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

P014439409

FACILITY: Jackson National Life		SRN / ID: P0144
LOCATION: 2005 Seager St, LANSING		DISTRICT: Lansing
CITY: LANSING		COUNTY: INGHAM
CONTACT: Vince Vilona , Director, Facilities Management		ACTIVITY DATE: 04/17/2017
STAFF: Daniel McGeen	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Inspection of four diesel fuel-fired generators at insurance company building.		
RESOLVED COMPLAINTS:		

On 4/17/2017, the Michigan Department of Environmental Quality (DEQ), Air Quality Division (AQD), conducted an inspection of four diesel fuel-fired generators, located at a Jackson National Life building. The purpose was to check compliance with their air use permit, and applicable state and federal regulations.

Environmental contact:

Vince Vilona, Director; Facilities Management; 517-367-3886; vince.vilona@jackson.com

Facility description:

This location is an insurance company building, with 4 diesel fuel-fired generators.

Emission units:

Emission unit* ID	Emission unit description	Installation or modification date	Permit to Install (PTI) No. or Rule	Federal rules	Compliance status
EU-ENGINE1	A 2,000 KW diesel-fueled generator manufactured in August 2010, exhausting via stack SV-ENGINE1.	10/12/2010	PTI No. 209-15	40 CFR Part 60, Subpart IIII, 40 CFR Part 63, Subpart ZZZZ	Compliance
EU-ENGINE2	A 2,000 KW diesel-fueled generator manufactured in August 2010, exhausting via stack SV-ENGINE2.	10/12/2010	PTI No. 209-15	40 CFR Part 60, Subpart IIII,	Compliance
EUENGINE3	A 2,000 KW generator set powered by a 2,190 KW diesel-fueled engine with a model year of 2015, and a displacement of 4.3 liters/cylinder.	NSPS notification date:	PTI No. 209-15	40 CFR Part 63, Subpart ZZZZ	Compliance
EUENGINE4	A 2,000 KW generator set powered by a 2,190 KW diesel-fueled engine with a model year of 2015, and a displacement of 4.3 liters/cylinder.	NSPS notification date:	PTI No. 209-15	40 CFR Part 60, Subpart IIII,	Compliance

***An emission unit is any part of a stationary source which emits or has the potential to emit an air contaminant.**

Flexible group summary table:

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-GENERATORS	Two diesel-fueled Generators.	EU-ENGINE1, EU-ENGINE2
FGGENERATORS2	Two 2,000 KW generator sets that are each powered by a 2,190 KW diesel fueled engine.	EUENGINE3, EUENGINE4

Regulatory overview:

This facility is considered to be a true minor source, rather than a major source of air emissions. A *major source* has the potential to emit (PTE) of 100 tons per year (TPY) or more, of one of the criteria pollutants. *Criteria pollutants* are those for which a National Ambient Air Quality Standard exists, and include carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide, volatile organic compounds (VOCs), lead, particulate matter smaller than 10 microns, and particulate matter smaller than 2.5 microns.

It is also considered a minor, or *area source*, for Hazardous Air Pollutants (HAPs), because it is not known to have a PTE of 10 TPY or more for a single HAP, nor to have a PTE of 25 TPY or more for combined HAPs.

PTI No. 209-15 was issued on 1/19/2016, for the installation of engines EUENGINE3 and EUENGINE4. The existing engines, EU-ENGINE1 and EU-ENGINE2, were permitted under PTI No. 162-10. This PTI was voided, because the conditions applicable to the existing engines were incorporated into PTI No. 209-15, without additional New Source Review.

The 4 engines are subject to 40 CFR Part 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. They are also subject to 40 CFR Part 63, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, also known as (aka) the RICE MACT, but their only requirement is to follow 40 CFR Part 60, Subpart IIII.

Fee status:

This facility is not a Category I fee subject source, because it is not a major source for criteria pollutants. It is not a Category II fee-subject source because it is not a major source for Hazardous Air Pollutants (HAPs). It is, however, subject to the NSPS, Subpart IIII for all 4 of the engines/generators, but AQD has typically not considered sources fee-subject where generators would be the only reason. Additionally, it is not Category III fee-subject. It is subject to 40 CFR Part 63, Subpart ZZZZ, for the 4 engines/generators, but, again, AQD has typically not considered facilities fee-subject where generators would be the only reason. They are not required to submit an annual report of their air emissions to the Michigan Air Emissions Reporting System (MAERS).

