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

B281040462

FACILITY: DTE - Electric Company RIVER ROUGE		SRN / ID: B2810
LOCATION: 1 BELANGER PARK DR, RIVER ROUGE		DISTRICT: Detroit
CITY: RIVER ROUGE		COUNTY: WAYNE
CONTACT: Amanda Kosch , Environmental Manager and Resorces		ACTIVITY DATE: 06/02/2017
STAFF: C. Nazaret Sandoval	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: FY 2017 - Targeted Inspection		
RESOLVED COMPLAINTS:		

**SCHEDULED INVESTIGATION REPORT  
(PCE for an FCE source)**

**Date of Investigation:** 06/02/2017**Source:** DTE Electric Company, River Rouge Power Plant**SRN:** B2810**Address:** 1 Belanger Park Drive, River Rouge, Michigan 48218-2601**Subject:** Scheduled Investigation**Author:** Nazaret Sandoval, Air Quality Division, Detroit Office**1 -SAFETY EQUIPMENT/SAFETY TRAINING/SECURITY**

Hardhat, safety glasses with side shields and steel-toed boots are required throughout the plant; hearing protection is required inside the boiler house. One must sign in at the guardhouse and allow security to notify plant staff of your arrival prior to entering the plant grounds beyond the guardhouse. One must obtain a temporary parking pass to park adjacent to the boiler house; otherwise, a visitor can usually park in the contractor/employee lot in the foreground of the guardhouse.

**2 - FACILITY DESCRIPTION**

DTE Electric Company River Rouge Power Plant (DTE River Rouge), formerly known as the Detroit Edison River Rouge Power Plant, was constructed in the 1950s to generate electricity. The original plant comprised three large steam boilers and associated turbines, a smaller auxiliary steam boiler, coal and ash handling equipment, and four diesel turbine peakers. The three steam boilers are identified as Unit 1, Unit 2, and Unit 3. Unit 1 is a natural gas fired unit owned by DTE River Rouge Unit 1 LLC, a subsidiary of DTE Energy, and operated by DTE River Rouge. Units 2 and 3, owned and operated by DTE River Rouge, fire primarily western subbituminous coal with additional amounts of eastern bituminous coal, natural gas, coke oven gas, blast furnace gas, and dried paint solids.

Over the years, there have been changes in the plant operations, including: number of boilers in use, types of fuels, additional processes for air pollution controls, etc. A detailed, and updated description of the operations at DTE River Rouge, follows:

DTE River Rouge offloads coal from railcars into an underground pit capped by a total enclosure known as the Rail Car Dumper House. The coal is lifted through a covered conveyor system comprising three primary transfer points (the Drive House, the Unloading House, and the Breaker House), stacking/stocking conveyors, and stockpiles for eastern, western, and PCI (pulverized coal injection) coal. All coal is eventually transported passing through additional transfer points (Transfer House No.1 and Transfer House No.2) to the boilers' bunkers or diverted for the PCI system, which utilizes the bunker formerly used for Unit 1. Particulate emissions at the Rail Car Dumper House and at the coal bunkers are controlled by fabric filters; particulate emissions along the conveyors and at the transfer points are controlled through enclosures and through the application of a dust suppressant.

DTE River Rouge acts as an intermediate coal processor for the U.S. Steel blast furnaces on Zug Island and AK Steel (formerly known as Severstal) blast furnaces in Dearborn. This coal, known as the PCI coal, is pulverized in one of four coal mills. Mills number 1, 2, 5 and 6 are used to pulverize the coal sold to U.S. Steel and the product is piped across the Rouge River to Zug Island. The coal processed at the Alstom Mill is sent to an on-site Silo and trucked to AK Steel. Particulate emissions from the PCI coal mills and PCI handling equipment are controlled by fabric filters. There are two stacks, one for each coal mill operation.

DTE River Rouge was designed to house three electric utility steam boilers; from east to west the boilers are named Unit 1, Unit 2, and Unit 3. Unit 1, the 2400 million British thermal unit (MMBtu) per hour boiler that was

originally designed to fire coal, switched to burn oil in the early 1970s, and finally converted to combust natural gas, exclusively, in 1999.

Unit 1 has been used for backup or peaking power and is rarely in service; it was last operated in 2005. Unit 2, a 2280 MMBtu per hour tangentially-fired boiler, operated with coal and equipped with gas burners, generated electricity for the last time on November 16, 2015 after a forced outage from July 2015 to October 2015 due to a damaged turbine that was beyond a cost-effective repair. Unit 2 was only used "intermittently" to generate steam until December 11, 2015 during the periodic winter outage of Unit 3, to ensure none of the equipment in the plant froze during the outage. Unit 2 was officially shutdown in late March 2016 and formally retired in April 2016.

Unit 3, the wall-fired, 2670 MMBtu per hour coal-fired unit, also equipped with gas burners, is the only boiler that remains in operation. Units 2 and 3 were permitted to combust up to 10,000 tons of residual paint solids (RPS) from auto assembly plants. However, the usage of RPS as an alternative fuel was discontinued in late 2015.

Unit 1 and Unit 2 boilers, the ancillary equipment and the stacks associated with their operations are still at the plant; but they are disconnected and inoperable. DTE River Rouge requested the removal of Unit 2 and the applicable requirements from the current permit (see details later in this report). Unit 1 is still listed in the permit as an emission unit, although it has not been in operations for more than 10 years. DTE River Rouge has not requested the removal of Unit 1 from the current permit. Therefore, in the following explanation we will continue to describe the equipment and operations associated with Unit 1.

Boiler emissions are vented vertically to the ambient air through stacks, 385 feet high for Unit 1 and 425 feet high for Unit 3. Particulate emissions from Unit 3 are controlled by electrostatic precipitators (ESP). Both units have low-NOx burners for NOx control; Unit 1 is also equipped with flue gas recirculation. SO2 emissions are limited by the sulfur content of the fuel; no add-on controls for SO2 are installed at the plant. Unit 3 is equipped with continuous emissions monitors (CEMS) for NOx and SO2 and with a continuous opacity monitor (COMS) for visible emissions. Unit 1 is equipped with CEMSs for NOx and CO. Boiler ash is wetted and discharged to trucks for transport to the Sibley Quarry; these operations are conducted in partial enclosures underneath the overhang of the ESPs.

On 7/24/2015 DTE River Rouge completed the installation of a modular Dry Sorbent Injection (DSI) and Activated Carbon Injection (ACI) system to comply with the Mercury Air Toxic Standards (MATS) for coal-fired electric utility steam generating units. The project included the installation of equipment to serve both boilers, Units 2 and 3. The MATS regulated pollutants are mercury (Hg), non-mercury metals, and acid gases. An emission limit for particulate matter (PM) can be used as a surrogate for non-mercury metals. An emission limit for Hydrochloric acid (HCl) can be used to demonstrate compliance with the acid gas standard. Hg emissions are controlled using ACI injected into the flue gas after the air heater and prior the electrostatic precipitator (ESP). HCl emissions are controlled through the DSI system. Trona, a sodium carbonate compound, is injected into the flue gas upstream of the air heater and prior to the ESP. The system described above was installed before Unit 2 was retired, thus Silo 1 (which would serve Unit 2) is on-site but was never connected. The DSI/ACI system started its trial operation on March 14, 2016 when the first delivery and loading of dry sorbent (Trona) was fed into the operating DSI modular system.

DTE River Rouge operated a limited-used, 235 MMBtu per hour, natural gas-fired Auxiliary Boiler installed in 1987. The purpose of the Auxiliary Boiler was to provide steam to the plant and to other nearby customers when the main boilers were down. The Auxiliary Boiler was not connected to a turbine and generated no electricity for the grid. The repairs to maintain the Auxiliary Boiler in service appeared to be too costly and DTE River Rouge decided to shut it down in May 2013. Consequently, to comply with the contract steam supply to U.S. Steel during outages of the main boilers, DTE River Rouge leased a Portable Boiler. The leasing of the Portable Boiler became more frequent and DTE River Rouge decided to purchase the approximately 40-year old Portable Boiler from the rental company during the fourth quarter of 2014. The unit is a natural gas-fired Portable Boiler nominally rated at 33.5 MMBtu per hour heat input and 150 psi. The equipment (located in a trailer) was brought to the plant on November 1, 2014 and it is permanently installed at the site, starting its operations on April 20, 2015. All the meters and monitoring system used with the former Auxiliary Boiler have been connected to the Portable Boiler.

There are also four 28.4 MMBtu per hour diesel fueled generators connected to the electrical grid and operate as peaking units (Peakers) for black start. No add-on emissions controls are associated with the Portable Boiler or Peakers; sulfur emissions from the Peakers are limited through the sulfur content of the fuel.

The facility has three diesel generators located in the coal yard to provide emergency lighting in the event of a blackout. There are four part-cleaners, two located in the maintenance machine shop and the other two in the fuel supply area.

### 3 - REGULATORY BACKGROUND

DTE River Rouge is a New Source Review major source for carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO<sub>2</sub>), and particulate matter (PM). The source is also a Clean Air Act Section 112 major source for Hazardous Air Pollutants (HAPs), primarily due to emissions of hydrogen chloride (HCl). Therefore, the source is subject to the Title V program, known as the Renewable Operating Permit (ROP) program in Michigan. Unit 1 is subject to New Source Performance Standards (NSPS) at 40 CFR 60, Subparts Da and it is also subject to the National Emissions Standards for Hazardous Air Pollutants (or MACT) at 40 CFR 63, Subpart DDDDD. Unit 3 is subject to the MACT standards at 40 CFR 63, Subpart UUUUU, including the limits for filterable PM, HCl and Hg. Unit 3 and its electrostatic precipitator (ESP) controls are subject to the federal Compliance Assurance Monitoring (CAM) regulation at 40 CFR 64. The newer portions of the coal handling system are regulated under the NSPS at 40 CFR 60, Subpart Y. The diesel peaking units and the emergency generators at the site are subject to the MACT standards at 40 CFR 63, Subpart ZZZZ. Fugitive dust emissions are regulated under State Implementation Plan (SIP) Order No. 9-1993, which has been incorporated into the ROP.

