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

B404936884

FACILITY: GM Technical Center		**SRN / ID:** B4049
LOCATION: Facilities Operations Building, WARREN		**DISTRICT:** Southeast Michigan
CITY: WARREN		**COUNTY:** MACOMB
CONTACT: Peter Maciejewski , Sr. Project Engineer		**ACTIVITY DATE:** 08/10/2016
STAFF: Francis Lim	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT:		
RESOLVED COMPLAINTS:		

On August 10 and 16, 2016, I conducted an inspection at General Motors LLC – Warren Technical Center located at 6250 Chicago Rd, Warren. The purpose of the inspection was to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control of Natural Resources and Environmental Protection Act, 1994 Public Act 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) Administrative Rules; and Renewable Operating Permit ROP No. MI-ROP-B4049-2014a. Pete Maciejewski, Sr. Project Engineer is GM's environmental contact.

GM Technical Center conducts research on all aspects of automobile development and production, including design, engineering and manufacturing. This facility operates a powerhouse that provides process steam and space heating at the Technical Center complex. It also operates an IT Center that has several emergency diesel engine electric generators to provide power during an outage.

ROP No. MI-ROP-B4049-2014 (renewal) was issued to the facility on September 29, 2014. The ROP was reissued on September 1, 2015 for a significant modification due to a deviation regarding the nameplate engine capacity for the installed MTU Detroit Diesel DRUPS engine generators at the IT Center. Actual engine capacity is higher than what was specified in permit conditions.

EUVVO

This emission unit covers the vehicle validation operation (Pre-Production Body Center).

Emission source is primarily the coating line, which includes the paint spray booth, a phosphate application line, an oven, and a flash off tunnel. There is only one booth used for prime coat, topcoat and clearcoat. After priming, the vehicle body is transferred to an oven and goes back to the booth for application of topcoat and clearcoat, if needed. Most of the time, the vehicle bodies are just primed. The vehicle bodies are coated with low gloss gray primer to prevent reflection so that the high speed cameras can record the crash dummies during crash testing. The vehicle bodies are coated with white primer to locate where the stress points are.

Particulate emissions from the paint spray booth are controlled by dry filters. N-Butyl Acetate is used as reducer. Recycled solvents are used for purge and cleanup. HVLP spray guns (Model SATA Jet 5000) are used. Paint usage is estimated from production. The number of full auto bodies coated are counted and multiplied by an emission factor that was derived from measuring a typical amount of coating used per auto body. Emission factor depends on the coating used. Body panels count as a fraction of a full body. The supervisor for this area Dave

Sandzik is responsible for monitoring paint usage (number of auto bodies coated).

From January 2015 until June 2016, highest daily average VOC emissions were 77.1 lbs. per day for February 2016. Daily limit is 400 lbs. VOC/day. 12-month rolling VOC emissions at the end of June 2016 were 6.81 tons; limit is 36.0 tons per year.

Number of operating days is recorded. Facility keeps a list of the VOC content of the coating, reducer and purge/cleanup solvents.

I conducted random review by comparing monthly emissions and usage record with the data entered in the 12-month rolling records. Data matches. See attached records.

There is another vehicle validation operation located at the General Services Bldg. There are no paint spray booths installed there.

There is an ongoing construction/expansion at the Pre-Production Body Center. The expansion deals with body and panel fabrication and welding operations. The expansion does not involve the paint shop.

FGRULE287C

Paint spray booths that are exempt under Rule 287(c) are installed in the following locations: Manufacturing A (Bldg. 109), Manufacturing B (Bldg. 108), Powertrain (Bldg. 207), Powertrain Emissions (Bldg. 208), Engineering South (Bldg. 111), Aero Lab (Bldg. 114), Climatic Wind Tunnel (Bldg. 105), Service Ops (Bldg. 204), Vehicle Engineering Center (VEC, Bldg. 210 West), Parts Fab (Bldg. 301), General Services 1 (Bldg. 302), R & D (Bldg. 106) and Design (Bldg.113).

