

K1271
MAWILA

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

K127145329

FACILITY: HENRY FORD HOSPITAL		SRN / ID: K1271
LOCATION: 2799 W GRAND BLVD, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: Dan Murakami , Director, Plant Operations		ACTIVITY DATE: 07/26/2018
STAFF: Stephen Weis	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Compliance inspection of the Henry Ford Hospital facility in Detroit. The Henry Ford facility is scheduled for inspection in FY 2018.		
RESOLVED COMPLAINTS:		

Location:

Henry Ford Hospital
(SRN K1271)
2799 West Grand Boulevard
Detroit 48202

Date of Activity:

Thursday, July 26, 2018

Personnel Present:

Steve Weis, DEQ-AQD Detroit Office
Dan Murakami, Director, Plant Operations, Henry Ford Hospital
Larry Jaskowski, Plant Operations, Henry Ford Hospital
Charles Barker, facility consultant, Hands & Associates, Inc.

Purpose of Activity

A self-initiated inspection of the Henry Ford Hospital facility (hereinafter "Henry Ford" or "Hospital") located at 2799 West Grand Boulevard in Detroit was conducted on Thursday, July 26, 2018. The Henry Ford facility was on my list of sources targeted for an inspection during FY 2018. The purpose of this inspection was to determine compliance of operations at the Henry Ford facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), and with applicable Federal standards. The facility is also subject to the terms and conditions of Renewable Operating Permit (ROP) No. MI-ROP-K1271-2012, as well as two Permits to Install (PTI) that were issued in the time since the ROP became effective, PTI Nos. 179-14 and 224-15.

Facility Site Description

The Henry Ford facility on West Grand Boulevard is the original hospital in the Henry Ford Health System. According to the Health System website, the Hospital was founded in 1915 by auto pioneer Henry Ford. The Henry Ford facility is a medical care facility, currently licensed for 803 beds, as well as a medical education and research complex. The Hospital facility is located on approximately 38 acres of land that is bounded by West Grand Boulevard to the south, Pallister Avenue to the north, the John C. Lodge Freeway/southbound Lodge Service Drive to the east, and Poe Avenue to the west. The area around the Henry Ford facility consists of residential and commercial properties. There are residences located in all directions from the facility, with some located as close as the other side of the facility's bordering streets.

The Henry Ford facility currently consists of 15 buildings, which contain 3.22 million gross square feet of space; this includes all of the floors of the buildings, and the facility's parking garage. The last additions of buildings at the facility involved the construction of the West Pavilion Building in 1998, and the addition of two floors in 2008. Henry Ford is in the midst of constructing a new building on the south side of West Grand Boulevard, directly across the street from the main hospital building, that will eventually be the Brigitte Harris Cancer Pavilion. The building will be a six story structure with 187,000 square feet of building space when complete.

From an air quality regulatory perspective, all of the buildings and associated operations at the site constitute the Henry Ford Hospital stationary source, which has been assigned the DEQ-AQD State Registration Number (SRN) K1271.

Facility Operations

As mentioned in the last section of this report, the Henry Ford facility is a medical care facility and a medical education and research complex that operates 24 hours per day, 7 days per week. The facility also includes various processes and associated equipment that function to support hospital operations. These processes include equipment that provides steam and backup electrical power to the Hospital, as well an ethylene oxide sterilizer to sterilize medical equipment.

I was told during my last site visit to Henry Ford in August 2016 that the facility receives electrical power from DTE Energy via two utility feeds that split into six 48 volt lines to feed the facility. Henry Ford currently has nine emergency back-up engine generators at the facility to ensure that the Hospital can function in the case of an interruption of electrical power from the utility.

Henry Ford also operates boilers that supply steam to the facility. The facility used to be connected to and receive steam from the Detroit Thermal steam system, but they constructed a powerhouse that was completed and operational in 2008 to generate their own steam on site. I was told that there are a couple of buildings on site that still utilize Detroit Thermal for back up steam needs. The powerhouse includes three boilers that are capable of producing 70,000 pounds of steam per hour. The boilers are natural gas-fired, with fuel oil backup. The hospital is required by governing bodies that oversee hospitals to have a backup fuel source to assure that hospital operations are not interrupted.

