N1099
MANILA

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

N109955907

FACILITY: Consumers Energy - Northville Compressor Station		**SRN / ID:** N1099
LOCATION: 9440 NAPIER RD, NORTHVILLE		**DISTRICT:** Detroit
CITY: NORTHVILLE		**COUNTY:** WAYNE
CONTACT: Amy Kapuga , Environmental Engineer		**ACTIVITY DATE:** 10/27/2020
STAFF: Stephen Weis	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Compliance inspection of the Consumers Energy - Northville Compressor Station facility in Northville Township. The Consumers Energy facility is scheduled for inspection in FY 2021.		
RESOLVED COMPLAINTS:		

Location:
Consumers Energy (SRN N1099)
Northville Compressor Station
9440 Napier Road
Northville Township

Date of Activity:
Tuesday, October 27, 2020

Personnel Present:
Steve Weis, EGLE-AQD Detroit Office
Frank Rand, Environmental Coordinator, Consumers Energy
Amy Kapuga, Senior Environmental Engineer, Environmental Services, Consumers Energy

Purpose of Activity
A self-initiated inspection of the Consumers Energy Northville Compressor Station facility (hereinafter "Northville Station") was conducted on Tuesday, October 27, 2020. The Northville Station was on my list of sources targeted for an inspection during FY 2021. The purpose of this inspection was to determine compliance of operations at the Northville Station with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control) and Federal standards. The facility is also subject to the terms and conditions of Renewable Operating Permit No. MI-ROP-B1099-2017. In addition, a compliance emissions test of an emergency engine was taking place on this day, so I was on site with a member of AQD's Technical Programs Unit staff to observe a portion of the test, as well.

Facility Site Description
The Northville Station facility is located on approximately 28 acres on the east side of Napier Road about halfway between 7 Mile and 8 Mile Roads in Northville Township. Napier Road marks the border between Wayne and Washtenaw Counties, with areas to the east being in Wayne County. The area around the facility is primarily a residential area populated with larger, rural lots. The closest residences are located directly across the street from the Northville Station, and directly to the south, sharing a fence line with the facility; the closest residence is located approximately 350 yards from the primary air emissions sources at the facility. Maybury State Park is located directly to the east and north of the facility, and it shares a fence line.

The Northville Station is a compressor station, its operations serving to assure that there is adequate pressure in the natural gas storage fields and the natural gas supply lines owned and operated by Consumers Energy and MichCon. There are three different natural gas storage fields

that are located 1-2 miles to the west and northwest of the Northville Station in Washtenaw and Oakland Counties. I was told during my last site visit that the three storage fields are identified as the Reef, which is in Salem Township in Washtenaw County, and Lyon 29 and Lyon 34 in Lyon Township in Oakland County. As natural gas is needed, a valve is opened to allow the pressurized gas to flow from the storage fields to the natural gas distribution pipes as the pressure in the storage field is greater than the pressure in the pipes. The facility utilizes compressors that raise the pressure of the natural gas being stored in nearby storage fields. The compressors are driven by four natural gas-fired engines; the compressors and engines are located in a building located in the northeast part of the property. There are also an office building and some buildings used for maintenance activities and storage located in the eastern part of the property, and some above-ground storage tanks located to the west of the engine building that are used to store natural gas condensate. There are also some city gate structures at the facility. City gates are used to reduce the pressure of the natural gas prior to it entering the distribution lines, and they are also the point in the process at which the odorant (methyl mercaptan) is added to the natural gas.

Facility Operations

The Northville Station is part of Consumers Energy's natural gas distribution system in their Michigan service area. A map from Consumer's website is attached that shows the utility's service area. The gas distribution system consists of gas storage fields, compressor stations and gas transmission pipelines, as well as associated infrastructure, such as city gates. Natural gas is transported to Michigan via underground pipelines, and it is routed either directly into the supply lines or into storage fields. According to Consumers Energy's website, the Michigan service area has one of the largest underground storage systems in the country, consisting of 15 underground gas storage fields with a storage capacity of 151 billion cubic feet. The storage fields are natural porous rock formations.