Location:

This facility is in north Lansing, in a predominantly industrial area. The closest residences are about 400 feet to the northeast.

Recent history:

This facility was last inspected by AQD on 1/4/2011.

Arrival:

Accompanying me on this inspection was Ms. Pratyusha Paidikondala, a Student Intern with the DEQ's Office of Environmental Assistance, for educational purposes. This was not an unannounced inspection, as AQD guidance for bringing interns in the field is to plan the inspection in advance. This assures that appropriate staff are available at the facility to safely escort DEQ staff through the industrial site. Additionally, the company's environmental contact is not normally stationed at this site, so it was necessary to make advance arrangements to meet him here.

We arrived at 12:59 PM. There were neither odors nor visible emissions detected from the facility, in the parking lot. Weather conditions were mostly sunny and 64 degrees F, with winds out of the northwest at 5-10 miles per hour.

We met with Mr. Vince Vilona, Director, Facilities Management. I provided my credentials/identification, per AQD procedure.

Inspection:

Mr. Vilona provided copies of Safety Data Sheets (SDS) for:

1. BP Diesel Fuel No. 2. Please see attached.
2. A fuel additive that they use onsite, Schaeffer's Specialized Lubricants 137B Diesel Treat 2000™ Ultra Low Sulfur. Please see attached.

It is my understanding that their diesel fuel is treated with 137B Diesel treat 2000™. It is also my understanding that their diesel fuel is classified as "Ultra Diesel" by Avery Oil & Propane, and appears to be Ultra Low Sulfur Diesel (ULSD).

Note: a 4/8/2011 e-mail between AQD's Brian Culham and Mr. Vilona concurred that maintaining records of purchase of fuels which comply with the sulfur content limit of the PTI at that time, No. 162-10, which applied to EU-ENGINE1 and EU-ENGINE2.

Mr. Vilona also provided copies of Emissions Log forms for each of the 4 generators. Please see attached. These handwritten forms document the date of operation, the reason for running, beginning run hours, ending run hours, total run hours, beginning fuel, ending fuel, fuel consumed, lbs of NOx emitted, expressed as "NOx Emission Fuel Consumed X 256/1000", rolling NOx emissions from exercise/maintenance, in lbs, rolling NOx emissions from use in power outages, in lbs, and the initials of the operator. The log forms provided go all the way back to the initial start-up of EU-ENGINE1 and EU-ENGINE2. The next date of operation for these 2 units was 5/14/2011.

We were informed that they refer to the two original generators here (EU-ENGINE1 and EU-ENGINE2) as 1A and 1B, and the two newer generators (EUENGINE3 and EUENGINE4) as 2A and 2B.

It is my understanding that they operate the generators for weekly exercise and monthly load testing. We were told that each generator runs about 50 hours per year. Generator 1A has run 331.4 total hours, over 6 years.

EU-ENGINE1; also known as (aka) 1A, was not running. I documented engine data, below

GEN-1A:

- Engine hours: 343.1
- Oil change date: 3/13/2017
- Engine hours at oil change: 339.1
- Next oil change: 3/13/2020
- Total fuel consumption: 11,580 gallons

EU-ENGINE2; aka 1B, was not running. I documented engine data below:

GEN-1B:

- Engine hours: 343.7
- Oil change date: 3/16/2017
- Engine hours at oil change: 339.9
- Next oil change: 3/16/2020
- Total fuel consumption: 11,506 gallons

EUENGINE3; aka 2A , was not running. I documented engine data, below.

GEN-2A:

- Engine hours: 63.0

- Oil change date: 3/21/2017
- Engine hours at oil change: 59.1
- Next oil change: 3/21/2020
- Total fuel consumption: 1,372 gallons

EUENGINE4; aka 2B, was not running. I recorded engine data below.