A paint usage log is kept for each paint spray booth subject to this flexible group. Purge and cleanup solvents are collected in buckets and transferred to a hazardous waste drum. The gun cleaning station uses a little basin with solvent (not considered cold cleaners). Purge and cleanup solvent usage is not reported.

Documentation of the filter replacement is only required for booths spraying more than 100 gallons of coatings per year. Facility keeps filter documentation for all booths that are using more than 100 gallons per year. Only the paint spray booths located in the Design Building, Manufacturing B Building (coating lab), and Service Ops Building use more than 100 gallons per year.

The following booths are installed in the Design Building: five large booths (Booth Nos. 36, 37, 42, 43, and 44), two small booths (Booth Nos. 41 and 45 – these booths are rarely used), and two booths used for plastering and resin casting. For the five large downdraft booths, floor dry filters are changed once a week; roof exhaust filters, twice a year. Aramark is the contractor that replaces all the filters.

The two booths used for plastering and casting use a parting compound (release agent). A daily log is kept to track parting compound usage. The usage is estimated based on the number of jobs.

All coatings are stored in the paint mix room. Hazardous waste is stored in drums at the paint mix room. Paint viscosity is carefully measured before it is sprayed. Spray guns use a disposable cup to hold the coating. As a result of using disposable cups, less purge and cleanup solvent are used. Air assisted HVLP spray guns are used. Established formulations

which are used in the assembly plant are generally used. Cleanup solvents are recorded but not reported as part of Rule 287 records. Booth No. 36 and 37 are state of the art booths (excellent humidity control) and are typically used more than the other large booths

The coatings lab (located at Manufacturing B Bldg.) resembles a coating line at an assembly plant. Experiments (as well as painter training) are conducted to properly setup the robotic spray guns in the assembly line. The coating line is controlled by a downdraft water wash system.

Paint log sheets are sent to Pete on a monthly basis. Based on GM's records, staff verified that the monthly limit of 200 gallons per booth was not exceeded. Paint usage records for each booth are attached to this report.

The maintenance paint spray booths at Site Operations and Service Ops (Service Technology) are subject to additional Part 6/7 rules pertaining to plastic and metal coatings (Design Bldg. maintenance paint spray booth has been removed). In accordance with Rule 621 and Rule 632, the facility is exempt from these rules if all of the following is not exceeded: VOC emissions of 2000 pounds per line per month, 10 tons per line per year, and 30 tons per year for all metal and plastic parts coating lines. GM keeps separate emissions records to show that VOC emissions from these paint booths are within the limits, and thus exempt from Rule 621 and Rule 632. Staff verified that actual emissions are well below the threshold limits. Emission compliance records for Part 6/7 rules are attached to this report. NOTE: Service Technology spray booth is used to repair corporate cars used by company executives.

FGRULE290

There are two gasoline purge units under this flexible group. These are located at the GSB-1 Bldg. and the Engineering Bldg. For safety reasons, GM does not want any gasoline (or diesel) stored in a vehicle gas tank for an extended period of time (more than 2-3 days). After the vehicle gasoline tanks have been worked on, gasoline is emptied from the gas tank. The tanks are then cleaned and purged using a liquid alkaline cleaner called SLIX. An air hose bubbles the SLIX in the gas tank for approximately 8 hours to purge the remaining gasoline in the tank. After the cycle, the SLIX is pumped back to the reservoir. Another 8 hours is required to air dry the tank. The gas tank is scrapped or stored and worked on again.

GM established an emission factor for each tank that is purged. Since gasoline contains some carcinogens, the Rule 290 limit is 20 pounds per month. In 2015, there was not much activity at the Engineering Building compared to GSB-1 Bldg. May 2015 has the highest monthly emissions of 7.6 pounds (from January 2015 – June 2016). Emissions records are attached to this report.

FGWOODMETAL

This flexible emission group covers wood and metal machining, metal grinding, sand blasting, and shot blasting equipment. Equipment is subject to Rule 331 and controlled by dust collectors. Dust collectors exhaust outdoors; some emit indoors.