As mentioned in the last section, the Northville Station is a compressor station that serves to ensure that there is adequate pressure in the natural gas distribution system by pressurizing the natural gas in the gas storage fields in the area. Natural gas enters the Northville Station via a series of supply lines. The gas that is transported directly into the distribution lines enters the facility at about 550-650 psi pressure, and the pressure is raised to 750-800 psi prior to distribution. This gas is of pipeline quality, and it comes from other Consumers Energy stations (St. Clair) and MichCon.

The natural gas that is sent to the storage fields is scrubbed to knock out moisture, and then compressed/pressurized to approximately 2,000 psi. The moisture that is collected is pumped to the natural gas condensate tanks. All of the gas that is compressed by the engines is sent through coolers that cool the gas using radiant heat. The gas is cooled in order to meet pipeline temperature requirements.

The Northville Station is unique among the other natural gas storage fields in Michigan in that the natural gas flows directly from the storage fields to the distribution pipeline without the use of an engine to boost the flow. As mentioned in the last section of this report, at the Northville Station facility, natural gas is delivered to the distribution lines by opening a valve that allows the pressurized gas to flow from the storage fields to the natural gas distribution pipes as the pressure in the storage field is greater than the pressure in the pipes. As the natural gas in the storage field

is pipeline quality, and moisture has been removed prior to it being stored, the Northville Station does not need to utilize a glycol dehydrator to remove moisture from the natural gas.

The Northville Station operates Monday through Friday, from 7:00am until 3:00pm. The facility occasionally operates at additional times, as necessary, to address gas supply needs.

The Northville Station's Renewable Operating Permit defines Emission Units and Flexible Groups that represent the various processes that occur at the facility. These Emission Units and Flexible Groups are described below.

- EUENGINE 1-1, EUENGINE 1-2, EUENGINE 1-3 and EUENGINE 1-4 – all four engines represented by these Emission Units are 19 MMBTU/hour, 2,700 hp rated natural gas-fired reciprocating engine that are used to power the compressors at the facility. The compressors are used to compress natural gas for injections into the natural gas storage fields.

  The engines are Clark Model TLA-8 engines. The permitting and regulatory requirements for the four engines are put forth in the FGENGINES Flexible Group.

- FGCOLDCLEANERS – this Flexible Group contains the general EUCOLDCLEANERS Emission Unit that applies to any cold cleaning equipment that is exempt from DEQ-AQD permitting requirements and was placed into operation after July 1, 1979. In addition, this Flexible Group addresses two specific cold cleaners – EUDEGREASER1, which is identified as a small cold cleaner located in the fabrication building/mechanic shops, and EUDEGREASER2, which is identified as a small cold cleaner used for parts cleaning that is located in the garage.

- FGPROCESSHTRS – this Flexible Group addresses two natural gas-fired heaters, both described as being rated at 250,000 BTU/hour. EUFUELHEATER1 is a fuel gas heater, and EULINEHEATER3 is a pipeline heater.

- FGRULE285(2)(MM)– this Flexible Group addresses any Emission Unit that experiences routine and emergency venting of natural gas and meets the permit exemption requirements put forth in Michigan Administrative Rule 285(2)(mm).

There is also additional equipment and processes located at the facility that are exempt from EGLE-AQD permitting requirements. The table from the current ROP's staff report that summarizes the exempt equipment that is not included in the ROP is attached for reference.

Inspection Narrative

I arrived at the facility at 9:55am. I arrived at the same time as Mark Dziadosz of EGLE-AQD's Technical Programs Unit (TPU), who was on-site to observe the compliance emissions test being performed on a new emergency generator that was installed at the facility that is designated as EUEMERGEN. The test was being performed in accordance with the requirements of 40 CFR Part 60 Subpart JJJJ. We checked in at the main office at the Northville Station, and we were met by Thom Schmelter of Consumers Energy's testing group, as well as Amy Kapuga. Thom told us that Run 1 of the test began at 9:30am, and was about halfway through. Mark and I began the site visit watching the company/facility safety video.