A Portable Boiler designed to burn natural gas is permanently located at the facility since 11/1/2014 and substituted the Auxiliary Boiler installed in 1987 (limited-used boiler regulated under 63.7499(o) of 40 CFR Subpart DDDDD) which operated until May 2013. DTE River Rouge submitted a notification letter to AQD indicating that the Auxiliary Boiler was permanently inoperable. Consequently, the requirements cited in the ROP for the Auxiliary Boiler (EU-AUX\_BOILER) are no longer applicable. AQD will remove EU-AUX\_BOILER special conditions requirements during the ROP renewal.

The Portable Boiler, with 33.5 MMBtu per hour heat input, is exempt from the requirements of Rule 201 to obtain a PTI under exemption R336.282(2)(i) – indirect heating, natural gas firing equipment with heat input rate less than 50 MMBtu per hour. The Portable Boiler has a fabrication date of January 9, 1975, therefore; it is not subject to the New Source Performance Standards (NSPS) at 40 CFR 60, Subparts Dc. However, it is considered an existing source regulated under the National Emissions Standards for Hazardous Air Pollutants (or MACT) at 40 CFR 63, Subpart DDDDD. There are no emission limits or operating parameter limitations associated with MACT regulations applicable to the Portable Boiler. The only requirements are a one-time energy assessment and an annual tune-up.

Units 1 and 3 boilers are subject to the federal Acid Rain (AR) regulations and to the Cross-State Air Pollution Rule (CSAPR). On September 7, 2016 the EPA finalized an update to the CSAPR for the 2008 Ozone National Ambient Air Quality Standards (NAAQS) by issuing the final CSAPR Update. CSAPR regulations are replacing the Clear Air Interstate (CAIR) regulations. CSAPR regulates annual emissions of NOx and SO<sub>2</sub> as well as NOx emissions during the ozone season (May 1 through September 30) from subject electric generating units (EGUs). CSAPR implementation began on January 1, 2015. CSAPR requires fossil fuel-fired EGUs at coal-, gas-, and oil-fired facilities in 27 States (Michigan is one of them) to reduce emissions to help downwind areas attain fine particle and/or ozone with the NAAQS. Starting on May 1, 2017 the CSAPR Update ozone season (May 1 through October 31) NOx program will largely replace the original CSAPR ozone season NOx program. The Acid Rain permit expires in conjunction with the facility's ROP and the renewal is issued at the same time of the ROP renewal. CSAPR requirements of 40 CFR Part 97, Subparts AAAAA, BBBBB and CCCCC will be incorporated as an appendix into the ROP during the renewal process. The compliance determination with the Acid Rain and CSAPR regulations is primarily performed by the US EPA at the end of every compliance period through the acceptance and evaluation of the data submitted directly by DTE River Rouge to the EPA Clean Air Markets program. This process is called annual reconciliation.

## **4 - FACILITY VISIT**

### **Overview**

On 6/2/2017 I arrived at Belanger Park Drive at about 9 AM and signed in at the DTE River Rouge. I met with Amanda Kosch, Environmental Engineer at DTE River Rouge. Ms. Kosch introduced me to Ms. Tanecia Wilson, Environmental Engineer at DTE River Rouge. Ms. Kosch has been the main contact at DTE River Rouge for Air Quality compliance and permit related issues. However, Ms. Kosch indicated that she has been transferred to the DTE Monroe Power Plant and Ms. Wilson will be replacing Ms. Kosch. During the transition period and before she is fully transferred to Monroe, Ms. Kosch will be a backup contact for DTE River Rouge issues.

After the introductions, I stated the objective of the inspection. The purpose of the inspection was to evaluate the facility's compliance with respect to the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), and the conditions of Renewable Operating Permit (ROP) number MI-ROP-B2810-2012b (ROP).

The inspection consisted of approximately six hours of investigation. During the opening meeting I gave an outline of the main issues to be evaluated. Then, we discussed the ROP provisions and recordkeeping requirements. Ms. Kosch provided some of the records requested and she agreed on sending the remaining records via email. A plant tour followed our discussion until approximately noon time. We met again at 1:30 PM to finish the plant tour and to finalize our discussion. At the closure meeting I indicated that the final status of

compliance would be determined after further evaluation of the records is conducted. I left the facility at about 4:30 PM.

Since the 2015 inspection there have been some changes at the plant. One of the first things I noticed was the low-level activity at the conveyor/transportation system that transfers the coal to the bunkers. This is explained by the reduction of coal usage due to the cessation in operations of Unit 2. We started the tour at the north side area of the plant to observe the most recent project installed at the plant: the ACI/DSI system. The activated carbon storage, Silos No. 1 and No. 2, are located near the abandoned rail-road track facing the River Rouge Canal. Mr. Gary Toulouse, Production Manager, gave an overview of the operations and identified the ACI/DSI equipment and its functions. The ACI/DSI system started operations on March 14, 2016. From the area of the ACI/DSI we proceeded to the CEMs shelter. Ms. Kosch introduced me to the staff (from an outside company) who were by Unit 3 stack conducting Mercury RATA testing for the ACI/DSI System. Mr. Mac Henderson, the CEMs technician, showed us the monitor that displays the emission for the different pollutants. Emissions data were obtained from the analyzers in the CEMS shelter for Unit 3 on June 2, 2017. Opacity readings were also recorded at the location of the COMs analyzers for Unit 3. After leaving the CEM shelter we stopped at to the control room of the ESP and I recorded some operational data. The Mercury shelter for Unit 3 was visited in our plant walkthrough to observe the sorbent trap system. The last stop, before the morning break, was at the coal supply section of the plant. We met with Mr. Phil Wellman, the Fuel Supply Supervisor, and he provided an update on coal consumption and coal blending. The boiler control room was not visited during the inspection, but we examined the data on Ms. Kosch's computer screens. We discussed the parameters that are regularly monitored and recorded at the facility.

After the break, we stopped at: the Peakers, which are situated at the south-east corner of the plant; the trailer that houses the Portable Boiler; and the location of the "former" Auxiliary Boiler. Ms. Kosch pointed out to the Auxiliary Boiler fittings connections to the system and they were all "disconnected". To conclude the tour, we observed the cold cleaners.

All the recorded data obtained during the plant tour is provided later in this report.

Before leaving the site, I drove along Belanger Park Drive west and south of the plant and I conducted stack observations. No visible emissions were observed from Unit 3 boiler stack or the two PCI coal mill stacks. Views from these directions placed the sun outside the allowed 140° angle for an official Method 9 reading and in a location which served to enhance the appearance of visible emissions.

### **Observations and Updates**

For ease of documentation, I have combined the observations that relate to one another or that are common to an emission unit or group of emission units. Unless a time stamp was readily observable at a display, the times given are from the display on my personal mobile phone; data at the CEMS/COMS and the ESPs are constantly altering, therefore observations from the displays for a number of categories are not necessarily concurrent to one another. The information included below was either gathered the day of the on-site visit, updated from past description, and/or provided or revised by DTE River Rouge staff.

Coal is received by railcar at the southwestern edge of the plant. Since the shutdown of Unit 2, coal usage has decreased from 5,000 tons per day, reported during the 2015 inspection, to approximately 1,600 tons per day. When both boiler units were running the trains delivered coal at the plant two to three days per week; now, coal delivery has been reduced to four trains per month. Eastern Coal deliveries were suspended around June 2016 and since August 2016 the facility stopped blending coal and it is processing Western Coal only. Western Coal trains will carry about 130 cars with a capacity of 115 tons per car. Last month (May 2017) the total coal inventory at the end of the month was near 80,000 tons. In May 2017, the plant received two trains of the Western Coal for Units 3, carrying about 15,000 tons of coal. The plant received one train for the PCI system, carrying between 11,600 tons and 13,200 tons of coal.

Coal is loaded into the bunkers Monday to Friday between 7 am and 11 am. The Unit 3 bunker holds 3,000 tons. The PCI bunkers hold 3,000 tons total; 2,000 for the U.S. Steel system and 1,000 for the AK Steel system. Typically, the PCI system will only consume 700-900 tons per day per system: A maximum of 700 tons / day for the AK Steel system and 900 tons / day for the U.S. Steel system. The bunkers used for the PCI units were originally part of Unit 1, which explains their large capacity.

In May 2017, total coal usage was:

33,000 tons Western Coal (Unit 3)  
 0 tons Eastern Coal (blending ceased in August 2016)  
 20,000 tons for U.S. Steel (PCI)  
 14,800 tons for AK Steel (PCI)

Particulate control in the coal yard is accomplished through preventative measures, except at the Rail Car Dumper House. The Rail Car Dumper House consists of an enclosed structure overtop an excavated pit. A railcar charged with coal enters the Rail Car Dumper House, is secured, and then revolved to discharge coal into the pit below. The air within the structure is filtered through baghouses and vented vertically to ambient air through two stacks. Collected coal particles are returned to the coal pit below. An underground riser lifts the coal to the aboveground enclosed conveying system and the Drive House, where an enclosed stacker diverts the coal to the stockpile. The dust suppressant Benetech is sprayed onto the coal as it is lifted from the pit; although the other major transfer points (the Coal Unloading House, etc.) were originally equipped with add-on particulate control devices and exhaust stacks, the application of the Benetech coal suppressant at various stages in the conveying process has supplanted the filtering systems as the particulate control system for these transfer points. At the time of the plant walkthrough on June 2, 2017 there were no process operation activities at the fuel supply area. Therefore, observations of the unloading of railcars at the Rail Car Dumper House and visible emissions from the baghouse stacks and/or from other activities (i.e. stockpiles, transportation conveyors, etc.) were not conducted.

The paved areas of the plant were swept, and traffic produced minimal localized dust. Signs denoting a speed limit of 15 miles per hour were noted along traffic routes.