GM maintains a current list of equipment subject to Rule 331 and exempt under Rule 285(l)(vi). The list includes type of dust collector and whether it emits indoors or outdoors. Majority of woodworking and metal machining units are seldom used, except for units at the Design Bldg.

Since the wood and metal working units are numerous and located throughout the huge complex, the location of the units are divided into quadrants, for the purpose of conducting

and recording VE readings. VE observations of the dust collector exhaust stacks are conducted monthly, by quadrant. Staff verified that monthly VE readings are recorded for each quadrant. Since majority of the units are seldom used, the units may not be running during the VE readings. However, because of good maintenance on the equipment, visible emissions are not expected. For majority of wood and metal working units, routine and preventative maintenance is conducted on the dust collectors annually. For units that are used more often, preventative maintenance is done quarterly (units at the Design Bldg.). Pete Maciejewski determines which units are seldom used, thus annual preventive maintenance for those units is sufficient. Maintenance software called Maximo is used to schedule and track maintenance activities. A copy of the monthly VE readings per quadrant is attached (May 2015-August 2016). During the previous inspection, GM submitted copies of all quarterly and annual maintenance conducted on the wood and metal working units.

Facility maintains on file a calculation which demonstrates that compliance with the particulate limit. In demonstrating compliance, GM took a particulate sample from the dust collectors at the wood shop located at Parts Fabrication. After looking at all equipment subject to FGWOOD/METAL, GM determined that dust collectors from Parts Fabrication will represent worst case. Particulate emissions were then calculated using the known amount of air contaminant collected over a period of time.

During the Tech Center complex drive-thru, staff did not notice any visible emissions from equipment subject to this flexible group.

FGCOLDCLNRS

Cold cleaners use either solvent based or water based material. Cold cleaners have an air vapor interface area of less than 10 sq. ft. Written procedures complying with Rule 707 are posted near the cold cleaners. Attached to this report is an updated record of the air/vapor interface of each cold cleaner, type of cleaners used, corresponding Reid vapor pressure, solvent usage, and VOC content. Although the record contains information stating that some solvents have Reid vapor pressure of more than 0.6 psia, none of these solvents have been used in the cold cleaners.

Crystal Clean now services most of the cold cleaners every 16-18 weeks. Used solvent is removed and replaced by a fresh batch. A record of how much was taken and how much was put in is kept. Net usage is calculated based on the difference. Solvent used by Crystal Clean is 100% petroleum naphtha.

Other cold cleaners are serviced by GM personnel. For these cold cleaners, solvents are replaced infrequently, only when it becomes dirty. Since operators do not log this infrequent solvent replacement, solvent usage from these cleaners is just estimated. Solvent used in the GM-serviced cold cleaners is a petroleum distillate (SK/Premium Gold) and has a VOC content of 6.6 lbs./gal. Some GM-serviced cold cleaners use water based cleaners.

Staff randomly inspected some cold cleaners during the plant walk-thru. Covers and procedures for the cold cleaners are in place. Some of the larger cleaners have electrically or mechanically assisted covers.

The list of active cold cleaners has been changing at the Tech Center. Since many operations at the Tech Center have stopped, the number of cold cleaners has been reduced. Emissions from the cold cleaners are reported in MAERS.

FGRDDYNOS

This flexible group covers the permitted engine dynamometer test cells 2, 3, 4, 5, 6, and 16 located at the Research & Development Bldg. A dynamometer is a machine that is used to measure torque and rotational speed from which power produced by the engine can be calculated. A dynamometer that is coupled directly to an engine is called an engine dynamometer. Most of the engine dynamometers installed at the Tech Center are designed to just absorb the load from the engine being tested (through the engine crankshaft). Some engine dynamometers are universal, capable of either absorbing the load or motoring the engine being tested.

During the dynamometer inspection, staff met with Chris Budzyn. The engine dynamometers covered by this flexible group are used for testing engine emissions, fuel economy, heat distribution, as well as engine oil life. For the engine oil life testing, the engines are run using different engine configurations, from idling to full throttle. These tests can last up to seven days. The engines are either fired up with fuel or the dynamometers can motor the engine. Gasoline, diesel and indolene are used as fuel. Indolene is a standard form of gasoline used in testing and it does not have any additives.