GEN-2B:

- Engine hours: 58.4
- Oil change date: 3/20/2017
- Engine hours at oil change: Did not record; will follow up with company.
- Next oil change: 3/20/2020
- Total fuel consumption: 1,366 gallons

Compliance with the Special Conditions of the PTI No. 209-15 was checked, as follows:

The following conditions apply to:

FG-Generators

I. EMISSION LIMITS

1. The permit sets a NOx limit of 17.4 TPY for FG-Generators, based on a 12-month rolling time period as determined at the end of each calendar month. The limit is based upon Rule 205 and 40 CFR 52.21(c) & (d). Stack testing would be necessary in order to verify compliance. At present, there does not appear to be a need to require stack testing, as there is no evidence of the units operating improperly or being maintained improperly. The NOx limit is based upon an emission factor of 256.0 lbs of NOx per 1,000 gallons of diesel fuel used in EU-ENGINE1 and EU-ENGINE2.

II. MATERIAL LIMITS

1. The diesel fuel used in EU-ENGINE1 and EU-ENGINE2 is to meet the requirements of 40 CFR 80.510(b) with the maximum sulfur content not to exceed 15 ppm. They use BP Diesel Fuel No. 2, according to the SDS sheet Mr. Vilona provided, please see attached. It is my understanding that their diesel fuel is treated with 137B Diesel treat 2000™, which Mr. Vilona also provided a SDS for; please see attached. It is also my understanding that their diesel fuel is classified as "Ultra Diesel" by Avery Oil & Propane, and appears to be Ultra Low Sulfur Diesel (ULSD).

According to the Wikipedia definition of "Ultra-low-sulfur diesel", in the United States after 12/1/2014, "all highway, non-road, locomotive and marine diesel fuel produced and imported will be ULSD." It acknowledges the allowable sulfur content for ULSD is 15 ppm. Sulfur content of 15 ppm is equal to 0.0015% by weight.

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee is required to install and operate EU-ENGINE1 and EU-ENGINE2 in accordance with manufacturer's specifications. We were informed that they are doing this.

2. The permittee is required to comply with the NSPS, Subparts A and IIII. It is my understanding that they are doing this, overall, based on our discussion, however it is not clear if their generators are certified or non-certified, as defined in 40 CFR Part 60, Subpart IIII. AQD is requesting proof of certified status.

3. The permittee is not to exceed 100 hours for maintenance checks and readiness testing for the

Flexible Group FG-Generators. We were informed that they average 50 hours per year.

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee is to equip and maintain each of the two engines in this FG-Generators with non-resettable hours meters to track their operating hours. We were advised that they are doing this. The run hours are manually recorded on the Emissions Log forms for each engine.

V. TESTING/SAMPLING

Nonapplicable (NA)

VI. MONITORING/RECORDKEEPING

1. The permittee is to complete all required calculations by the last day of the calendar month, for the previous calendar month. it is my understanding that they are doing this.

2. The permittee is to monitor and record the diesel fuel usage rate for each individual generator on a monthly and 12-month rolling time period basis. Fuel use is being recorded on a daily basis as verified on the Emissions Log forms. However, the daily data does not appear to be tallied into a 12-month rolling value. AQD will advise the company to begin compiling the data into 12-month rolling values, from this point forward.

3. The permittee is to keep monthly and 12-month rolling period NOx emission calculation records for FG-Generators. The Emission Log forms for each generator show that they are doing this.

4. The permittee is to keep separate records of the sulfur content calculations for each of the two generators, in percent by weight, on an annual average. We were advised that the sulfur content is 15 ppm. This is equivalent to 0.0015% sulfur, by weight. A 4/8/2011 e-mail between AQD's Brian Culham and Mr. Vilona indicates B. Culham agreed that maintaining records of purchase of fuels that comply with the sulfur limit is an adequate way to show compliance with the limit. The attached fuel receipt from Avery Oil and Propane lists 9.461 gallons of "AVERY ULTRA DIESEL DYED RDC 3". This appears to indicate the purchase of ULSD. Plus, per the Wikipedia definition of "ultra-low-sulfur-diesel", after 12/1/2014, "all highway, non-road, locomotive and marine diesel fuel produced and imported will be ULSD."