The Plant Operations Department staffs the powerhouse on a 24 hour per day, 7 days per week basis. There are currently approximately 80 staff in Plant Operations.

From an air quality perspective, the process equipment that is identified in the Henry Ford facility's ROP, in their ROP renewal application and included in the active PTIs includes the following:

- An ethylene oxide sterilizer, designated in the ROP as EUTOSTER1. The unit is an AMSCO Model 3017 unit, and it is located on the 5th floor of the main building.
- EUWPAVGEN8 – a diesel-fired emergency generator rated at 1,500 kW that is located adjacent to the West Pavilion. This generator is identified at the facility as Generator number 8.
- EUBUNITGEN – a diesel-fired generator rated at 300 kW located at the B Unit. This generator is identified at the facility as Generator number 9.
- EUENGINE10 – Engine 10 is rated at 750 kW, and it has a maximum heat input capacity of 7 MMBTU/hour.
- EUENGINE12A – This diesel-fired generator is rated at 2,000 kW, and it has a maximum heat input capacity of 20 MMBTU/hour.
- EUENGINE15 – The engine is described in PTI No. 179-14 as a 1,474 bhp diesel-fueled engine driving a 1,000 kW emergency generator. This unit is located on the roof of the E&R (Education and Research) Building.
- EUENGINE16 – This engine is a 2,000 kW diesel-fueled emergency generator that is located at the West Clinic Building.
- EUENGINE17 – This engine is a 500 kW diesel-fueled emergency generator that is located at the guest apartment building.
- EUBOILER4, EUBOILER5 and EUBOILER6 - Three Nebraska boilers, each having a maximum rated heat input capacity of 88.4 MMBTU/hour. These boilers are capable of firing natural gas and diesel fuel. They make up the FGBOILERS Flexible Group.

There are also a few additional generators and a couple of natural gas-fired boilers at the facility. All of them are small enough in terms of maximum rated heat input capacity to be exempt from DEQ-AQD permitting

requirements, and they are old enough in terms of their date of manufacture and/or installation so as not to be subject to Federal regulations.

Inspection Narrative

I arrived at the facility at 9:55am. I entered the Hospital's main lobby and proceeded to Dan Murakami's office in the lower level of the main building. Dan met me, and we proceeded to a conference room in the building operations area adjacent to his office. We were met by Charles Barker and Larry Jaskowski.

I briefly explained the purpose of my visit, which was to discuss the permits that are currently in place to regulate air emissions at the Hospital; I wanted to review all of the applicable permit conditions, check how the facility staff demonstrates compliance with the permit conditions, and determine whether the Henry Ford facility is complying with applicable permit requirements and regulations. Since the facility has submitted the renewal application for their ROP, I also brought the mark-up version of the ROP along to review the information presented in the application.

I received some background regarding the Henry Ford facility. We discussed the powerhouse that began operation in 2008, and the types of equipment used to provide steam and back-up power to the Hospital. Dan described how the Hospital is required to maintain a backup fuel for the boilers to assure that hospital operations are maintained in case of an interruption in one type of fuel. Dan described how this requirement is put forth by the Joint Commission, which is the oldest and largest standards setting and accrediting body in health care in the United States, as well as the Centers for Medicare and Medicaid Services. Dan told me that the boilers are run on fuel oil once each calendar quarter for preventative maintenance checks.

While on the topic of fuel oil, we discussed the diesel fuel used at the facility in the boilers and in the emergency generators. Henry Ford staff provided me with information that serves as examples of the type of information that is provided to them with each fuel oil delivery. They receive information related to the sulfur content, and all of the fuel oil used at the facility is classified as ultra low sulfur diesel.

We discussed how fuel usage is tracked at the facility. Larry is given the fuel usage from staff in the boiler complex, and he uses this information to tabulate monthly fuel usage records. I was provided printouts of the June 2018 fuel usage information, including an e-mail message that was sent to Larry that provides the natural gas and fuel oil usage. A copy of this information is attached to this report.

We discussed the new Brigitte Harris Cancer Pavilion that is under construction. I was told that the current plan for the building is to provide heating and cooling via rooftop HVAC units. Facility staff said that they would contact DEQ-AQD if plans change and any fuel combustion sources or other emission units are installed in the new building.