A stack test was conducted on July 14-20 and August 16, 2004, to verify emission factors for CO and 1,3 butadiene. Lead was not tested since leaded gasoline is not used. The test results are: for CO, 2.5 pounds/MM BTU (gasoline) and 0.68 (diesel); 1,3, butadiene, less than 0.08 gms/MM BTU (gasoline), less than 0.29 (diesel). Note that the CO test was just to confirm emission factors while 1,3 butadiene test was to establish emission factors.

AQD staff verified from emission records that emission limits are not exceeded. For the 12-month rolling period ending June 2016, annual heat input is 285.5 MM BTU (limit is 7,500 MM BTU); annual CO emission is 0.32 ton (limit is 90 tons); annual lead emission is 0.0002 ton (limit is 0.22 tons); and annual 1,3 butadiene emission is 0.1 lb. (limit is 97.5 lbs.).

Daily average heat input limit is 204 MM BTU/day (maximum daily average heat input is 0.9 for February 2016); CO daily average limit is 4,896 lbs./day (maximum daily average emissions are 2.4 lbs for February 2016); lead daily emission limit is 12 lbs./day (maximum daily average emission is 0.001 lbs); 1,3 butadiene limit is 2.6 lbs./day (maximum daily emission is 0 lbs). Emissions records are attached.

For ROP compliance calculation, GM uses the CO emission factor in the permit. For MAERS, GM uses the test results (which is much lower) in calculating CO emissions. According to Pete, in the MAERS seminars, they were instructed to use stack test results if it is available. The ROP renewal did not require another stack test for the test cells.

Staff verified that daily usage logs are kept for each permitted dynamometer.

GM will be transferring the dynamometer engine testing operations to Pontiac Engine Testing Facility. Note: Only the testing operations will be transferring, not the equipment. Currently, only Test Cell No. 2, 3, and 4 are still operating.

Chassis dynamometer testing operations have stopped.

FGEXEMPTDYNOS

This flexible unit is for exempt and grandfathered engine dynamometer test cells.

All grandfathered engine dynamometer test cells located at the Powertrain and Engineering buildings were taken out of service in 2009 (grandfathered engine dynamometers were

installed in 1953). The buildings that housed these grandfathered test cells have been renovated. The battery lab is housed at the former Powertrain building.

Engine testing operations previously conducted at the Powertrain and Engineering Buildings were moved to Pontiac. Except for some parts and electronics, the grandfathered engine testing equipment that was taken out of service from the GM Tech Center was not transferred to Pontiac.

After the move to Pontiac, 13 grandfathered engine dynamometer test cells remained at Research & Development. These grandfathered cells are identified as # 7, 8, 9, 10, 14, 17, 18, 20, 21, 25, 28, E and F. Another test cell is located nearby at Bldg. 102 and identified as #1-98. This test cell uses radioactive material as a tracer during the engine test. Anybody entering this building needs to wear a dosimeter.

Remaining engine dynamometer testing activities at the Tech Center is winding down. Many of the test cells are already out of service. It is anticipated that all remaining engine dynamometer testing at the Tech Center will be moving to the Pontiac Engine Testing Facility. Only grandfathered Test Cell No. 7, 20 and 25 are still operating. The test cell located at Bldg. 102 is projected to stop operations by the end of 2016.

For MAERS reporting, usages for the exempt dynamometer test cells are estimated. Every month, gasoline tank inventory is submitted to Pete. To estimate usage for the grandfathered test cells, tank farm inventory is taken and the fuel usage for the permitted dynamometer test cells is subtracted. There are 15 tanks in the tank farm – eight have a capacity of over 2,000 gallons (included in FG-GASTANKS).

See attached R&D Tank Farm Fuel Use and Emissions Data.

FGGASTANKS

The gasoline tanks are subject to the requirements of Rule 703, loading gasoline into new stationary vessels of more than 2,000 gallon capacity at dispensing facilities.