After watching the video, we went to the testing trailer. I was told that during the testing, the KW generated, the engine speed and horsepower, and the volume of fuel consumed by the generator/engine are being monitored. The engine is rated at 500 KW (755 hp output), and it is oversized for the site. As a result, the engine was unable to operate at +/- 10% of its maximum load for the testing. A load bank was installed for the test to provide a load to the engine, and to provide an outlet for the energy produced by the engine during the test. Thom showed us the load

bank, and the meter that is used to read the fuel flow to the engine, a picture of which is attached to this report for reference. Mark and I were shown that during Run 1, the engine operated at 437 KW. Thom provided some preliminary sampling concentrations for Run 1 that had not yet been corrected.

During Run 2, Amy and Frank Rand met me at the testing trailer, and we walked around the facility. We started at the new line heater (EULINEHEATER3). We looked at the unit's plate/label, which provides that the unit is a Flameco heater with a maximum rated heat input capacity of 1.5 MMBTU/hour. I was told that installation of the unit was competed earlier in the month. We discussed the replacement of the former line heater. I was told that the unit was not sized for its intended purpose, and that it always ran during periods of cold weather rather than operating periodically as needed. The current line heater can cycle on and off, which is as intended.

We then walked through the Equipment, Maintenance and Storage Building. We looked at the ZEP Dynaflow cold cleaner in the garage area of the building. The lid on the unit was closed, and there was a DEQ (EGLE) label affixed to the unit, as well as operating instructions posted near the unit, instructing as to the measures to minimize emissions from the use of the unit. We then walked to the Plant 1 Auxiliary Building. This building houses the control room for the facility, and it contains a small boiler (having a maximum rated heat input capacity of 500,000 BTU/hour), and the other ZEP Dynaflow cold cleaner unit. We looked at the cold cleaner; its lid was closed, and it also featured a DEQ (EGLE) label and instructions to close the lid when the unit is not in use. Frank pointed out the location where the emergency engine that is designated in the facility's ROP that is designated as EUAUXGENERATOR used to be. The engine has been permanently removed from the facility.

We walked back outside and looked at the fuel heater that is designated as EUFUELHEATER1, which is located close to the engine building. I read the boilerplate label attached to the unit, which showed it to be a JW Williams heater with a maximum rated heat input capacity of 250,000 BTU/hour, and a manufactured year of 2014.

We then walked through the engine building, a large blue building that houses the facility's four natural gas-fired compressor engines, which is located directly to the west of the Auxiliary Building. These engines are identified as EUENGINE1-1, EUENGINE 1-2, EUENGINE1-3, and EUENGINE1-4, and all of the engines are Clark Model TLA-8. At the time of our walkthrough, Engine 2 was operating.

After leaving the engine building, I returned to the testing trailer to check on the compliance test. Run 2 took place between 11am and 12pm, and run 3 started at 12:30pm, and was to run until 1:30pm. Mark and I were provided with some corrected numbers (to 15% O_2) from Run 2. CO was measured at 206 ppmvd and 1.6 g/hp-hr (vs. the Subpart JJJJ emission standards of 540 and 4.0, respectively); NOx was measured at 77.5 ppmvd and 0.99 g/hp-hr (vs. 160 and 2.0); and VOC was measured at 50.9 ppmvd and 0.62 g/hp-hr (vs. 86 and 1.0).

I returned to the main building and went to the conference room where Amy and Frank were set up. We discussed the records that I needed to review as part of the compliance determination for the facility. I sent Amy a document that summarized the information and records that I needed, which she received. Amy said that she would respond to my email and provide the records that I needed. She sent me a response that provided the information via an email that was sent to me on

October 29. A copy of the email, and the information that was included with it to address my information request, is attached to this report for reference.

I left the facility at 1:55pm.

Permits/Orders/Regulations

Permits

Renewable Operating Permit

Renewable Operating Permit No. **MI-ROP-N1099-2017** was issued to Consumers Energy with an effective date of October 17, 2017. This permit addresses the Emission Units and Flexible Groups referenced in the "Facility Operations" section of this report.

The following paragraphs provide a description of the Northville Station's compliance with the terms and conditions put forth by ROP No. MI-ROP-N1099-2017, with the headings representing the sections of the ROP.

Source-Wide Conditions

There are no Source-Wide Conditions applicable to the facility in ROP No. MI-ROP-N1099-2017.