Next, we discussed the operation of the ethylene oxide (EtO) sterilizer. I was provided with a copy of the June 2018 recordkeeping form for the sterilizer, titled "Air Permit Monitoring Form: EtO Sterilizer". The records show the days of the month that the sterilizer operates, and the amount of ethylene oxide used in each cycle. A copy of the recordkeeping form for June 2018 is attached to this report. The operation of the sterilizer was described. I was told that the sterilizer is equipped with an interlock system that prevents the unit from working if its catalytic oxidizer is not operating according to manufacturer's specifications. Laboratory staff that operate the unit track the usage of the sterilizer, monitoring each running cycle. Each sterilizer cycle lasts 12 hours, including a 1.5 hour exhaust cycle. 100% EtO is used, and one pre-filled cartridge of EtO is used per cycle.

We discussed all of the Emission Unit and Flexible Group tables in the ROP, and we discussed the facility's compliance status with the conditions of the permit. We also went through the facility's compliance status regarding the two Permits to Install (PTI) that address engines 15 and 16. I was shown various records to demonstrate compliance with some of the permit conditions, while others involved a discussion about things such as facility operating and maintenance procedures. We walked over and looked at a white board in a corner of the conference room that includes pictures of the facility, a plan view of the facility with all of the buildings and emission unit locations noted, and a table that lists all of the generators on site, along with their respective maximum fuel usage rates.

After some closing discussion and a review of action items, I left the facility at around 12 noon.

Permits/Regulations/Orders/Other

Permits

The Henry Ford facility currently has a ROP and two active DEQ-AQD Permits to Install (PTI). The ROP renewal application for the facility was submitted on April 12, 2017. The following is a summary of the facility's compliance with each of these permits.

ROP No. MI-ROP-K1271-2012

This ROP was issued to the Henry Ford facility with an effective date of November 27, 2012. The following paragraphs provide a description of the facility's compliance with the terms and conditions put forth by the ROP, with the headings representing the sections of the ROP.

Source-Wide Conditions

There are no Source-Wide Conditions associated with this permit.

EUENGINE12A

This Emission Unit addresses a diesel fired reciprocating engine generator with a nameplate capacity of 2,000 kW. This generator is located in the power plant. According to the generator information on the white board, this engine has a maximum fuel consumption rate of 140 gallons per hour.

I. Emission Limits

The permit includes emission limits for NO_x, CO, PM and HC; these emission limits are found in 40 CFR Part 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines).

Henry Ford submitted a document titled "Response to March 2015 information request for Henry Ford Hospital Permit # MI-ROP-K1271-2012"; this document was drafted and submitted in response to an information request after a site visit in 2015. The document includes a copy of an Exhaust Emission Data Sheet for this model of engine, as drafted by the engine manufacturer, Cummins. The Data Sheet includes exhaust emission data that indicates that emissions of NO_x, CO, PM and HC are certified to be below the permitted limits, thus **in compliance**.

II. Material Limits

The facility is **in compliance** with conditions II.1 and 2. As mentioned previously in this report, the facility keep records of the fuel receipts for deliveries of fuel to the facility. The facility uses ultra-low sulfur diesel fuel.

III. Process/Operational Restrictions

The facility is **in compliance** with conditions III.1 through 5. The facility maintains an Annual Generator Maintenance form and procedure to ensure that maintenance tasks are performed on each generator at the site, and no changes have been made to the recommended operating and maintenance procedures, in compliance with conditions III.1, 2 and 4. A copy of the form is included in the "Response to March 2015 information request" document. The facility tracks the hours of operation of this unit, which are well below the allowed hours of operation. I was provided with a copy of the engine usage records for June 2018, and I was shown that the 12 month sum of operating hours is below the permitted limit. The nameplate capacity of the unit is 2,000 kW.

VI. Monitoring/Recordkeeping

Compliance with the special conditions in this section was demonstrated during the site visit. The engine is equipped with a non-resettable hour meter (VI.1); a diesel particulate filter is not currently being used, so the provisions of the condition are not applicable (VI.2); the hours of operation are logged (VI.3); records of engine certification and other information from the manufacturer is kept on file, with a copy being included in the "Response to March 2015 information request" (VI.4); fuel records are kept that include information relating to sulfur content, examples of which are attached to this report (VI.5).

