP.

S.C. IV.1, VI.1-VI.3: Amy provided records of monthly fuel use records for the pipe heaters. A device monitors the fuel use as required by S.C. IV.1. The highest monthly fuel use in the pipe heaters from March 2023 through February 2024 was 6,130 MSCF in January 2024.

### FGWESTDRHTRS-P1



This flexible group covers two natural gas fired pipeline heaters, each rated at 5 MMBtu/hr according to the ROP. I observed both units during my inspection and confirmed that the rating on the nameplates are consistent with the description in the ROP. These heaters are not subject to MACT Subpart JJJJJJ or NSPS Subpart Dc.

S.C. II.1: Consumers staff confirmed that only natural gas is burned in these units.

## FGCOLDCLEANERS

During my inspection I observed one cold cleaner on site that had an air/vapor interface of no more than 10 square feet, as required by S.C. IV.1.a. According to Consumers staff, that was the only cold cleaner on site. I observed that the cleaner was equipped with a device for draining cleaned parts and a cover, as required by S.C. IV.2 and IV.3. I observed that the cover was kept closed as required. According to the cleaner information Amy provided, the Reid vapor pressure of the solvent used (Dyna 143) is 0.391 mm Hg at 20°C, or about 0.0077 psia. Since this is below 0.3 psia and the cleaner is not heated, the cold cleaner is not required to be mechanically assisted. I observed instructions for operation of the cleaner posted in an accessible, conspicuous location as required by S.C. VI.3.

S.C. II.1: This condition requires that the solvent shall not contain more than 5% by weight of the following halogenated compounds: methylene chloride, perchloroethylene, trichloroethylcane, 1, 1, 1-trichloroethane, carbon tetrachloride, chloroform, or any combination thereof. The SDS for Dyna 143 shows that it is composed of 90-100% light hydrotreated distillate.

S.C. VI.4: I observed that waste solvent was stored in closed containers, and according to Consumers staff the waste is collected by ERG for disposal.

## FGRULE285(2)(mm)

Rule 285(2)(mm) requires notification for venting of natural gas of amounts greater than 1,000,000 scf for routine maintenance or relocation of transmission and distribution systems. According to reports received by the AQD, Consumers St. Clair notified the AQD for two venting incidents. One was on July 31, 2023, and the other was on August 10, 2023. During the inspection, staff informed me that no other venting incidents had occurred. The facility meets the reporting requirements for this rule.

### Reporting

The facility has submitted all reporting and certifications required by the ROP, including semiannual and annual reporting.

Based on my observations during my inspection and the records reviewed, the facility is in compliance with the evaluated rules and regulations.

NAME 

DATE 6/10/2024

SUPERVISOR