Unit 3 has a circular ash silo installed between the boiler and the ESP. The silo stores fly ash from the ESP hoppers. DTE River Rouge takes the wet bottom ash from the ash hoppers in the plant and it is transferred to the silo through a different system. It is dewatered, added to the silo, and then both the fly ash and the bottom ash are rehydrated when loaded into trucks and taken offsite. The ash loading area is a partial enclosure allowing for truck traffic but with flaps extending down at the truck entrance and exit points. The ESP and associated supports overhang the area to the north and the boiler house is located to the south. For Unit 3 silo, the only practical direction for particulate emissions to exit the area is to the west. Since ash loading at the silo was not occurring during the plant tour on June 2, 2017, no emissions observation took place.

When Units 2 and 3 were both in operation, DTE River Rouge used to run them primarily on the lower sulfur, lower Btu content Western Coal, and occasionally, to maximize the load, the fuel supply to the boilers was a mixture of 30% Eastern Coal with 70% Western Coal. However, since mid-2016, after Unit 2 was shut down, DTE River Rouge is running Unit 3 with Western Coal only. Unit 3 was in operation at the time of the inspection and Unit 1 remains non-operational, as it has been the case for several years.

Emission data were obtained from the CEMS display at the 9th floor shelter where the CEMS analyzers are located. The recorded time is from the clock on my mobile phone. Print-outs from the computerized data acquisition and handling system (DAHS) located at the boiler control rooms were provided by Amanda Kosch, for the operations on June 2, 2017. The information collected is presented on the table below. Please note that the computer does not adjust the clock to the daylight savings time (DST); therefore, the DAHS time is one hour behind the actual time. The net and gross power data can be obtained from digital readouts in the control room; the CEMS shelter is equipped with a gross power digital readout.

As per paragraph 2.5 of EPA Method 9, DTE River Rouge records opacity in non-overlapping six-minute block averages. The computerized data acquisition system tracks opacity by the instantaneous reading, the current six-minute average, and the previous six-minute average. Utilizing the CEMS SO<sub>2</sub> ppm and exhaust flow data the computer system tracks the tons of SO<sub>2</sub> emitted thus far that calendar day and extrapolates to predict a calendar day total.

Unit	3	3
Date	6/2/2017	6/2/2017
Time (*)	10:45 AM	11:45 AM
Data Source	DAHS Printout	Analyzer
Opacity (% , instantaneous)	1.22	1.70
Opacity (% , 6-min. avg. current)	1.23	-----
Opacity (% , 6-min. avg. previous)	1.26	-----
NOx (ppm)	111.2	110.8
NOx (lb. / hr.)	403	-----
NOx (lb. /MMBtu)	0.257	-----

SO2 (ppm)	85.1	84.8
SO2 (lb./hr.)	420.4	-----
SO2 (lb. / MMBtu)	0.268	-----
SO2 (ton/day predicted)	-----	-----
SO2 (ton/day actual)	4.5	-----
CO2 (%)	8.73	8.73
CO2 (ppm)	-----	-----
Exhaust flow (kscfm)	496	Not recorded
Stack temperature (°F)	-----	-----
Steam load (kt#/hr)	-----	-----
Dilution ratio	100.00	-----
Dilution ratio corrected	99.8	-----
Power (gross/net MW)	Not listed in the printout record	Not recorded

(\*) From the second Sunday in March and the first Sunday in November the DAHS time is one hour behind operating time due to daylight savings time

The ACI/DSI system was installed to treat HCl, PM and Hg in the flue-gas before it enters to the ESP. The ACI/DSI includes: One (1) DSI sorbent storage trailer; one (1) DSI sorbent metering trailer; two (2) ACI sorbent storage silos equipped with bin vents – Silos 1 and 2; pneumatic system to transfer the sorbent from delivery trucks to the silos; blowers and other equipment required to inject the sorbents into the flue gas ductwork.

Mercury emissions are controlled by the ACI system. The activated carbon is delivered by enclosed dry bulk semi-trailers trucks and it is pneumatically unloaded and stored in a dedicated silo. From the silo, the activated carbon is metered and pneumatically transported from the ground level silo to the flue gas ductwork. The flue gas temperature is critical to ACI performance. At temperatures above 350 °F the mercury capture drops off rapidly. Therefore, to effectively control mercury emissions, the sorbent is injected into the flue gas downstream of the air heater and prior the ESP. The activated carbon reacts with or absorbs mercury, capturing the mercury as particulate matter in the existing ESP. The fly ash is removed for proper disposal utilizing the existing fly ash collection and disposal system.

HCl emissions are controlled through an acid gas powdered sorbent system or DSI system. Trona, a sodium carbonate compound, is injected into downstream flue gas ductwork prior to the ESP. Trona absorbs and reacts with HCl in the flue gas to form a sodium salt compound. As the transformed particle moves downstream, the ESP removes the entire particle from the flue gas. Because the use of sodium sorbents reduces fly ash resistivity, the DSI process typically enhances the ESP performance and reduces particulate matter emission rates. The solid reaction products including NaCl (sodium chloride), NaF (sodium fluoride), Na<sub>2</sub>SO<sub>4</sub> (sodium sulfate) are comingled with the fly ash and the collected in the dry ESP. The fly ash is removed utilizing the existing fly ash handling system.

The system described above was installed before Unit 2 was retired, thus Silo 1 (which would serve Unit 2) is on-site but was never connected. Silo 2 stores the activated carbon that is injected to the flue-gas out of Unit 3 prior to the ESP. ACI sorbents are charged two to three times a week. No visible emissions were observed from the top bin vent that discharges to the atmosphere from Silo 2. The portable DSI system is located a short distance from the silos, toward the location of Unit 3's stack. There are two portable trailers nearby and north of the stack, one is the sorbent metering trailer and the other is the blower trailer. Truck unloading occurs at the site and Trona is fed twice a week for a storage of about 70,000 pounds. According to the explanation given by DTE River Rouge plant staff, Trona injection rates and flow distribution are closely monitored and controlled to obtain the desired HCl emission limits. No visible emissions were observed from the dust collector located at the top of the sorbent metering trailer.

After being treated by the ACI/DSI system, flue gases from Unit 3 are vented through an ESP prior to discharge. The ESP is constructed of four parallel chambers identified as A, B, C and D. Each chamber has six fields (1 to 6). Therefore, there are a total of 24 ESP fields for the unit boiler. Flue gas is apportioned among the

chambers to achieve the best performance. Most particles are to be collected at the first two fields. A good indication of an effective ESP performance operation in term of particle collection is having the highest sparking rates (from 30 to 70 sparks per minute) at the first two fields (1 and 2), with decreasing sparking rates towards field No. 6. Sparking rates of "zero" are expected at field 6. During the inspection of June 2, 2017, digital readings of operational parameters were recorded for Unit 3, Chamber A. The parameters are displayed for fields 3 and 6, with the readouts given below:

Unit Boiler	# 3	# 3
Date	6/2/2017	6/2/2017
Time	12:06 PM	12:06 PM
Chamber/Field	A/3	A/6
Sparks per minute	14	0
Arcs per minute	0	0
Primary amps	293	198
Primary volts	295	265
Secondary amps	1.93	1.63
Secondary kilovolts	29	22
Kilowatts	67	46
Firing angle	121	130

The monitors also indicate, by a red light on/off toggle, when the following occur: spark, arc, ramp, search, limit, full conductance, unbalance, short, pulse block, back corona, P.O.R/P.R.R., aux. alarm 1, aux. alarm 2, M.F.T., T/R temp, and SCR temp. Fields that are down (non-operational) show a continuous red light denoting either a "short" or "unbalance".

Most of the PCI coal processing equipment is installed on the level of the CEMS shelter. PCI coal is stored in the former Unit 1 coal bunker and then pulverized either in one of the four original PCI mills for Zug Island or in the Alstom mill for AK Steel. Zug Island PCI coal is transferred to one of two 75-ton silos and then piped across the Rouge River. AK Steel PCI coal is transferred to a stand-alone silo at the northeastern end of the plant and then drop loaded into trucks for transport to AK Steel.

The vertical PCI transfer stacks and the horizontal stacks were observed to be clear at the time of the inspection. The PCI silo was observed to be clear, though no truck loading was occurring at the time. No visible emissions were observed exhausting out of the original mill stack (ringed blue at the top) or out of the Alstom mill stack (silver-colored).

Pressure drop gauges are installed across the dust collectors at the mills. They are identified as Filterhouse No.1, 2, 5 and 6. Thermocouple lines appeared to be present at the mills though no displays were observed.

The PCI computer displays are in the "former Unit 2" control room but were not visited during the plant walkthrough. According to a previous inspections, alarms and broken bag detectors are incorporated into the software as required; though this was not confirmed during the inspection of June 2, 2017. Daily records of pressure drop values for the various PCI dust collectors and vent filters (in inches of water column) are maintained by DTE River Rouge. Examples of these records were provided by Ms. Kosch via email received on 6/4/2017.

The Portable Boiler was in operation at the time of the inspection. No visible emissions were observed.

In the last portion of the plant tour we visited the location of the cold cleaners and the emergency generators. There are no changes in the size or type of part-cleaners; they are all "Zep Dyna 143" cold cleaners. Two of them are in the maintenance machine shop, one in the fuel supply tractor house and one in the fuel supply maintenance shop. All were inspected, the lids were observed closed, and instructions for proper operation were posted.

Three diesel generators are in the coal yard to provide emergency lighting in the event of a blackout. Clocks are installed on each generator with operational hours displayed. At the time of the inspection on 6/2/2017, the clock in the generator outside the Breaker/Tractor Houses (Generac 1) displayed 665.7 hours. On 7/12/2015, the display showed 553.3 hours; therefore, in a two-year period Generac 1, emergency generator has been operated for 112.4 hrs. The other three generators - Generac 2, located outside the Unloading House, and Generac 3 outside the Rail Car Dumper House were not inspected, but records of the operational hours were requested. Records were received via email on 6/23/2017. Each generator is equipped with a tank capable of holding about 40 gallons of diesel fuel. The generators are run for about 20 minutes each week to ensure reliability.

No underground fuel tanks remain at the site. There are two (2) - 1,000-gallon above ground diesel tanks behind the Tractor House and one (1) - 1,000-gallon above ground gasoline tank by the Dumpster House for fueling plant vehicles. Two open-topped storage tanks are installed near the western edge of the boilerhouse. The northern tank is for the storage of liquid wastes from boiler blowdowns; the southern tank is for the storage of wastewater having contacted an oil or lubricant, such as from the maintenance shop floor drains. The tanks are rarely used.