VII. Reporting

The facility has submitted all required certification and deviation reports. **Compliance**.

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission units were permitted.

IX. Other Requirements

The facility appears to be **in compliance** with the applicable provisions of 40 CFR Part 60 Subpart IIII.

EUTOSTER1

This Emission Unit references an AMSCO Model 3017 ethylene oxide sterilizer that utilizes a catalytic oxidizer for emissions control.

I. Emission Limits

The permit includes emission limits for ethylene oxide (EtO) and hydrochlorofluorocarbons (HCFC). According to facility records, the sterilizer only uses 100% pure EtO, so HCFC emissions are not evaluated as there will not be any emissions of this compound.

I was told that the usage of and emissions from the sterilizer are tracked by the operating staff on the 5th floor. I was provided with a recordkeeping form for June 2018 that shows the days that the sterilizer unit was used, the amount in pounds of EtO used per cycle and per day, and the total EtO emissions for the month. I was told during the site visit that each sterilizer cycle lasts 12 hours, including a 1.5 hour exhaust cycle. 100% EtO is used, and one pre-filled cartridge of EtO is used per cycle. Given the expected control efficiency of the catalytic oxidizer, the EtO emissions are below permitted limits.

An estimate of the hourly emission rate is based on the amount of EtO that is used per cycle (0.22 lbs.), the length of a sterilizer exhaust cycle (1.5 hours), and the EtO control efficiency of the oxidizer. These inputs result in an hourly EtO emission estimate of 0.00014 lbs/hour for the typical sterilizer run cycle, and that usage of the sterilizer is consistent from year to year. The facility has demonstrated **compliance** with the emission limits.

II. Material Limits

The records provided by the facility demonstrate compliance with the EtO usage limits in conditions II.1 and 2. The facility states that HCFC is not used in this process.

III. Process/Operational Restrictions

III.1 – **Compliance.** I was told that the sterilizer is equipped with an interlock that does not allow the sterilizer unit to operate if the catalytic oxidizer is not working, or if the oxidizer is not up to temperature. The facility maintains the manufacturer's specifications that state that the control efficiency of the oxidizer is 99.9%.

III.2 – **Compliance.** The unit operates as a closed loop, and I was told that the access/charge doors cannot be opened while the sterilizer is operating. I was told that at the end of the run cycle, EtO is drawn from the chamber and vented to the catalytic oxidizer. According to the "Response to March 2015 information request" document, there is no wastewater discharge from the sterilizer unit.

III.3 – **Compliance.** Henry Ford uses 100% EtO in the sterilizer unit. The EtO comes in individual, pre-filled cartridges. One cartridge is used per operating cycle, and the EtO enters the unit in a closed loop.

IV. Design/Equipment Parameters

The facility is **in compliance** with conditions 1 and 2. Per the specification sheet for the sterilizer, the capacity of the unit is 4.8 cubic feet. As previously mentioned, per the manufacturer's specification sheet, the catalytic oxidizer has a stated control efficiency of at least 99.9%.

V. Testing/Sampling

The testing condition states that testing will be conducted if requested by DEQ-AQD. To this point in time, DEQ-AQD has not requested a compliance test for this emission unit.

VI. Monitoring/Recordkeeping

Compliance with the special conditions in this section was demonstrated during the site visit, and is also based on information found in the previously-referenced "Response to March 2015 information request" document. The facility maintains records EtO usage (VI.1), as well as calculations of emissions (VI.2), as demonstrated in the attached records for June 2018. For VI.4 and 5, facility staff stated that there have not been any malfunctions to report, and that no new installations of equipment have occurred. The facility maintains a document titled "Detailed Equipment History Report" that includes a section for the sterilizers that details any malfunctions, and any maintenance that is performed on the sterilizer unit. This information is maintained by the staff that operate the sterilizer unit. The facility maintains operating records (VI.6). Regarding condition VI.3, the facility is required to maintain a copy of the manufacturer's specifications on site, which is done, and they are required to "... monitor an operating parameter of the control device...which assures at least 99.9% reduction of ethylene oxide." The condition goes on to state that, for processes controlled by a catalytic oxidizer, the oxidation temperature at the outlet to the catalyst bed should be continuously monitored. In the "Response to March 2015 information request" document, it is stated that DEQ-AQD's EtO General Permit "...changed the format of the special conditions and removed the temperature recording requirement for catalytic oxidizers." The document goes on to state that "Most catalytic oxidizers monitor the catalyst bed temperature and prevent operation or further introduction of EtO if the operating temperature is too low." Facility staff described the interlock system that does not allow the sterilizer to operate if the oxidizer is not functioning properly, which includes not allowing the sterilizer unit to operate if the catalytic oxidizer is not at a proper operating temperature. Thus, a temperature parameter associated with the oxidizer is being monitored.