In the previous ROP renewal, 28 exempt gasoline UST and AST were listed: 5 at Engineering, 3 at Climatic Wind Tunnel, 9 at Powertrain, 3 at Powertrain (for fleet vehicles), and 8 at Research Fuel Blend. The tanks at the Research Fuel Blend are located in an above ground vault.

Since the grandfathered engine dynamometer test cells at Engineering and Powertrain have been removed, all gasoline storage tanks in the Engineering and Powertrain Building subject to this flexible group requirements have been drained of fuel, cleaned, purged and subsequently removed in July 2011.

Each remaining tank (14 remaining minus one tank at Climatic Wind Tunnel which is not a dispensing tank) subject to this flexible unit is equipped with a permanent submerged fill pipe, a vapor balance system (or equivalent) and an interlock system which ensures a vapor tight collection line. AQD staff verified that inspection records showing inspection for vapor tightness is conducted, every quarter. The connectors and plungers (check plunger spring automatically retracts to seal the tank) for the vapor line are inspected to verify that these are still working properly. Facility also keeps a record of the installation date and capacity of each tank. Diesel tanks are not included in this flexible group. A list of the remaining tanks and tank inspection records (up to the 2nd quarter of 2016) are attached to this report.

FGBOILERSCL

Two natural gas-fired climatic boilers were installed to create climatic conditions to conduct physical analysis of vehicles in the climatic wind tunnel. These boilers are now used only as backup, since steam for the climatic wind tunnel is now supplied by the main steam plant (Powerhouse). The climatic boilers are only operated mostly during the weekends as well as for monthly testing. Natural gas usage is recorded monthly for each boiler. Records are kept in the Powerhouse.

Usage records are attached to this report.

The climatic boilers are subject to 40 CFR 60, Subpart A and Dc. The climatic boilers are subject to the requirements of the Boiler MACT, 40 CFR 63 Subpart DDDDD. The Boiler MACT was promulgated on January 31, 2013. Compliance date for existing sources is January 31, 2016. For natural gas-fired boilers, compliance requirements include tune-ups, one-time energy assessment and submission of compliance reports. Tune ups were done. Boiler MACT Energy Assessment was conducted by Burns McConnell on August 2015.

FGBOILERS

There were six dual fueled boilers at the site, although natural gas has been the only fuel for the past several years. The four Fuel Oil No. 6 storage tanks have been drained, cleaned, and purged in 2008. During the inspection, only three boilers remain: Boiler 1, 5, and 6. GM intends to demolish these three remaining boilers and replace with three identical natural-gas fired boilers. The existing boilers are classified as gas 1 category for the Boiler MACT, each with 108 MM BTU heat input capacity. Permit-to-Install No. 102-16 was issued on October 7, 2016 for three new boilers, each with 108 MM BTU heat input capacity, and for a new 60 KW natural gas-fired emergency generator to be installed at the Powerhouse.

The remaining boilers are equipped with an oxygen and CO monitor in the flue gas exhaust. This aids in operating the boiler efficiently while minimizing air pollution. The boilers are computer controlled, which means the excess oxygen is set at a certain percentage and automatically adjusted. Excess oxygen is set at 4-6%. The boilers are not equipped with economizers (flue gas does not heat boiler feed water). The flue gas however is used to preheat the combustion air. The forced draft fans are not variable speed. Combustion air volume is controlled by dampers. Boiler 5 have combined forced draft and induced draft fans. Facility does not conduct flue gas analysis since they already have CO and oxygen monitors. The CO and oxygen monitors are calibrated. Boiler tubes that leak are plugged. For safety concerns, state regulations do not allow plugging more than 10% of the boiler tubes.

The powerhouse operates 24 hours a day/7 days a week. During the summer, only one small boiler is usually operated. During winter, up to three may be operated. On most winter days, Boiler 1, which is the largest at 240 MM BTU is sufficient to supply the steam demand.

This flexible group has a sulfur limit on fuel oil. There has been no fuel oil delivery in the past several years and fuel oil is no longer stored in any of the storage tanks.