## 5 - COMPLIANCE EVALUATION

The initial ROP for DTE River Rouge was issued on 9/22/2003. AQD issued the renewal MI-ROP-B2810-2012 on 4/1/2012. Since the last ROP renewal in 2012, DTE River Rouge has received approval for ROP minor modifications to incorporate various Permits to Install (PTI) that had been issued within a two-year period since the last inspection of 7/20/2015. The chronology of PTI issuance and ROP modifications is cited below. As of the publication of this report, the current permit is MI-ROP-B2810-2012b.

On 7/24/2015, AQD issued PTI 40-08G, which establishes new SO<sub>2</sub> limits and recordkeeping for the coal fired Units 2 and 3, in support of 1-hr SO<sub>2</sub> National Ambient Air Quality Standards (NAAQS). DTE River Rouge elected to establish lower pound per hour and pound per million Btu, federally enforceable SO<sub>2</sub> emission limits by managing the sulfur content in the fuel concentrations and fuel consumption to achieve new unit specific SO<sub>2</sub> limits. DTE River Rouge must comply with the new emission limits on and after January 1, 2017.

PTI 40-08G also retained special conditions and applicable requirements for the limited combustion of paint solids (RPS) in Units 2 and 3, as had been originally permitted under PTI 40-08C. PTI 40-08C allowed the combustion of RPS up to 40 tons per day and 1,000 tons per 12-month rolling time period. The issuance of PTI 40-08E on 2/14/2013 increased the annual amount to 10,000 tons. PTI 40-08E was voided on 7/24/2015 and the flexible group "FG-RPSProject" was incorporated into PTI 40-08G issued on 7/24/2015.

On 12/1/2015, AQD issued MI-ROP-B2810-2012a, a minor modification to incorporate permit PTI 215-06B into MI-ROP-B2810-2012. No comments from the EPA were received after the 45-day comment period. PTI 215-06B (issued on 5/30/2012) clarified and made corrections to the language within FG-PCI\_COAL\_HAND, a flexible group containing requirements for the pulverized coal injection (PCI) system at the plant. Since issuance of MI-ROP-B2810-2012, the former Detroit Edison Company has been renamed "DTE Electric Company"; this change was incorporated into MI-ROP-B2810-2012a.

On 11/1/2016, AQD approved MI-ROP-B2810-2012b, a minor modification to incorporate permits PTI 82-15A and 40-08H into Section 1 of the ROP. On 5/3/2016, AQD approved modifications under PTI 82-15A (the MATS Compliance Project) and PTI 40-08H (the SO<sub>2</sub> 1-hour NAAQS project). The amended permits reflected the shutdown of Unit 2, changes to Unit 3's SO<sub>2</sub> emission limits, and the removal of RPS as an alternative fuel in the boilers. PTI 82-15A replaced PTI 82-15 which had been issued on 7/24/2015 for the installation of air emission control systems, Dry Solvent Injection (DSI) and Activated Carbon Injection (ACI) on Units 2 and 3 to comply with the proposed Mercury and Air Toxics Standards (MATS) in accordance with 40 CFR Part 63, Subpart UUUUU. PTI 40-08H replaced PTI 40-08G issued on 5/3/2016 to remove Unit 2 from the ROP. PTI 40-08H also removed the ability to combust RPS.

Prior to the inspections of 6/2/2017 the last site inspection was conducted on 7/20/2015, with full compliance evaluation covering the period from 7/20/2014 to 7/20/2015. In general, this report covers compliance activities that have occurred from 6/2/2016 to 6/2/2017, although historical data is presented in some sections of the report.

### **GENERAL PROVISIONS: MI-ROP-B2810-2012b, GENERAL CONDITIONS**

**9, 10 – Compliance** – Collected air contaminants shall be removed to maintain controls at required collection efficiency; air cleaning devices installed and operated in a satisfactory manner – Controls were installed and operating properly during the dates when the facility was inspected. Dust suppressants are utilized in addition to add-on particulate controls.



**11 – Compliance** – Visible emissions limited to 20% opacity over a six-minute average, with the exception of one six-minute period per hour where the average may not exceed 27%, unless otherwise specified in the ROP or in a federal NSPS. This limit applies to point source (non-fugitive) emission units at the plant – I did not observe visible emissions exceeding 20% opacity during the site inspection conducted on 6/2/2017.

**12 – Compliance** – Nuisance emissions prohibited – During the evaluated period, the AQD Detroit Office has not received any citizen complaints related to fallout or odors attributed to DTE River Rouge operations.

**19 through 23, 25 (and under individual EU/FG tables at SCs VII.1 through 3) – Compliance** – Semiannual deviation reports, Rule 912 reports, compliance certifications and report certifications – For both sections of the ROP (1 and 2), the semiannual deviation reports and annual certifications were timely submitted in accordance with the terms and conditions cited on the ROP. Please refer to the Full Compliance Evaluation (FCE) summary for the specific postmarked dates when ADQ Detroit Office received the semiannual and annual reports.

**24 – Compliance – Submissions to the Emissions Inventory** – The 2016 estimated emissions from DTE River Rouge were reported on line through the Michigan Air Emission Report System (MAERS). The information was timely submitted and received by AQD on 3/13/2017. The certification was received (or postmarked) on 3/15/2017. Please see audit report B281034737.

#### **UNIT 1: MI-ROP-B2810-2012b, EU-BOILER#1**

Installed in 1953, Boiler No. 1 (or Unit 1) is a 2400 MMBtu per hour natural gas-fired unit equipped with Low-NOx burners and flue gas recirculation. Modified in 1999 through a conversion to natural gas-fire, Unit 1 is subject to NSPS Da, MACT DDDDD, the federal Acid Rain program, and CAIR regulations).

Unit 1 has not operated since 10/22/2005 but the Unit is still listed on the ROP as active source. DTE River Rouge continues to submit quarterly reports to show compliance with the emissions limits and the operational requirements cited for EU-BOILER#1.

Due to the inactivity of Unit 1, no further discussion will be presented in this report regarding the ROP special conditions and requirements. If interested in the evaluation and/or the applicability of the above cited regulations to Unit 1, please refer to the inspection report dated 9/17/2013, under the sections labeled "UNIT 1: MI-ROP-B2810-2012, EU-BOILER#1". Also read "MACT DDDDD for Steam Boilers and Process Heaters" in this report.

#### **AUXILIARY BOILER: MI-ROP-B2810-2012b, EU-AUX BOILER**

A 235 MMBtu per hour natural gas-fired Auxiliary Boiler, without add-on air pollution control equipment was installed in 1987. This unit, subject to NSPS Db and MACT DDDDD, operated infrequently and provided steam to customers in the event the boilers in the main plant were down. The unit remains on-site but has been nonoperational since May 2013. According to the 2013 quarterly CEMS/COMS reports submitted for Units 2 and 3, the Auxiliary Boiler only operated one (1) hour in the second quarter and one (1) hour in the fourth quarter, for testing purposes. A rented portable boiler operated 108 hours for steam production. DTE River Rouge submitted a notification letter to AQD indicating that the Auxiliary Boiler is permanently inoperable. Starting 2014, the terms and conditions cited on the ROP for EU-AUX\_BOILER are no longer applicable and will not be discussed in this report. EU-AUX\_BOILER was replaced with a Portable Boiler. Off-permit changes were introduced by DTE River Rouge on September 30, 2015 for the Portable Boiler and its MACT requirements. AQD will remove the EU-AUX\_BOILER requirements during the ROP renewal. The compliance requirements for the Portable Boiler will be discussed under section "MACT DDDDD for Steam Boilers and Process Heaters".

#### **PORTABLE BOILER: NSPS Db FOR STEAM BOILERS – NOT APPLICABLE**

The federal New Source Performance Standards (NSPS) at 40 CFR 60, Subparts A and Db regulates industrial, commercial, and institutional steam generating units that commenced construction, reconstruction, or modification after 6/19/1984 and have a maximum heat input capacity greater than 100 MMBtu per hour. For the period between May 2013 and November 2014 DTE River Rouge leased a "Portable Boiler". The Portable Boiler was installed at DTE River Rouge on 11/1/2014 and it started normal operations on 4/20/2015. The Potable Boiler has a fabrication date of January 1, 1975 and a 33.5 MMBtu per hour heat input; therefore, the unit is not subject to the NSPS regulation.

#### **UNIT 1 AND PORTABLE BOILER: MACT DDDDD FOR STEAM BOILERS AND PROCESS HEATERS In Compliance**

The federal National Emissions Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR 63, Subparts A and DDDDD (MACT DDDDD) regulates hazardous air pollutants (HAP) emissions from boilers and process heaters installed at major sources of HAPs. DTE River Rouge is a major source of HAPs.

MACT DDDDD applies to industrial boilers, commercial boilers, institutional boilers, and process heaters (40 CFR 63.7490(a) through (e)). An "industrial boiler" is defined at 40 CFR 63.7575 as "a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity." Unit 1, Unit 2, Unit 3, and the Portable Boiler all produce steam or electricity and therefore are considered industrial boilers. However, Units 2 and 3 are electric utility steam generating units (EGU) regulated by MACT UUUUU and therefore, by 40 CFR 63.7491(a), are not subject to regulation under MACT DDDDD (please see report B281018764). Per 40 CFR 63.9983(b), Unit 1 is not subject to MACT UUUUU because, though an EGU, it combusts neither coal nor oil and combusts natural gas in an amount greater than 15.0 percent of the boiler's annual heat input for a calendar year. Per 40 CFR 63.9981 and 40 CFR 63.10042, the Portable Boiler is not subject to MACT UUUUU because it does not produce electricity for sale and therefore it does not meet the definition of an EGU under the standard. Excluded from regulation under MACT UUUUU, Unit 1 and the Portable Boiler thus default to regulation under MACT DDDDD.