VII. Reporting

The facility submitted all required certification and deviation reports. **Compliance.**

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission units were permitted

IX. Other Requirements

I was told that the facility is meeting the requirement that the stack discharge be located a minimum of 25 feet from any window, air intake vent, or any location accessible by the general public. I was told during my last site visit in August 2016 that the ambient discharge for the sterilizer unit is at the 19th floor of the Clinic Building, and that the closest building air intakes are located at the 17th and 5th floors, on the opposite side of the building. This information was verified during this site visit. The facility appears to be **in compliance** with this requirement.

EUWPAVGEN8

This Emission Unit references the West Pavilion Emergency Diesel Generator identified as HFHS No. 8. Based on the information on the white board, this generator has a maximum fuel consumption rate of 105 gallons per hour.

I. Emission Limits

The permit includes an emission limit for SO₂ of 0.33 lb/MMBTU heat input. There is no compliance testing requirement associated with this limit in the ROP, and the monitoring method is a limit on the sulfur in fuel. The facility uses ultra-low sulfur diesel in their combustion equipment, which is compliant with the sulfur in fuel limit of condition II.1, which, for the purposes of this permit, is **compliant** with the emission limit.

II. Material Limits

The facility is **in compliance** with conditions II.1 and 2. The facility uses ultra-low sulfur fuel in their combustion equipment, and they keep records of the fuel analyses for each load of fuel delivered (II.1). The facility tracks fuel usage in their combustion equipment. The fuel usage in this generator is well below permitted levels. I was told by Dan that the entire Henry Ford facility has not used the permitted limit of 58,500 gallons allowed for EUWPAVGEN8 in the last 5 years combined.

III. Process/Operational Restrictions

The facility is **in compliance** with conditions 1 and 2. The facility tracks fuel usage and keeps a log of the hours of operation of the generator (III.1), and this same log also contains a check off box to indicate how many hours of use are for maintenance/readiness checks.

VI. Monitoring/Recordkeeping

The facility is **in compliance** with condition VI.1, as they keep records of the sulfur content of the diesel fuel used in the engine.

VII. Reporting

The facility submitted all required certification and deviation reports. **Compliance.**

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission units were permitted.

EUBUNITGEN

This Emission Unit references the Emergency Diesel Generator at B Unit that is identified as HFHS No. 9. This generator is identified on the white board as having a maximum fuel usage rate of 22.9 gallons per hour.

I. Emission Limits

The permit includes emission limits for NO_x and SO₂. The ROP does not include specific compliance testing requirements for these emission limits, instead linking the compliance demonstration for these limits to fuel specifications and content and hours of operation of the engine. In addition, the "Response to March 2015 information request" document includes manufacturer's specification sheets for the engine that lists NO_x lb/hour emissions for various operating loads, all of which are lower than the permitted emission rate of 13.8 lb/hour of NO_x. For the purposes of this permit, the facility appears to be **in compliance** with permitted limits.

II. Material Limits

The facility is **in compliance** with conditions II.1 and 2. Records are kept of the fuel receipts for deliveries of fuel to the facility. The facility uses ultra-low sulfur diesel fuel.

III. Process/Operational Restrictions

The facility is **in compliance**, as operating hours for this engine are tracked and logged.

VI. Monitoring/Recordkeeping

The facility is **in compliance** with condition VI.1, as they keep records of the sulfur content of the diesel fuel used in the engine.