There is a SO_2 12-month rolling and pounds/hour limit for Boiler 6 only. Since no fuel oil is used, sulfur dioxide emissions are well below limits. If fuel oil needs to be used, the fuel oil burner has to be manually inserted in the combustion chamber.

Facility keeps a monthly natural gas usage as recorded from gas meters for each boiler. Attached to this report are fuel use records.

The boilers are not subject to 40 CFR 60, Subpart Dc since the boilers were installed prior to the NSPS promulgation date.

The boilers are subject to the Boiler MACT. For gas 1 category boilers, compliance requirements include tune-ups, one-time energy assessment and compliance reports. The U.S. Environmental Protection Agency published the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT) final rules in the Federal Register on January 31, 2013. Existing sources will have until Jan. 31, 2016 to comply with the rule, while new sources have until Jan. 31, 2013 or startup date, whichever is later, to comply with the rule. The Boiler MACT requires owners of industrial, commercial and institutional boilers to comply with the EPA's standards for air pollutants, including mercury. Tune ups were done. Boiler MACT Energy Assessment was conducted by Burns McConnell on August 2015.

BOILER MACT
In addition to the boilers located at the power plant and climatic wind tunnel, there are other smaller boilers and hot water heaters located at the facility that are subject to the boiler MACT. Compliance requirements that include tune-ups, one-time energy assessment and submission of compliance reports were done. Boiler MACT Energy Assessment was conducted by Burns McConnell on August 2015.

Hot water heaters with more than 120 gallon capacity are subject to the BOILER MACT.

FGRICEMACT
This flexible group covers all exempt emergency generators less than 10 MM BTU/hr. that are subject to the RICE MACT. The emergency generator list subject to this flexible group is attached to this report. NOTE: If an emergency generator is permitted, it is included in a separate emission unit or flexible group.

Each gen set is limited to 500 hours of operation per year based on a rolling 12-month period. For the purpose of necessary maintenance checks and readiness testing, each gen set is limited to 100 hours of operation per year based on a rolling 12-month time period. Each emergency gen set may operate up to 50 hours of non-emergency situations per year based on a rolling 12-month time period. The 50 hours count towards the 100 hours per year allowed for maintenance and testing. The gen sets are equipped with a non-resettable hour meter. See attached records of operation hours.

Diesel fuel with sulfur content less than 15 ppm is used.

GM keeps a list of all emergency generators (permitted and exempt) that includes a summary of requirements for each of the emergency engine generators installed.

Required maintenance (including oil changes and belt inspections) were completed. See attached logs.

FGSUBPARTIIII
This flexible group covers exempt emergency compression ignition internal combustion engines less than 30 l/cyl constructed (ordered) after July 11, 2005 and manufactured after April 1, 2006. NOTE: If an emergency generator is permitted, Subpart IIII NSPS requirements are included in the emission unit or flexible group for the permitted generator.

A 601 HP MTU diesel generator is installed at Bldg. 106 R & D Courtyard. It was not yet operating. Engine family is GMDDL14.0ZWK. Attached is a copy of the engine nameplate stating that it complies with 40 CFR 60.4202 certification. Attached is an EPA certification for the engine family.

A 661 HP Cummins diesel generator is installed at Campbell-Ewald. Engine family is FCEXL015.AAJ. Attached is an EPA certification for this engine family.

A Detroit Diesel 685 HP generator was installed in 2008 (2007 model year, located at Bldg 106, R&D). This engine is certified. There is a faceplate attached to the engines stating that the engines conform to EPA regulations. I also verified this from the EPA website, based on model year, manufacturer and engine family.

MTU Detroit Diesel 1,207 HP generator was installed in 2009 (2008 model year located at Bldg 202 – 7000 Bldg. East). The engine is certified. There is a faceplate attached to the engines stating that the engines conform to EPA regulations. I also verified this from the EPA website, based on model year, manufacturer and engine family.

Diesel fuel used has a sulfur content of less than 15 ppm and a cetane index of 47. Cetane index is calculated based on the fuel's density and distillation range. It is a measure of the diesel fuel's ignition quality.