Construction on both Unit 1 and the Portable Boiler commenced prior to 6/4/2010 and therefore both are considered "existing" industrial boilers (40 CFR 63.7490(d)). Both combust natural gas and so fall within the definition of a "unit designed to burn gas 1 subcategory" at 40 CFR 63.7575. At 40 CFR 63.7490(a)(1), the collection of all existing boilers and process heaters within a subcategory constitutes an affected source and, therefore, Unit 1 and the Portable Boiler combine to form a single affected source under MACT DDDDD.

DTE River Rouge also operates natural gas fired-coal mill heaters within the PCI process. The combustion gases directly contact the coal within these units and therefore this equipment does not meet the definition of "process heater" at 40 CFR 63.7575: "process heaters are devices in which the combustion gases do not come into direct contact with process materials." These units are regulated as thermal dryers under the NSPS Y for Coal Preparation Plants.

Compliance with MACT DDDDD is required not later than 1/31/2016 for existing boilers and process heaters (40 CFR 63.7495(b)). An Initial Notification dated May 30, 2013, post marked by AQD on June 3, 2013, was received from DTE River Rouge for this standard as it applied to the former Auxiliary Boiler (EU\_AUX\_BOILER). In January 2015, DTE River Rouge submitted an amendment to the 2013 Initial Notification requesting the revision of the classification for EU\_AUX\_BOILER to the limited use subcategory as defined in 40CFR 63.7545. However, later in the year, DTE River Rouge dismissed the request due to the replacement of the existing Auxiliary Boiler with the Portable Boiler.

The 33.5 MMBTU/ hr. portable boiler is capable of firing 30,000 scf of natural gas per hour at the boiler's maximum steady state design capacity. DTE River Rouge has demonstrated compliance with the applicable work practice standards requirements cited under 40 CFR 63.7499 (l) as described below:

On March 14, 2017 AQD received a copy of the 40 CFR Subpart DDDDD tune-up compliance report as it was submitted by DTE River Rouge on the Compliance and Emissions Data Reporting Interface (CEDRI). The report, was submitted in compliance with 63.7550(c)(1) for existing Units in the 63.7499 (l): Unit designed to burn gas 1 fuels. It covered the period from January 1, 2016 to December 31, 2016 and it was timely submitted in the reporting year immediately following the tune-up. The report contains information required under 63.7550 (c)(5) (ii to iii); as well as 63.7550 (c)(5) (xiv) and 63.7550 (c)(5) (xvii). According to the report, the most recent tune-up per 63.7550 (c)(5) (xiv) was on 10/7/2016 and the date of burner inspection was on 10/7/2016. AQD did not request or review the actual tune-up report but according to the DTE River Rouge compliance certification report cited above, the equipment is maintained following the work practice standards for this type on units. The required tune up frequency is annual. The report also stated the usage of pipeline natural gas. There are no emission limitations associated with 40 CFR 63 Subpart DDDDD.

#### **PORTABLE BOILER: PART 8 RULES FOR NOX SOURCES**

Michigan's Part 8 rules were promulgated in response to interstate ozone transport issues identified under Section 110(a)(2)(D)(i)(I) of the Clean Air Act. The Part 8 rules incorporate requirements imposed first by the federal NOx Budget Program and by the former CAIR program with some additional provisions. Broadly, the Part 8 rules apply to fossil fuel-fired steam generating units producing electricity for sale while serving a generator with a nameplate capacity of 25 MW or more (e.g. Rules 801(2), 802(1)(a), 821(1)(a), 821(1)(b)) and any other source of NOx with a heat input capacity greater than 250 MMBtu per hour (e.g. Rules 801(4), 802(1)(b), 821(1)(c)). The Portable Boiler does not qualify under either category.

**UNITS 3: MI-ROP-B2810-2012b, EU-BOILER 3**

Installed in 1955, Boiler No. 3 (or Unit 3) is a 2670 MMBtu per hour coal-fired unit equipped with Low-NOx burners and an electrostatic precipitator. Unit 3 is subject to the federal Acid Rain and programs. The requirements for Units 3 are:

**11 (from the General Conditions), VII.5a.i. – Compliance** – Visible emissions from the boiler limited to 20% opacity over a six-minute average, except for one six-minute period per hour where the average may not exceed 27%; quarterly report on visible emissions exceedances.

I did not observe visible emissions exceeding 20% opacity during the facility inspection on 6/2/2017, and the COMS on the boiler on June 2, 2017 measured values below 20%.

Periods of excess opacity represent periods of non-compliance and have been reported by DTE River Rouge, both in the quarterly CEMS/COMS and as deviations in the ROP semiannual reports. Quarterly reports have been timely submitted to AQD within 30-days of the end of the calendar quarter and include the information required by ROP conditions. For the 12-month period from January 1, 2016 to December 31, 2016, Unit 3 is reported to have exceeded the visible emissions limit on only one occasion. The opacity exceedance lasted for six-minutes and it was recorded during the 3<sup>rd</sup> quarter of 2016. This is equivalent to say that Unit 3 was not in compliance for 0.18 seconds per hour of operation during that quarter. Though excess emissions have occurred, DTE River Rouge has maintained these periods to a minimum. Therefore, DTE River Rouge is in substantive compliance with the opacity limits. For details of the review and analysis of the quarterly reports for year 2016, please refer to report B281041700. For the review of past quarterly reports, please refer to the compliance activity reports in the AQD DTE River Rouge files.

**I.1, V.1 – Compliance** – Emissions of particulate matter not to exceed 0.175 pounds per 1000 pounds of exhaust gas on a wet basis corrected to 50% excess air; PM test once every three calendar years. These limits are established pursuant to Rule 331 and are determined by State reference test methods 5B or 5C; therefore, these limits are the filterable portion only (condensable not included) without speciation to PM10 or PM2.5.

The most recent PM testing on the exhaust of Unit 3 was conducted on October 6, 2016. The report with test results was received by AQD on October 27, 2016. Measured emissions averaged 0.003 pounds PM per thousand pounds of exhaust gas, wet basis, and corrected to 50% excess air. During the test the unit was operated at an average gross load of 257 megawatts, which is within 10% of its highest achievable load (278 GMW). Visible emissions averaged 0.6 % opacity over the duration of the test.

Previous PM tests at Unit 3 have measured the following (in units of pounds PM per 1000 pounds of exhaust gas, on a wet basis, and corrected to 50% excess air): 0.008, 0.015 and 0.010. All tests occurred at average gross loads between 80 to 90 % of full load conditions, as dictated by the day's market conditions.

All tests results have been below the emission limit for PM. For details about testing methods and procedures refer to the compliance activity reports in AQD DTE River Rouge files.

**I.2 through I.4, VII.4 – Compliance** – Sulfur dioxide emissions in Unit 3, not to exceed 1.67 pounds per million Btu heat input on a daily average based on 1.0% sulfur by weight and 12000 Btu per pound heat content; sulfur dioxide emissions not to exceed 50.5 tons per day on each calendar day; and 2,300 pounds per hour in a 720-clock hour rolling average at the end of each calendar day; quarterly report on operating hours and daily sulfur emissions.

For this compliance evaluation, quarterly reports of daily SO<sub>2</sub> emissions were examined for a 12-month period from January 1, 2016 to December 31, 2016. Please see report B281041700. The maximum reported emissions for the evaluated period were 1.17 pounds per million Btu heat input reported on 1/26/2016, and 20.2 tons per day reported on 2/11/2016.

For a detailed evaluation of quarterly reports on sulfur dioxide emissions previous to the inspection of June 2, 2017 please see review reports on AQD DTE River Rouge files.

**III.1 and 2, IV.1 and 2 – Compliance** – Unit 3 not to be operated unless the Low-NOx burners and electrostatic precipitator (ESP) is installed and operated properly; ESP is to be equipped with a saturable core, silicon-controlled rectifier linear reactor or equivalent; the transformer-rectifier capable of operating at optimum spark-limited mode and meter/display the primary RMS voltage and amperage, the average secondary amperage, and the average spark rate; Malfunction Abatement Plan (MAP) implemented for ESP, Low-NOx burners, abnormal conditions, startup/shutdown, malfunction, and excess emissions.

According to AQD records, DTE River Rouge submitted a Malfunction Abatement Plan (MAP) for the ESPs and Low-NOx burners on 3/12/2004. The MAP was associated with both Unit 2 and Unit 3. Unit 2 retired in April 2016. A revised MAP dated August 11, 2016 (with cover letter dated August 16, 2016) was received by AQD on August 19, 2016. The MAP revisions reflect the ceased in operations of Boiler No. 2 by removing all references to Unit 2. AQD reviewed the MAP and considered the revisions appropriate. The maintenance activities (i.e. preventive maintenance program, the monitoring requirements and the corrective action procedures) described in the 2004 MAP remain essentially the same. The MAP calls for daily review of emissions (e.g. NOx emission rate), control parameters (e.g. voltages), and certain equipment (e.g. observe combustion flame) as well as periodic maintenance during downtime.

The ESP has saturable core reactors and qualifies as "very large precipitator" having specific collection areas over 400. DTE River Rouge stated that the average spark rate is metered and displayed on the ESP panel and in the ESP control room and that each employs solid state circuitry to preset power levels based on sparking rate limits.

DTE River Rouge response to the records requested on 6/2/2017 indicated that the most recent ESP inspection was in April/May 2017, during the Unit 3 outage. In early 2017, Unit 3 underwent a series of in-depth inspections. The most recent Low-NOx burners-testing and tuning was in 2016. Before that, Unit 3 ESP repairs took place during the unit periodic outage from mid-October to December 2015. NOx testing and Unit 3 tuning was completed in 2014. Based on the information provided, it seems like DTE River Rouge is adequately implementing the MAP.

During the inspection of 6/2/2017 I noted that the primary voltage, primary amps, secondary amps, and average spark rate were all displayed on Unit 3 ESP control panel. Based on these observations and the fact that no-visible emissions were observed from the Unit 3 Stack, the ESP for Units 3 seemed to be installed and operating properly as the boiler operated.