VII. Reporting

The facility submitted all required certification and deviation reports. **Compliance.**

EUCLVBOILER

This Emission Unit references the operation of a Cleaver Brooks natural gas-fired boiler, rated at 16.3 MMBTU/hour. This unit was permanently shut down and removed from the facility in April of 2013. This Emission Unit is marked to be removed in the facility's ROP renewal application.

FGPEAKSHAVERS

This Flexible Group references three GSPS diesel-fired electrical generators rated at 500 kW. These three units were permanently taken out of service in April of 2013. This Flexible Group is marked to be removed in the facility's ROP renewal application.

FGENGINES

In the current ROP, this Flexible Group includes the emission units designated as EUENGINE9, EUENGINE10, EUENGINE11, EUENGINE12A, EUENGINE12B and EUENGINE14. Only EUENGINE10 and EUENGINE12A remain in service; the other engines are no longer in operation, and they have been marked to be removed in the ROP renewal application.

I. Emission Limits

The permit includes an emission limit for NOx from these engines. The facility keeps a log of the usage of these engines that includes the hours that they are used, and the resulting pounds of NOx emissions per month. I was provided with a copy of the monthly log for June 2018, and shown the 12 month total NOx emissions. The facility is **in compliance**.

II. Material Limits

There are no material limits/restrictions in this permit.

III. Process/Operational Restrictions

The facility is **in compliance**, as they track and log operating hours for all of these engines, and the usage is below the permitted limits.

VI. Monitoring/Recordkeeping

The facility is **in compliance** with conditions VI.1 through 4; a log is kept of hours of operation for all of the individual engines, and resultant NOx emissions are calculated and logged on a monthly and 12 month basis.

VII. Reporting

The facility submitted all required certification and deviation reports. **Compliance**.

FGENGINES9-10-11

This Flexible Group includes the emission units designated as EUENGINE9, EUENGINE10 and EUENGINE11, and the permit/regulatory requirements specific to this equipment. EUENGINE9 and EUENGINE11 are no longer in operation. The ROP renewal application proposes removing these engines, placing the permit requirements in EUENGINE10, and deleting this Flexible Group.

I. Emission Limits

The Flexible Group does not include emission limits for these engines.

II. Material Limits

Compliance. Condition II.1 limits the sulfur content of the diesel fuel that is combusted in these engines. The facility uses ultra-low sulfur diesel fuel, which has a sulfur content of 15ppm.

III. Process/Operational Restrictions

The facility is **in compliance** with conditions III.1 through 6. The facility maintains the manufacturer's written instructions for the engines on site, and they adhere to operating and preventative maintenance procedures in accordance with the manufacturer's guidelines (III.1 and 3). The facility maintains a log of the operating hours of each of the engines (III.2). The facility states that the nameplate capacity of the engines is as specified in conditions II.4 through 6.

VI. Monitoring/Recordkeeping

The facility is **in compliance** with the special conditions in this section. The engines are equipped with non-resettable hour meters (VI.1), the hours of operation of the engines is logged and recorded (VI.2), and the Hospital maintains records of the sulfur content of the fuel used at the facility (VI.3).

VII. Reporting

The facility submitted all required certification and deviation reports. **Compliance**.

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission units were permitted.

FGENGINES12B&14

This Flexible Group includes the emission units designated as EUENGINE12B and EUENGINE14. According to Henry Ford, these two engines were never installed, and not even purchased. There are no plans to install this equipment. The ROP renewal application has these engines and the Flexible Group marked for removal.

FGBOILERS

This Flexible Group includes three Nebraska boilers that can fire natural gas and No.2 fuel oil, and they are each rated at 88.4 MMBTU/hour. These boilers are designated in the ROP as EUBOILER4, EUBOILER5 and EUBOILER6, but they are designated by Henry Ford as boilers 1, 2 and 4 respectively.