EUAUXGENERATOR

This Emission Unit addresses the requirements for a 2.16 MMBTU/hour natural gas-fired emergency generator. The generator was subject to the requirements of 40 CFR Part 63 Subpart ZZZZ (National mission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines). Consumers Energy decommissioned and removed this generator from the facility. According to a June 18, 2019 e-mail from Amy Kapuga, "...there is a project to replace the existing emergency stationary RICE with a new emergency RICE...", and Consumers has "determined that the installation of the new emergency RICE is exempt from the requirement to obtain a permit to install (PTI) pursuant to Rule 201, based upon the exemption in Rule 285(2)(g)." Her e-mail went on to state that the new engine will be subject to 40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ, that Consumers will comply with all applicable requirements that apply to the new emergency engine, and that they will submit a M-001 form to address the installation of the new engine in the facility's ROP. The new emergency engine is designated as EUEMERGEN.

At the time of the site visit, the emergency engine that was addressed by this Emission Unit table in the ROP had ceased operation and been permanently removed from the facility. The requirements for this Emission Unit are no longer applicable.

FGENGINES

This Flexible Group addresses the regulatory requirements for the four natural gas-fired engines that are used to compress natural gas to inject it into the natural gas storage fields. These engines are identified as EUENGINE1-1, EUENGINE 1-2, EUENGINE1-3, and EUENGINE1-4.

There are not many permit conditions associated with FGENGINES; there are no emission limits, process/operational restrictions, design/ equipment parameters, or testing/sampling requirements.

II. Material Limits

Special Condition (SC) II.1 limits the compressor engines to fire only natural gas, which is the only fuel that is used in these engines.

VI. Monitoring/Recordkeeping

SC VI.1 requires Consumers to record the natural gas usage for FGENGINES for each calendar month. The Northville Station is **in compliance** with this requirement. I was provided with copies of the worksheet that is maintained by facility staff that tracks the amount of fuel used at the facility for January through September of 2020 as part of the information that Amy provided to me; these worksheets are attached to this report for reference. I was told that in addition to this information, each month, a beginning and ending gas meter reading is taken, as well as a beginning and ending reading of the engine hours.

VII. Reporting

The Northville Station is **in compliance** with the reporting requirements in this section, submitting the required reports.

IX. Other Requirements

SC IX.1 – This SC requires that the four engines comply with all applicable provisions of 40 CFR Part 63 Subpart ZZZZ. The engines are not currently subject to 40 CFR Part 63, Subpart ZZZZ, as they are classified as existing spark-ignition two-stroke lean-burn engines. The engines may be subject to Subpart ZZZZ if they are reconstructed at any point in the future, so this SC is presumably included as a place holder.

SC IX.1 – This SC requires that the four engines comply with all applicable provisions of 40 CFR Part 60 Subpart JJJJ. The installation dates of the four engines pre-dates the applicability requirements of Subpart JJJJ, so, like SC IX.1, it is assumed that this SC was included in the Flexible Group as a place holder in case the engines are moved or modified in the future.

FGRULE285(2)(mm)

This Flexible Group addresses routine and emergency venting of natural gas at the Northville Station.

Venting is part of a "fire gate event". The fire gate is a valve that is used during emergencies that closes valves on pipes that lead to the Northville Station. When this occurs, accumulated gas at the facility can be vented to the atmosphere.

I have been told by Consumers staff that a live test of a fire gate event is scheduled each year, typically in June. At this time, yearly maintenance activities are performed, which include checking the emergency systems, and checking connections, valves and pilot lights. I have been told during past site visits that the amount of time between fire gate events is not to exceed 15 months.

I was told that the amount of natural gas that is vented depends on the pressure in the system at the facility. Consumers has created a calculation sheet for the Northville Station that estimates the amount of natural gas that will be vented under specific pressures in the system. During my last site visit in 2019, Paul provided me with a copy of the calculation sheet. The cells on the spreadsheet that are highlighted in yellow show the amounts of natural gas that are vented at the targeted systems pressures at the facility, which results in less than 1 million cubic feet (1 MMCF) of

natural gas being vented. I was told that if greater than 1 MMCF of natural gas is vented, Consumers Energy notifies the appropriate entities.

In the information that Amy provided to me, she provided that during the last annual fire gate testing event that took place at the Northville Station on June 8, 2020, the quantity of natural gas vented was less than 1 MMCF.