5. The permittee is to keep manufacture certification documentation indicating that EU-ENGINE1 and EU-ENGINE2 meet applicable NSPS emission limitations. A 4/5/2011e-mail from Mr. Vilona to AQD's B. Culham advised that documents pertaining to the manufacturer's certification of the equipment's emission limitations would be kept on hand and available for inspection, for EU-ENGINE1 and EU_ENGINE2. It therefore appears that the those engines are certified. However, AQD needs proof of certification. AQD is requesting copies of documentation from the company.

6. The permittee is required to monitor the hours of operation for each generator, and the reason it was in operation. We were informed that they do this. The Emissions Log forms for each generator show that they are doing this.

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

The generator exhaust stacks, SV-ENGINE1 and SV-ENGINE2, are each required to have maximum exhaust diameter of 18.0 inches and minimum height above ground of 20 feet. The stacks appeared to be meeting this requirement, we saw, while standing outside the facility.

IX. OTHER REQUIREMENTS

NA

(End of conditions for FG-Generators.)

The following conditions apply to:

FGGENERATORS2:

I. EMISSION LIMITS

The flexible group FGGENERATORS2 has a permit limit for non-methane hydrocarbons (NMHC) + NOx of 6.4 g/KW-hr, a limit for CO of 3.5 g/KW-hr, and a limit for particulate matter (PM) of 0.20 g/KW=hr. A stack test would be necessary in order to verify compliance, but at present there does not appear to be a need to require stack testing, as there is no evidence of the units operating improperly or being maintained improperly. The limits are based on 40 CFR 60.4205(b), 60.4202(a)(2), and 40 CFR 89.112.

II. MATERIAL LIMITS

1. The permittee is to burn only diesel fuel in FGGENERATORS2 with the maximum sulfur content of 15 ppm by weight, and a minimum Cetane index of 40 or a maximum aromatic content of 35 volume percent. It is my understanding that their diesel fuel is treated with 137B Diesel treat 2000™. It is also my understanding that their diesel fuel is classified as "Ultra Diesel" by Avery Oil & Propane, and appears to be Ultra Low Sulfur Diesel (ULSD).

However, the company was not aware of what the minimum Cetane index or the maximum aromatic content were. AQD is following up on this.

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee is to not operate each engine for more than 500 hours per year. It is my understanding that each engine averages about 50 hours per year. Please see the Emissions Log forms, attached. The hours run were not totaled for each year, however, the very limited hours of operation make it likely that the units fall below 100 hours per year each.

2. The permittee is prohibited to operate each engine in FGGENERATORS2 more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing and transmission operator, or the insurance company associated with the engine. It is my understanding that each engine averages about 50 hours per year. Please see the Emissions Log forms, attached. The hours run were not totaled for each year, however, the very limited hours of operation make it likely that the units fall below 100 hours per year each.

We were advised that they do not do any peak shaving or non-emergency demand response.

3. This condition contains requirements for certified engines. A 4/5/2011e-mail from Mr. Vilona to AQD's B. Culham advised that documents pertaining to the manufacturer's certification of the equipment's emission limitations would be kept on hand and available for inspection, for EU-ENGINE1 and EU_ENGINE2. It therefore appears that the those engines are certified, and possibly EUENGINE3 and EUENGINE4. AQD needs proof of the certified status of the engines, so AQD is requesting documentation from the company.

a. The permittee is to operate are to maintain the certified engine and control device according to the

manufacturer's emission-related written instructions. AQD is requesting documentation from Jackson National Life of this.

b. The permitee is to change only those emission-related settings that are permitted by the manufacturer. AQD is in the process of inquiring as to whether they have changed any emission-related settings.

c. The permittee is to meet the requirements as specified in 40 CFR 89, 94, and/or 1068, as they apply to them. AQD is in the process of inquiring if they are meeting applicable requirements.

4. This applies if the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner. If so, the permittee is to keep a maintenance plan for each such engine in FGGENERATORS2 and shall, to the extent practical, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions.

It is suspected that the engines are certified, rather than non-certified. However, AQD requires proof of this. AQD is requesting copies of documentation from the company.

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee is required to equip and maintain each engine in FGGENERATORS2 with a non-resettable hours meter. We were advised that this was done.