**III.3 – Compliance** – Only burn processed coke oven gas in Units 3, unprocessed coke oven gas to be prohibited by the contract between DTE River Rouge and the coke oven gas supplier – A copy of the cited contract is kept in DTE River Rouge files. During the inspection of 6/2/2017 AQD did not request copies of the document because the contract has not changed and a transcription of the relevant section of the contract was provided during the 2015 inspection. The original Wayne County Installation Permits C-9902 & C-9903 permitted the combustion of coke oven gas from then Great Lakes Steel after it had been processed within the No. 5 Coke Oven Battery byproduct plant. Unprocessed coke oven gas contains a greater amount of hydrogen sulfide, which leads to post-combustion emissions of sulfur dioxide. The contract prohibits the transfer of coke oven gas with hydrogen sulfide in excess of 6 grains per cubic foot on a daily average.

**III.4, VI.4 – Compliance** - AQD requested recent records illustrating the measures implemented by DTE River Rouge to minimize CO. Records received via email on 6/23/2017 show "CO Minimization Actions" implemented by DTE River Rouge for the period from 5/20/2017 to 6/19/2017. Monitoring the air to fuel ratio is the primary technique utilized by DTE River Rouge to minimize CO. Adjusting oxygen percentage and visually monitoring combustion conditions were also listed as measures to minimize CO emissions. The plan dated 3/28/2001 for Unit 3 was current as of the 2015 inspection; AQD did not ask for the plan to be submitted as part of the 2017 inspection because it has remained essentially the same since its inception.

**VI.1 through 3, VII.5b. and 5c., VII.6, 7, 10.b., and 10.c. – Compliance** – Continuously monitor and record visible emissions, sulfur dioxide, nitrogen oxides, carbon dioxide, exhaust gas flow as delineated in 40 CFR 75; implement Part 75 QA/QC program; quarterly CEMS QA reports; annual COMS audit; quarterly reports on CEMS/COMS downtimes, operating time, instrument range exceedances. For SO<sub>2</sub>, in the event not one quality assured monitor operating hour is established for the CEMS in the calendar day, then daily coal sampling shall replace the CEMS as the monitoring method.

NOx monitor downtime is governed by the data substitution protocol of the Acid Rain Program. The SO<sub>2</sub> monitors serve the dual roles of the former Acid Rain accounting and compliance monitoring for SO<sub>2</sub> emission limits.

The CEMS and COMS for Units 3 measured visible emissions, SO<sub>2</sub>, NOx, CO<sub>2</sub> and exhaust gas flow data were collected during the 6/2/2017 inspection. Information of those parameters was provided earlier in this report as part of the Facility Visit summary.

AQD reviewed and evaluated the CEMS/COMS quarterly reports for a 12-month period from January 1, 2016 to December 31, 2016. During this period, the CEMS at Unit 3 failed to monitor visible emissions for very short periods, which varied from 6-minutes down of 67386 minutes of total operating time in the 1st quarter, to 24-minutes out of 104,868 minutes of total operating time in the 2<sup>nd</sup> quarter. The total downtime for year 2016 was

66 minutes down of 406,224 minutes (282 days); which is equivalent to 0.23 minutes per day of operation of Unit 3. Please see report B281041700 for review details. For the evaluation of quarterly reports and COM audits, previous to the inspection of June 2, 2017, please see compliance activity reports in AQD DTE River Rouge files.

For the evaluated period DTE River Rouge did not experience SO<sub>2</sub> monitoring downtimes problems. The most recent event occurred during the second quarter of year 2015, when an extended period of monitoring downtime for SO<sub>2</sub> at Unit 3 was reported. Specifically, Unit 3 SO<sub>2</sub> monitor experienced 25.2% downtime: 402 hours down out of 1598 hours of boiler operation. The longest downtime period during the second quarter of 2015 (378 hours) was between May 25 and June 10. Unit 3 had some problems during May and June, which had been brought to the attention of AQD during the 7/20/2015 inspection. DTE River Rouge confirmed that the root cause of the downtime was the damage to the monitor probe inside the stack. A violation notice (VN) was issued by the AQD /TPU on October 12, 2015 to address SO<sub>2</sub> monitoring downtime violations. DTE River Rouge responded to the VN with a letter dated October 28, 2015. In the letter, DTE River Rouge explained the circumstances that had caused the monitoring downtime; the course of action to resolve the problem; and the preventive measures to minimize recurrence. AQD considers the VN to be resolved.

DTE implements and maintains QA/QC program for both the CEMS and COMS. Daily calibration is conducted. Annual audit of the COMS is also performed, and the results are submitted to AQD within 30 days of the completion of the audit. The most recent audit of the COMS for Unit 3 was completed on September 2, 2016. The report with the results of the audit was received by AQD on September 9, 2016. The submittal contained minute-by -minute records of emissions data as well as QA/QC procedures implemented on that day. Per AQD/Technical Program Unit staff the COMS for visible emissions was within the recommended tolerances.

**VI.5 through 7, VII.8 and 9, IX.3 and 4 – Compliance** – COMS to be utilized as indicator of compliance with PM limits in I.1 pursuant to CAM; excursion defined as two or more consecutive 1-hour block average opacity values exceeding 20%; operate COMS when coal-fired boiler is operating and properly maintain the COMS; initiate corrective actions when CAM exceedances or excursions occur and record; semiannually report exceedances, excursions, and monitor downtime; promptly modify the CAM plan if inadequate and notify AQD.

CAM conditions were first included in the ROP with the renewal MI-ROP-B2810-2012 issued on 4/1/2012. Exceedances of the visible emissions standards are reported in the COMS quarterly reports as required by SC VII.5.a.i. During the 12-month evaluated period from January 1, 2016 to December 31, 2016, the quarterly reports showed opacity excess emissions (EE) for the first and third quarters. Three EE events (1/19, 1/20 and 2/10) were reported in the first quarter, with a total duration of 18 minutes and one event of 6-minute exceedance reported on 9/24/2016. Please note that the reported exceedances are not CAM excursion because the opacity readings exceeding 20% did not last for more than two consecutive 1-hr. block averages. With respect to opacity monitoring downtime, refer to the previous section analysis. The opacity deviations were reported in the CAM semiannual reports for the evaluated period, which are received concurrent with the semiannual ROP deviation reports.

For the review/comments of the most recent semiannual reports submitted to AQD for years 2015 and 2016, and the CAM records review reports; refer to AQD files for DTE River Rouge. CAM monitor downtime reports are also submitted concurrent with the semiannual ROP deviation reports and provide the same information regarding COMS downtime as it is provided in the quarterly CEMS/COMS reports required under Special Condition VII.5.b.

**IX.1– Compliance** – Compliance with the acid rain permitting provisions as outlined in the complete Phase II, Acid Rain permit (ARP) issued by the AQD incorporated into the ROP as Appendix 10-1 – The Phase II Acid Rain Permit No. MI-AR-1740-2012 in Appendix 10-1 expired the same date the ROP expired (April 1, 2017). The ARP renewal application is currently under review, as part of the ROP renewal process. The ARP is a “Cap and Trade” based programs regulated by EPA through the Clean Air Markets. EPA maintains an Allowance Management System (AMS) to record allowance transfers. AMS accounts are the official records for allowance holdings and transfers used for compliance purposes. At the end of every compliance period each source must hold enough allowances to cover their emissions (each allowance represents one ton of SO<sub>2</sub> or NO<sub>x</sub> emissions). EPA maintains the Air Markets Program Data (AMPD) and used the data to make compliance determination for the regulated sources. For year 2016 DTE River Rouge appears to be in compliance with the Acid Rain Program requirements since notifications of non-compliance have not been issued by EPA.

## CSAPR UPDATES

The EPA's 2005 Clean Air Interstate Rule (CAIR) ended in 2014 and it has been replaced with the Cross-State Air Pollution Rule (CSAPR). CSAPR implementation began on January 1, 2015. On September 7, 2016, the EPA revised the CSAPR ozone season NOX program by finalizing an update to CSAPR for the 2008 ozone National Ambient Air Quality Standards, known as the CSAPR Update. The CSAPR Update ozone season NOX program will largely replace the original CSAPR ozone season NOX program starting on May 1, 2017.

In a similar manner as it was cited for the Acid Rain Program, EPA makes compliance determinations in relation to the implementation of the CSAPR at the regulated sources by tracking the annual SO<sub>2</sub> and NO<sub>x</sub> allowances, as well as the ozone season NO<sub>x</sub> allowances, on AMPD). At the end of every compliance period DTE River Rouge must hold enough allowances to cover its emissions. It is assumed that for the evaluated period (year 2016) DTE River Rouge is complying with the CSAPR since non-compliance issues or remedial actions has been brought to the attention of the facility by the EPA.

### **UNIT 3 DRY SORBENT INJECTION (DSI) AND ACTIVATED CARBON INJECTION (ACI); MI-ROP-B2810-2012b, FG – DSI/ACI**

#### **Regulatory Background**

The federal National Emissions Standards for Hazardous Air Pollutants (NESHAP) at 40 CFR 63, Subparts A and UUUUU (MACT UUUUU) regulates hazardous air pollutants (HAP) emissions from coal- and oil-fired electric steam generating units (EGUs) installed at major sources of HAPs. DTE River Rouge is a major source of HAPs.

On 2/16/2012, the EPA promulgated MACT UUUUU (77 FR 9304). On 8/14/2012, DTE River Rouge met the deadline for the submittal of the Initial Notification for MACT UUUUU informing that Unit 2 and Unit 3 were existing affected sources under the standard. The Initial Notification provided the information required at 40 CFR 63.9(b)(2). The deadline for compliance with the requirements of MACT UUUUU / Mercury and Air Toxic Standards – MATS was 4/16/2016. On 4/21/2015 AQD received a permit application from DTE River Rouge requesting the installation of Dry Sorbent Injection (DSI) system to reduce sulfur dioxide and acid gas emissions, and an Activated Carbon Injection (ACI) system to reduce mercury emissions. These controls would be installed to operate in conjunction with Unit 2 and 3 to enable DTE River Rouge to comply with the MATS requirements. The new air pollution controls were permitted under PTI 85-15 which was issued on 7/24/2015. PTI 85-15 was voided on 5/3/2016 and it was replaced with permit PTI 85-15A, which included administrative changes to address the shutdown of Unit 2. Later, on 11/1/2016, PTI 85-15A was incorporated into the ROP with the approval of a minor modification and issuance of the modified ROP, MI-ROP-B2810-2012b.