The Northville Station is **in compliance** with the requirements of this section. The conditions address situations during which greater than 1 MMCF of natural gas is vented.

FGCOLDCLEANERS

This Flexible Group contains the requirements for cold cleaners at the facility that meet identified criteria. The Special Conditions in the Flexible Group are part of a template that addresses the various state requirements that apply to cold cleaners, as found in Parts 6 and 7 of the Michigan Administrative Rules.

There are currently two cold cleaners on site; one is located in the mechanic's shop in the Auxiliary Building, and the other is located in the garage area of the Equipment, Maintenance and Storage Building. The units are ZEP Dynaflow II units, Model No. 906101. These cold cleaners are used for the general cleaning of parts that are used in maintenance activities. Information in onsite facility files that I reviewed during a facility site visit in 2015 indicated that the units were installed in September 1994. I was told that the cold cleaners are using the same material as in my past site visits. During a site visit in 2015, I was provided with a Material Safety Data Sheet (MSDS) for the material used in the cold cleaners, DYNA 143°, a copy of which is in the facility file. It shows that the material has a Reid Vapor Pressure of 0.067 kPa (0.5 mmHg), a specific gravity of 0.79, and that it is water insoluble.

During my last site visit, the inspection and maintenance procedures for the cold cleaners were explained to me. The procedures follow an internal air quality regulation related maintenance procedure through which, once a month, the maintenance procedures are performed, and the operating parameters are monitored in accordance with the company's procedures. This includes checking the drains and filters on the units.

The information that Amy sent to me included Inspection Record forms for both of the cold cleaners (identified as EUDEGREASER1 and EUDEGREASER2). The forms are work order forms that summarize parts cleaner inspections that were performed in March 2020 and at the end of August/early September 2020. This information is attached to the report for reference.

As mentioned earlier in this report, we walked by both of the cold cleaners during our walk through of the facility. Both units had their lids closed, and they were both affixed with a DEQ (EGLE) sticker and a label instructing staff to keep the lid closed when not in use.

The Northville Station is **in compliance** with the conditions in FGCOLDCLEANERS.

FGPROCESSHTRS

The Flexible Group addresses the natural gas industrial boilers and process heaters at the facility, which is classified as a major source of hazardous air pollutants, that are subject to requirements of 40 CFR Part 63 Subpart DDDDD (National Standards for Hazardous Air Pollutants for Industrial,

Commercial, and Institutional Boilers). The ROP identifies the emission units identified as EUFUELHEATER1, a 250,000 BTU/hour fuel gas heater, and EULINEHEATER3, a 250,000 BTU/hour pipeline heater, as being included in this Flexible Group. The 250,000 BTU/hour unit designated as EULINEHEATER3 was removed from the facility in the fall of 2018, and replaced with a 750,000 BTU/hour unit in October of 2018. The 750,000 BTU/hour pipeline heater was exempt from Michigan Administrative Rule 201 permitting requirements, and Consumers submitted a M-001 form to update the ROP to reflect the installation of the new line heater. The 750,000 BTU/hour unit was itself replaced with a 1.5 MMBTU/hour pipeline heater, which had a startup date of October 18, 2020. Consumers submitted a Subpart DDDDD notification for the new heater in correspondence that was sent to EGLE-AQD dated October 27, 2020. Both of the heaters in this Flexible Group are also exempt from Michigan Administrative Rule 201 permitting requirements (per the provisions in Michigan Administrative Rule 282(2)(b)(i)).

The special conditions in this Flexible Group address the requirements of Subpart DDDDD. There are no emission or material limits, and no testing requirements; the special conditions address the maintenance and tune up, energy assessment and work practice standards associated with the Subpart. All of the individual conditions were not discussed during this site visit. Rather, an overview of the facility's compliance with Subpart DDDDD was discussed.