I. Emission Limits

The permit includes an emission limit for NO_x from the three boilers. The facility keeps a log of the usage of the boilers that includes the amount of natural gas and fuel oil used by the boilers, and a calculation of the resulting NO_x emissions. The most recent MAERS report shows 20 tons of NO_x emitted in 2015, using the MAERS emission factor of 100 lbs/MM cubic feet of natural gas combusted. Performing the calculation using the emission factor that appears in the footnote to this permit condition (which states that "...the NO_x limit is based on an emission factor of 0.107 pounds of NO_x per MMBTU of fuel oil used and 0.039 pounds of NO_x per MMBTU of natural gas used) results in a NO_x emission estimate of 8.2 tons for 2015. These estimates are below the permitted limit of 35.4 tons per year in condition I.1. **Compliance.**

Condition I.2 puts forth a visible emissions limit of 20% when the boilers fire fuel oil. I was told that the boilers are fired once per calendar quarter on fuel oil for about half of the run time on that day. Charles showed me the visible emission readings that are taken during these periods of fuel oil firing.

II. Material Limits

The facility is **in compliance** with conditions II.1 through 3. As mentioned previously in this report, the facility uses ultra-low sulfur fuel (II.1). Fuel usage is logged and tracked. The most recent MAERS report shows that 401 MMCF of natural gas were used in 2015 (vs. the permit limit of 1,515.48 MMCF), while 1,000 gallons of fuel oil were used (vs. the permit limit of 1,234,000 gallons per year. The boilers are run briefly each month on fuel oil for testing purposes; natural gas is the primary fuel used in the equipment. Charles demonstrated that there is a trigger point in the fuel recordkeeping system that is based on the fuel usage limits such that the facility is notified if they approach the monthly prorated limit. For example, the trigger for monthly natural gas usage is 126 MMCF, which is roughly 1/12 of the annual natural gas usage limit. The reported June natural gas usage is just under 39 MMCF.

VI. Monitoring/Recordkeeping

The facility is **in compliance** with the special conditions in this section. Henry Ford logs and records the amount of fuel used in the boilers on a monthly basis (VI.1 and 3); calculations of the NO_x emissions from the use of the boilers is logged and tracked (VI.2); the facility maintains fuel oil certifications for each load of fuel that is delivered to the facility (VI.4).

VII. Reporting

The facility submitted all required certification and deviation reports. **Compliance.**

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission units were permitted.

This permit addresses the installation and operation of a Caterpillar engine designated as EUENGINE15. The engine is described as a 1,474 bhp diesel-fueled engine driving a 1,000 kW emergency generator. The engine is a 2014 model year with a displacement of 2.7 liters per cylinder.

The following provides a description of Henry Ford's compliance with the Special Conditions put forth by Permit to Install No. 179-14.

I. Emission Limits

The permit includes emission limits for NMHC + NO_x, CO and PM. These limits are found in 40 CFR Part 60, Subpart IIII. There is no specific compliance testing requirement for the engine. The permit review notes for the PTI, as drafted by DEQ-AQD Permit Unit staff, state that the engine is EPA certified for emergency use. According to information in the permit application, the engine is EPA Certified for Stationary Emergency Application to EPA Tier 2 emissions levels. This serves to demonstrate **compliance** with the emission requirements of Subpart IIII.

II. Material Limits

As mentioned earlier in this report, Henry Ford uses ultra-low sulfur fuel in their combustion equipment, including EUENGINE15. The facility is **in compliance** with condition II.1.

III. Process/Operational Restrictions

The facility is **in compliance** with conditions III.1 through 4. The facility logs the hours of operation of the engine, and they are checked against the hour limits in the permit, and in Subpart IIII (III.1 and 2). The facility reported using this engine for 0.8 hours in June 2018. Henry Ford states that the manufacturer's operating instructions for this engine are checked and maintained as part of the facility's generator maintenance program (III.3). The engine has not operated in a non-certified manner (III.4).

IV. Design/Equipment Parameters

The engine is equipped with a non-resettable hour meter (**in compliance** with IV.1), and according to the facility, it is not exceeding the listed nameplate capacity (IV.2).

V. Testing/Sampling

This section requires that an initial performance test be conducted within one year of startup of the engine unless the engines have been certified by the manufacturer. These engines are certified, so the test should not be required. **Compliance.**

VI. Monitoring/Recordkeeping

The facility is **in compliance** with the special conditions (VI.1 through 5) in this section. Required records, such as the manufacturer information and certification (VI.2), hours of operation of the engine (VI.4), and fuel certification records (VI.5), are being kept. Records are kept of the hours of operation of the engine for emergency and non-emergency (i.e. readiness checks) purposes (VI.3).