#### **Applicable Requirements:**

The flexible group FG-DSI/ACI has been in operation since March 14, 2016 and are part of the pollution control equipment that regulates PM, HCl and Hg emissions from Unit 3's flue gas under the MATS regulations. PM is monitored as a surrogate for individual HAPs. HCl is measured via emission testing as a surrogate for individual acid gases.

**I.1 through 3, II.1 and V.1 – Compliance** - Emission limits for PM, HCl and Hg are listed in input-based (mass per heat input) or gross output-based (mass per electricity generated). DTE River Rouge selected heat input-based limits in lb/MMBtu for demonstrating compliance with MATS. Except during periods of startup and shutdown, PM emissions are limited to 0.03 lb / MMBtu, HCl emissions are limited to 0.002 lb / MMBtu, and Hg emissions are limited to 1.2 lb / TBtu. All emission limits are based on 30-day rolling averages calculated based on operating days as defined by MATS. Initial compliance was to be demonstrated through performance testing within 180 days after the applicable date of April 16, 2016 (not later than October 13, 2016) per 40 CFR 63.10011 (a). Subsequent performance tests are required according to 40 CFR 63.10006. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. Mercury emissions are monitored by Sorbent Trap Systems (STMS) installed at the plant and RATA testing is required. The procedures outlined in Performance Specification (PS) 30B, 12B and Appendix A of Subpart UUUUU for certification, calibration and QA/QC are used to maintain the STS. Items 3 and 4 in Table 3 of Subpart UUUUU establishes the work practice standards for periods of startup and shutdown.

Initial compliance standards for material limits was conducted in accordance with 40 CFR Part 63, Subpart UUUUU for Unit 3, per 40 CFR 63.10011(a). DTE River Rouge Initial Notification and Certification of Compliance Status (NOCS) for Mercury and Air Toxic Standards (MATS), was received/postmarked by AQD on 7/25/2016. The NOCS, dated and signed on 7/20/2016, contained the results of the initial compliance demonstration in accordance with 63.10030(e)(1) to (8). The notification was for the compliance demonstration performed using continuous emission monitoring (CEMS) for particulate matter and sorbent trap monitoring systems (STMS) for monitoring mercury. The compliance demonstration began on the first day with valid hours of operation and continued for 30 boiler operating days as defined by MATS following the compliance date of

April 16, 2016. The start and end dates for the demonstration were: 5/13/2016 to 6/17/2016 for mercury (Hg), and 5/11/2016 to 6/15/2016 for PM. The 30-Boiler Operating Day Average Value for compliance demonstration were: 0.8 lb. / Tbtu for Hg and 0.01 lb. /mmbtu for PM; which are below the MATS emission limits on Table 2 of Subpart UUUUU, Hg (1.2 lb /Tbtu) and PM (0.03 lb/mmbtu). A separate notification of compliance status was submitted by DTE River Rouge for compliance demonstration performed using testing for HCl. The report certification signed/dated on 8/22/2016 was received by AQD on 8/25/2016. The test was conducted on 6/24/2016 and the 30-Boiler Operating Day Average Value was 0.0006 lb/mmbtu (below the emission limit of 0.002 lb / mmbtu).

PM emissions are controlled by the ESPs. MATS allow for a stack testing option for demonstrating compliance with the PM emission limits using a modified version of EPA Method 5. However, DTE River Rouge selected PM CEMS. The PS11 procedures for certification, calibration and QA/QC are used to maintain the PM monitors. Data is collected by the DAHS. PS-11 PM CEMS correlation testing was conducted from June 1 to 3, 2016. The testing was performed to correlate the EPA reference method (RM) mass emission and the particulate matter monitor (PMCEMS) according to the correlation test procedure in PS 11, Appendix F of 40 CFR 60 and EGU MATS rule. The report with results dated 7/5/2016, was received by AQD on 8/8/2016. The results indicated that the PM CEMS meets the PS 11 correlation criteria for different models. A linear correlation was selected, and the correlation coefficient was 0.983.

Quarterly testing for HCl was conducted throughout the year 2016, with the initial test on 6/24/2016. The testing results in lb/mmbtu, and the corresponding testing dates, for the second, third and fourth quarter, are: 0.0006 (6/24/2016), 0.0012 (9/14/2016) and < 0.0006 (11/8/2016). All values are below the permit emission limit. Relative Accuracy Test Audit (RATA) was completed for the Mercury STMS against EPA RM 30B. RATA was conducted on May 24 and May 25, 2016. The results demonstrated that the facility passed the audit. All required QA/QC specifications were met. The RA for STMS was less than 20% (3.8 % for Unit 3).

**III.1 and 2, IV. 1 and 2, VI.2 and 3 – Compliance** – Work practice standards and operating limits according to Tables 3 (i.e. conduct a tune-up of the EGU burner and combustion controls at least each 36 calendar months) as specified in 63.10021(e). If Unit 3 is offline when the deadline to perform the tune-up passes, perform the tune-up work practice within 30 days after the re-start of Unit 3. Maintain on-site and submit, if requested by AQD, an annual report containing the information for all periodic tune-ups performed to Unit 3. Develop MATS site-specific monitoring plan of the continuous monitoring system (CMS) and submit it to AQD (if requested) at 60 days of the initial performance evaluation of the CMS.

DTE River Rouge completed the tune-up of Unit 3 burners on 7/15/2016, within the required timeline established in the regulation. During the inspection of 6/2/2017 AQD requested a report with the results. The report dated 10/11/2016 was provided via email on 6/4/2017. The information in the report meets the requirements specified in 63.10021(e)(1) to (9), which included the work practice standards -inspections and repairs activities- applicable to the burners and combustion control components, as well as combustion optimization practices to minimize the generation of CO and NOx.

A copy of the MATS Site-Specific Monitoring Plan was requested for the inspection of 6/2/2016 and it was provided on the site. The plan outlines the compliance measures, monitoring methods, reporting and other applicable requirements related to MATS per 63.10000(d)(2). The plan is kept on site and will be amended and updated as necessary. AQD reviewed the plan and it appears to address the minimum requirements cited on 63.10000 (d)(5)(i) through (d)(5)(vii).

**VI.1 and 4, VII. 4 and 5, IX– Compliance** – Keep records for 5 years following the date of the occurrence, 2 years on-site and off-site for the remaining 3 years; keep records of startups, shutdowns and malfunctions. Report in a timely manner the deviations from applicable emission limits in Tables 2 through 4 of Part 63, Subpart UUUUU or failure to conduct required tune-up.

DTE River Rouge followed the MATS notification and reporting requirements covered in section 63.10030 and 63.10031 and Table 8 of Subpart UUUUU. The first semi-annual compliance report for the period April 16, 2016 through December 31, 2016 was received by AQD on March 17, 2017. The report included all required/applicable information cited on the MATS regulation. A few periods (seven events) of PM CMS downtime were reported, for a total of 70 hours, which represents 1.3% of the total operating time. The reasons for the reported downtime varied from failure of the analyzer to calibration failures. Similarly, Hg monitoring downtime occurred ten times, for a total duration of 47 hours, representing 0.9% of the total operating time. The occurrences were attributed to electrical and sampling failures. However, there were no periods of malfunctions, no excess emissions, and no deviations reported for the cited period. Startup and shutdown data for PM CEMS and Hg STS were included in the semiannual report. The semiannual report, signed on 3/13/2017 by DTE River Rouge, is a certification of continuous compliance with MATS.

This flexible group includes the metering trailer that delivers the sorbent to the DSI system and the pneumatic conveying system that transport the activated carbon to the silo. There are bin vents and dust collectors on each emission unit.

**I.1, V.3, VI.1 – Compliance** – Maintain/demonstrate opacity limits below 7% at each individual bin vent filter or dust collectors by conducting non-certified visible emissions observations on a daily basis during normal operations; conduct EPA Reference Method 9 certified visible emissions readings of each operating emission unit at a minimum of once per calendar year, during maximum routine operating conditions and also ( for a minimum of 15 minutes) when visible emissions are detected during non-certified observations.

DTE River Rouge keeps daily records of non-certified visible emissions observations for the dust collectors at the DSI injection trailer and the ACI silo, during normal operations. A sample of the daily routine checklist used for the recording of the DSI/ACI system operational parameters was provided via email on 6/11/2017. According to the checklist, no visible emissions were observed from the cited emission units from 5/28/2017 to 6/3/2017. In addition, copies of the annual EPA Reference Method 9 certified visible emissions readings for 5/6/2016, for maximum routine operating conditions (truck loading/unloading) were received on 6/2/2017. Records reported 0% opacity.

**I.2 to I.7, V.1 and 2 – Unknown** – Emissions limits for particulate matters expressed as PM, PM10 and PM2.5, associated with various emission units (i.e. DSI metering trailer and dust collector for the ACI Silo) to be evaluated by testing per AQD request. – Verification of the particulate matters emission rates via testing have not been requested by AQD.

**III.1 and 2, IV.1, VI.2 – Compliance** – Maintain and implement a fugitive dust control plan for all material handling operations; update the control plan as necessary and keep a copy of the plan at the facility; implement and update as necessary a MAP as described in Rule 911(2) for operation of the process and emission control equipment associated with FG-MODULAR; keep a copy of the MAP at the facility; submit to AQD the fugitive dust control program, the MAP report and/or the amendments, for review and approval. If the AQD does not notify approval within 90 days of submittal, the reports or amendments shall be considered approved. Monitor and record, the hours of operation for FG-MODULAR on a daily basis.