2. The maximum rated power output of each engine in FGGENERATORS2 is not to exceed 2,190 KW (2,937 HP), as certified by the manufacturer. We were advised that the maximum rated power output of each unit does not exceed this.

V. TESTING/SAMPLING

1. a., b., and c. contain requirements that apply if the engine is not installed, configured, operated, or maintained according to the manufacturer's emission-related written instructions, or the permittee changes emissions related settings in a way that is not permitted by the manufacturer. AQD has contacted the company, to inquire.

VI. MONITORING/RECORDKEEPING

1. The permittee is to complete all required calculations by the last day of the calendar month, for the previous calendar month. it is my understanding that they are doing this.

2. The permittee is to keep the following records for each engine in FGGENERATORS2:

a. For each certified engine, the permittee shall keep the manufacturer's certification. It is suspected that the engines are certified, but AQD needs proof of this. AQD has contacted the company, to inquire.

b. For each uncertified engine, records of required testing. It is suspected that the engines are certified, but AQD needs proof of this. AQD has contacted the company, to inquire.

3. The permittee is to keep the following records of maintenance activity for each engine in FGGENERATORS2:

a. For each certified engine, the permittee shall keep records demonstrating that the engine has been maintained according to the manufacturer's emission-related instructions. I was informed that they keep all of their maintenance records. It is suspected that the engines are certified. AQD has contacted the company, to inquire.

b. For each uncertified engine, the permittee shall keep records of a maintenance plan. Further follow

up is needed. It is suspected that the engines are certified.

4. The permittee shall monitor and record the total number of hours of operation and the hours of operation during non-emergencies for each engine in FGGENERATORS2. This is being done, as shown in the Emissions Log forms for EUENGINE3 and EUENGINE4, , GEN 2A and GEN 2B, respectively.

5. The permittee is to keep fuel supplier ceritification records or fuel sample test data showing that the engine meets the requirements of 40 CFR 80.510(b). Further follow up is needed, as the cetane index and aromatic index of the fuel were not immediately known. The receipt for fuel delivery from Avery Oil and Propane indicates that the fuel delivered on 12/5/2016 is "Ultra Diesel DYED RDC 3.

VII. REPORTING

1. Within 30 days after completion of installation, construction, reconstruction, relocation, or modification, the permittee is to notify AQD in writing of the completion of the activity. AQD did not receive a written letter from the company on this issue. However, the Emission Logs for GEN 2A and GEN 2B show that the startup date for each unit was 5/3/2016.

2. The permittee is to submit a notification specifying whether each engine in FGGENERATORS2 shall be operated in a certified or non-certified manner in writing, within 30 days of initial startup, and within 30 days of switching the manner of operation. AQD does not have a written statement from the company on this. I called the company, to request a written statement for all 4 engines.

3. This SC is non-applicable, because the engines In FGGENERATORS2 are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in 40 CFR 60.4211(f).

VIII. STACK/VENT RESTRICTIONS

1. and 2. The generator exhaust stacks, SVENGINE3 and SV-ENGINE4, are each required to have maximum exhaust diameter of 18.0 inches and minimum height above ground of 20 feet. The stacks appeared to be meeting this requirement, we saw, while standing outside the facility.

IX. OTHER REQUIREMENTS

1. Compliance is required with 40 CFR Part 60 Subpart A and Subpart IIII as they apply to each engine in FGGENERATORS2 is required. It is my understanding that they are doing this, overall, based on our discussion, however it is not clear if their generators are certified or non-certified, as defined in 40 CFR Part 60, Subpart IIII. AQD will request proof of certified status.

2. Compliance is required with 40 CFR Part 63 Subpart A and Subpart ZZZZ as they apply to each engine in FGGENERATORS2 is required. The requirement under Subpart ZZZZ is to follow the requirements of Subpart JJJJ. It is my understanding that they are doing this, overall, based on our discussion, however it is not clear if their generators are certified or non-certified, as defined in 40 CFR Part 60, Subpart IIII. AQD will request proof of certified status.

(End of conditions for FGGENERATORS2.)

Conclusion:

Overall, the facility appeared to be in compliance, but there are a number of items which AQD will do additional follow up on, to determine compliance status.

NAME _____ DATE 9/29/2017 SUPERVISOR _____