VII. Reporting

The facility submitted all required certifications and notifications. The notifications were submitted via correspondence dated June 28, 2015. **Compliance.**

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission unit was permitted.

IX. Other Requirements

The facility appears to be **complying** with the applicable provisions of 40 CFR Part 60 Subpart IIII and 40 CFR Part 63 Subpart ZZZZ.

Permit to Install No. 224-15

This permit addresses the installation and operation of an engine designated as EUENGINE16. The engine is described as a 2,937 bhp diesel-fueled engine driving a 2,000 kW emergency generator. The engine is a 2015 model year with a displacement of 4.31 liters per cylinder.

Based on the permit review, the engine is a certified engine, so it should be compliant with the emission limits in this permit. The following provides a description of Henry Ford's compliance with the Special Conditions put forth by Permit to Install No. 224-15.

I. Emission Limits

The permit includes emission limits for NO_x, CO, PM and VOC. These limits are found in 40 CFR Part 60, Subpart IIII. The permit review notes for the PTI, as drafted by DEQ-AQD Permit Unit staff, state that the engine is EPA certified for emergency use. The PTI application includes information about the engine, including specification sheets and emissions information. The emissions information presented for this certified engine is less than the permitted/regulatory amount for each of the pollutants – 5.45 g/hp-hour (certified) vs. 6.54 (permit limit) for NO_x, 0.3 vs. 0.54 for CO, 0.025 vs. 0.04 for PM and 0.11 vs 0.15 for VOC. This serves to demonstrate **compliance** with the emission requirements of Subpart IIII.

II. Material Limits

The facility is **in compliance** with condition II.1, as Henry Ford uses ultra-low sulfur diesel fuel in their combustion equipment.

III. Process/Operational Restrictions

The facility is **in compliance** with conditions III.1 through 4. The facility logs the hours of operation of the engine, and they are checked against the hour limits in the permit, and in Subpart IIII (III.1 and 2). The facility reported using this engine for 0.8 hours in June 2018 (the same amount of time that EUENGINE15 ran that month). Henry Ford states that the manufacturer's operating instructions for this engine are checked and maintained as part of the facility's generator maintenance program (III.3). The engine has not operated in a non-certified manner (III.4).

IV. Design/Equipment Parameters

The engine is equipped with a non-resettable hour meter (**in compliance** with IV.1), and according to the facility, it is not exceeding the listed nameplate capacity (IV.2).

V. Testing/Sampling

This section requires that an initial performance test be conducted within one year of startup of the engine unless the engines have been certified by the manufacturer. These engines are certified, so the test is not required. **Compliance.**

VI. Monitoring/Recordkeeping

The facility is **in compliance** with the special conditions (VI.1 through 5) in this section. Required records, such as the manufacturer information and certification (VI.2), hours of operation of the engine (VI.4), and fuel certification records (VI.5), are being kept. Records are kept of the hours of operation of the engine for emergency and non-emergency (i.e. readiness checks) purposes (VI.3).

VII. Reporting

The facility submitted all required certifications and notifications. The notifications were submitted via correspondence dated September 28, 2016. **Compliance.**

VIII. Stack/Vent Restrictions

The stack parameters were not verified during this site visit. There has been no indication that these parameters have changed since the emission unit was permitted.

IX. Other Requirements

The facility appears to be **complying** with the applicable provisions of 40 CFR Part 60 Subpart IIII and 40 CFR Part 63 Subpart ZZZZ.

Compliance Determination

Based upon the results of the July 26, 2018 site visit and review of the facility's compliance records, the Henry Ford Hospital facility in Detroit appears to be **in compliance** with applicable rules and regulations, including with the terms and conditions of ROP No. MI-ROP-K1271-2012, and Permit to Install Nos. 179-14 and 224-15.

Attachments to report: print outs from fuel deliveries to the facility demonstrating how the location that the fuel is dispersed to is tracked, and that the sulfur content is tracked; the recordkeeping form for the EtO sterilizer, including usage and emission records. from June 2018; the facility's Emission Tracking Input records from June 2018 of the usage of fuel combustion equipment showing the recorded hours of operation of the generators and the natural gas usage in the boilers.

NAME Atul Wels DATE 8/27/18 SUPERVISOR JK