Regarding the initial notification requirements for the regulation, per correspondence dated May 21, 2013, Consumers provided US EPA and DEQ (now EGLE)-AQD with the Initial Notification of Applicability for Subpart DDDDD for all of their facilities in Michigan having equipment that was determined to be subject to the regulation, including the Northville Station. This notification identified three natural gas fired pipeline heaters, EULINEHEATER1, EULINEHEATER2 and EULINEHEATER3, and the natural gas-fired fuel gas heater identified as EUFUELHEATER1, as being subject to Subpart DDDDD. In addition, in correspondence dated October 9, 2014, Consumers Energy notified US EPA and DEQ (EGLE)-AQD that the heater identified as EUFUELHEATER1, which was a 750,000 BTU/hour rated unit, was replaced by a 250,000 BTU/hour rated natural gas-fired boiler. The October 9 correspondence also included the Initial Applicability Notification, in accordance with 40 CFR 63.9.

Consumers submitted the Notification of Compliance Status (NOCS), in accordance with 40 CFR 63.7550. This notice includes EUFUELHEATER1 and EULINEHEATER3 as the Subpart DDDDD subject equipment at the Northville Station. As previously mentioned, EULINEHEATER3 has been replaced with a new unit; EUFUELHEATER1 was replaced in July 2014 with a smaller unit rated at 250,000 BTU/hour; and EULINEHEATER1 and 2 were removed from service.

The one-time energy assessment required by 63.7530(e) was completed. The on-site portion was conducted on August 19, 2015, and the final written report was issued on January 15, 2016. The January 27, 2017 NOCS also includes a statement that the energy assessment was performed according to 63.7530(e). Amy also provided that the initial tune-ups were completed. The tune-ups are required of all boilers and process heaters that are covered by Subpart DDDDD, and they are to be performed according to the procedures in 63.7540(a)(10)(i) through (vi). The initial tune-up on EUFUELHEATER1 was conducted on January 6, 2016. Consumers submitted the Major Source Boiler – 5 Year Compliance Report (as required in 40 CFR 63.7550(b) and SC VII.5), and that report provided that the most recent tune-up on EUFUEHEATER1 was conducted on February 5, 2021. For

EULINEHEATER3, the initial compliance date is October 18, 2020, and a tune-up is required within 5 years of that date.

Amy provided me with a spreadsheet the summarizes the Industrial Boiler MACT Applicability for the Northville Station. The spreadsheet, which is attached to this report for reference, lists all of the boilers, process heaters, hot water heaters, and comfort/space heaters at the facility. EUFUELHEATER1 and EULINEHEATER3 are the only two pieces of equipment at the Northville Station that are currently listed as subject to Subpart DDDDD. The spreadsheet includes the maximum rate heat input capacity of the equipment, the installation date, whether the equipment is subject to Subpart DDDDD, which aspects of the regulation apply, and dates for tune ups, energy assessments, and notice/report submittals. To this point, Consumers Energy looks to be **in compliance** with the requirements of 40 CFR Part 63 Subpart DDDDD.

Federal Regulations

As discussed earlier in this report, the new emergency engine designated by the facility as EUEMERGEN is subject to requirements in 40 CFR Part 60 Subpart JJJJ, and the equipment in the FGPROCESSHTRS Flexible Group is subject to requirements of 40 CFR Part 63, Subpart DDDDD.

The Northville Station facility is not subject to **40 CFR Part 63, Subpart HHH (National Emission Standards for Hazardous Air Pollutants for Natural Gas Transmission and Storage Facilities)** as the facility does not operate any glycol dehydrators. This is due to the natural gas in the storage fields being of pipeline quality, with moisture having been removed prior to the gas being stored in the storage fields.

Compliance Determination

Based upon the results of the October 27, 2020 site visit and subsequent records review, the Consumers Energy Northville Compressor Station appears to be in compliance with the terms and conditions of the facility's Renewable Operating Permit, as well as applicable State and Federal regulations.

Attachments to this report: a map of the Consumers Energy service area; a summary of the ROP and permit exempt equipment at the Northville Station; a picture that was taken of the fuel supply flow meter for the emergency engine that was being tested at the time of the site visit; a copy of the email that was sent by Consumers in response to my information request; the attachments from the email that Consumers sent that includes the natural gas usage for FGENGINES, cold cleaner work order forms for 2020; and a spreadsheet that summarizes the heaters in FGPROCESSHTRS that includes information relating to 40 CFR Part 63 Subpart DDDDD

NAME _____ DATE 9/17/24 SUPERVISOR JK