A non-resettable hour meter is installed and operating. See attached record of hours of operation.

FG-SUBPARTJJJJ

This flexible group covers exempt emergency spark ignition internal combustion engines greater than or equal to 100 HP (except gasoline or rich burn LPG) that commenced construction (ordered) after June 12, 2006 and manufactured on or after January 1, 2009. NOTE: If an emergency generator is permitted, Subpart JJJJ NSPS requirements are included in the emission unit or flexible group for the permitted generator.

There is a recently installed (September 2016) natural gas fired generator in Bldg 101 Site Ops. This is a non-certified engine. Stack testing has not yet been done.GM has six months from September to conduct the test.

FG-GENERATORSBLDG210

This flexible group is for two diesel generators rated at 2876 HP each, manufactured by Caterpillar, installed in 2001 and located at the VEC Bldg (northeast and northwest). At the time of installation in 2001, GM thought the capacity of the generators was below 10 MM BTU/hr, and exempt from permits. A permit was issued to these generators.

The generators have a NOx limit of 15.5 tpy (each), based on a rolling 12-month period and a limit of 500 hours (each) operation per 12-month rolling time period. Both units are equipped with a non-resettable hour meter, and use diesel fuel with sulfur content less than 15 ppm. Attached to this report is a record of hours of operation. NOx emissions are below limit – less than one ton per year. See attached NOx records.

Both units are considered "affected source" under the RICE MACT, but with no requirements, including no notification. Both units are not subject to NSPS Subpart IIII (compression ignition engines).

EU-ENGINE7000BLDG202

This is for a 1099 KW diesel-fired emergency electric generator located at 7000 Bldg. This engine is subject to 40 CFR 63, Subpart IIII. This is a certified engine. Hours of operation for the engine is limited to 500 hours per year based on a rolling 12-month time period. A non-resettable hour meter is installed. See attached record of hours of operation.

FG-BACKUPGENSBLDG206

This flexible group is for (4) generator sets and (9) Diesel Rotary Uninterruptible Power Supply (DRUPS) generator sets located at the Cadillac Bldg. (IT Center).

In a DRUPS, when the main electricity supply fails, the stored energy in the flywheel dives the emergency electric generator. At the same time, the diesel engine, with some delay, takes over the flywheel to drive the electric generator.

Four generator sets and six DRUPS have been installed. The backup generators demonstrate compliance with the NOx, HC, CO, and PM limits by providing manufacturer certification that the engines meet the emissions standards. Manufacturer certification for the gen sets and DRUPS gen sets have either been submitted or were verified by AQD (from the EPA website https://www.epa.gov/compliance-and-fuel-economy-data/engine-certification-data). Ultra-low sulfur diesel fuel is used as fuel.

Each gen set is limited to 500 hours of operation per year based on a rolling 12-month period. For the purpose of necessary maintenance checks and readiness testing, each gen set is limited to 100 hours of operation per year based on a rolling 12-month time period. Each emergency gen set may operate up to 50 hours of non-emergency situations per year based on a rolling 12-month time period. The 50 hours count towards the 100 hours per year allowed for maintenance and testing. The gen sets are equipped with a non-resettable hour meter. See attached records of operation hours.

Aramark is the general contractor for the maintenance of the backup gens located at the IT Center. Pillers and Cummins are the maintenance subcontractors. I reviewed the annual maintenance, including oil changes and belt inspections with the Aramark representative. See attached log.

All engine gen sets are subject to the RICE MACT (notification of startup- no emissions standards or work practice standards apply) and NSPS Subpart IIII. Startup testing for the earlier installed generators was done in December 2012. The startup date for the four recently installed generators was January 19, 2016.

NOTE: GM discovered a deviation regarding the stack dimensions for the Caterpillar Gen Set 1 and 2. The stack heights were extended and work completed on July 2014. GM discovered a deviation regarding the nameplate engine capacity for the four MTU Detroit Diesel DRUPS. Actual engine capacity is higher than permit conditions. This resulted in a significant ROP permit modification.

NAME _____ DATE 02- SUPERVISOR _____