AQD reviewed a report received on 5/16/2016 which combined the Fugitive Dust Control Plan - FDCP (dated 3/11/2016) and the MAP (dated 4/15/2016). The fugitive dust control activities associated with the new emission units conforming the DSI/ACI system were incorporated into the MAP. The MAP describes the components of the dust collectors associated with the DSI/ACI systems and how they prevent fugitive dust emissions by allowing displaced air to exit the modular system during truck uploading of sorbent, sorbent aeration, and during the use of the rotary feeder for the DSI system. Similarly, for the ACI system, dust collectors prevent fugitive emissions during truck uploading of pulverized activated carbon, silo aeration and rotary feeder. The MAP contains all required elements, such as; the preventive maintenance program, monitoring requirements, and corrective action procedures. Preventive maintenance activities are tracked and scheduled through the work management system "Maximo". An example of the most recent work order was provided on 7/11/2017. The work order showed the scheduled day for filter change. According to the MAP, operational hours are tracked automatically through an electronic system and the number of hours of operation are recorded daily for each system. No part of the ACI/DSI modular system is operated unless all associated environmental control devices are operating correctly. Procedures for corrective actions and notifications of regulatory agencies during malfunction or excess emissions are described in DTE Electric Co. Power Plant Order No. 223. A copy of this document was attached to the MAP report.

**VIII.1 and 2 – Compliance** – The exhaust gas must be discharged from the stacks, maximum exhaust dimensions (inches) and minimum exhaust heights above ground (feet) as follows: DSI Meter (9.36 x 9.36) inches and 16 feet, ACI Silo 2 serving Unit 3 (7.87 x 13.78) inches and 48 feet. Exhaust gases vent unobstructed to the atmosphere. Special Condition VIII.3 is obsolete because ACI Silo 1, originally permitted to serve Unit 2, is not used – Visual observation of the stacks during the inspection of 6/2/2017 did not raise a question of non-compliance with stack specifications, though stack height and diameter measurements were not performed.

**FLY ASH HANDLING EQUIPMENT: MI-ROP-B2810-2012b, FG-FLYASH-HANDLG**

Installed in 1954, the flexible group comprises two fly ash silos and an associated dust collector for each.

**11 (from the General Conditions), I.1, III.1, VI.1 through 3 – Compliance** – Visible emissions from each ash silo limited to 20% opacity over a six-minute average, with the exception of one six-minute period per hour where the average may not exceed 27%; particulate emission limit of 0.10 pounds per 1000 pounds. Daily non-certified Method 22 visual observations on the two fly ash stacks; if opacity is noted conduct a certified Method 9 or shut



down the process; conduct inspection on dust collector following visible emission observation. Dust collectors installed, maintained and operated satisfactorily; conduct regular inspections regardless of malfunction or failure. Log observations, shutdowns, results of inspections, and corrective actions.

Compliance with the particulate emissions limit is presumed by compliance with the opacity limitations and by proper maintenance of the controls. Fly ash loading was not occurring during the inspection of 6/2/2017; therefore, surveillance of the operations and/or observations of visible emissions were not conducted in the loading area. Records of inspections and visible emission readings were provided by DTE via email on 6/20/2017. The submittal provided an example of the fly ash Silo 2 observations from 5/26/2017 through 6/2/2017. The records showed that the system was not in-service during six of the eight days of data collected. Clear conditions with no visible emissions were observed during the two days of system operation.

#### **COAL HANDLING EQUIPMENT: MI-ROP-B2810-2012b, FG-PCI COAL HAND**

FG-PCI-COAL\_HAND is a flexible group containing requirements for the pulverized coal injection (PCI) system - the equipment for the handling and processing of PCI coal.

**I.1 and 2, II.2 and 3, V.1, VI.1 and 3 – Compliance** – Nitrogen oxides from each coal mill heater not to exceed 0.12 pounds per MMBtu heat input; nitrogen oxides from the coal mill heaters, collectively, not to exceed 48.1 tons per 12-month rolling time period; stack test upon AQD request; NOx emission rate through test or emission factor maintained on file; collective natural gas usage limited to 76.3 million cubic feet per month and 801 million cubic feet per 12-month rolling time period; natural gas usage records required.

Please see Appendix A to the submittal of 11/14/2003, where it is reported NOx emissions were measured at 0.095 pounds per MMBtu during a stack test of 1/9/1997 on the heaters for the four B & W coal mills. AQD has not requested a test on the Alstom coal mill heater, however, in the supplement to the 9/19/2013 submittal received 1/21/2014 DTE River Rouge reports a stack test of 7/29/2008 measured NOx emissions at 0.006 pounds per MMBtu. The NOx annual emission limit is correlated to the pound per heat input limit and annual natural gas usage. Natural gas monthly records for period June 2016 to May 2017 received via email on 6/4/2017 indicated a monthly maximum of 8.7 million cubic feet in March 2017 and a 12-month total of 72.5 million cubic feet combusted for the period.

**I.3 – Compliance** – Particulate matter limited to 0.031 grains per dry standard cubic foot for each coal mill pursuant to the thermal dryer requirements within NSPS Y, Standards of Performance for Coal Preparation Plants, at 40 CFR 60.252(a)(1). Please see section below on NSPS Y relating to the initial performance tests on each coal mill dryer; no subsequent tests have been requested by the AQD.

**I.4 through 18, VI.4 – Compliance** – Particulate matter limits for PCI equipment expressed in grains per cubic foot (gr/cf) of exhaust air corrected to 70°F and 29.92 inches Hg, in pounds per hour (pph), and tons per year (tpy): B & W coal mill stack (0.002 gr/cf, 1.83 pph, 8.03 tpy); Alstom mill stack (0.003 gr/cf, 1.58 pph, 6.90 tpy); each transfer system stack (0.006 gr/cf, 0.33 pph, 1.43 tpy); transport vessel stack (0.01 gr/cf, 0.025 pph, 0.11 tpy); truck loading and coal silo vent filters (0.005 gr/cf, 0.30 pph, 1.30 tpy). Records of test data to be maintained; if test data is not available, emission factors utilized for compliance, shall be maintained.

Stack tests conducted on 1/9/1997 (please see Appendices A and B of the 11/14/2003 submittal) measured particulate emissions in the following concentrations: 0.0016 grains per dry standard cubic foot (gr/dscf) from the B & W coal mill stack, 0.0007 gr/dscf from the North Bag Filter House (a transfer system emission point), 0.0007 gr/dscf from the South Bag Filter House (a transfer system emission point), and 0.00033 gr/dscf from the Area 3 Fine Coal 75-Ton Silo Baghouse (the transport system emission point). A stack test conducted on 7/29/2008 (please see submittal of 3/22/2010) at the Alstom mill measured particulate emissions at 0.001 gr/dscf. Compliance with the concentration, pound per hour, and ton per year limits for the truck loading/coal silo vent filters are assumed at this time; no stack tests have been conducted on these vents.

Each pound per hour limit is based on the concentration limit and the maximum exhaust gas flowrate; each ton per year limit is based on pounds per hour limit and the maximum 8760 hours of operation in a year. Therefore, compliance with the pounds per hour and tons per year limits is presumed based on stack test compliance with the concentration limits.

For the inspection of 6/2/2017 AQD evaluated the emissions reported in MAERS for calendar year 2016 for each regulated PCI equipment/emission point. The emissions are based on MAERS emission factors and an assumed 99% control. For each PCI emission point, PM emissions are calculated at less than 100 pounds per year.

**I.19, VI.7 and 8 – Compliance** – Visible emissions limited to 5% over a 6-minute average from any stack within the flexible group; daily non-certified Method 22 visual observations on the PCI stacks; if opacity is noted

conduct a certified Method 9 or shut down the process; conduct inspection on dust collector following visible emission observation and log observations, shutdowns, results of inspections, and corrective actions.

I observed the PCI equipment during the inspection of 6/2/2017; no visible emissions were noted from any operation or stack. The 6/20/2017 email submittal contains records of visible emissions observations for 5/27/2017 through 6/2/2017; observations are made twice a day at 7:00 AM and 7:00 PM.

At 60.252(a)(2) and 60.254(a), each thermal dryer, coal processing and conveying equipment, coal storage system, and coal transfer and loading system that is an affected facility under the standard is prohibited from emitting gases which "exhibit 20 percent opacity or greater." For PCI equipment subject to the NSPS Y visible emissions standard compliance with the 5% opacity limit also demonstrates compliance with the less than 20% standard. Please see section below on NSPS Y relating to the initial performance tests conducted on the PCI equipment.

**II.1, VI.2 – Compliance** – Coal throughput in PCI pulverizers limited to 1,091,160 tons per 12-month rolling time period as determined at the end of each calendar month; monthly and 12-month rolling coal throughput records required – Records for the period from June 2016 to May 2017 were submitted by DTE River Rouge via email on 6/4/2017. A maximum of 290,934 tons of coal was processed in December 2016. DTE River Rouge did not label the records of 6/4/2017 to specify whether the values are monthly quantities or if they are 12-month rolling totals at the end of each month. AQD reviewed historical records submitted for the past two inspections. For a similar 12-month period the coal processed was 366,366 tons in 2013 and 219,666 tons in 2015.

**III.1 through 3, VI.5 and 6 – Compliance** – Air pollution control equipment to be installed and operated properly; broken bag detectors and pressure drop gauges with alarms to be installed on all PCI dust collectors/vent filters and daily readings taken, when coal is transported; maximum pressure drop values are as follows, in inches of water column: B & W coal mills = 8; transfer systems = 8; transport system = 12; Alstom mill = 6; coal silo = 6; truck loading = 6.

DTE River Rouge has indicated in the past that alarms and broken bag detectors are incorporated into the PCI software; though this was not confirmed for every dust collector/vent filter. PCI pressure drop records for the period 5/17/2017 through 6/17/2017 were provided via email on 6/4/2017. Measured pressure drops are within the ROP required ranges.

**VI.9 – Compliance** – Exhaust temperature from each coal mill to be continuously monitored; monitoring devices to be certified accurate to within 3°F and recalibrated annually – During the inspection of 6/2/2017 it was observed that monitoring devices were recording exhaust temperatures. According to the 7/11/2017 email submittal, thermocouples at the PCI Air Heaters were last replaced on 4/10/2017 under an annual preventive maintenance plan.

**VIII.1 through 7 – Compliance** – Stack maximum diameters (inches) and minimum exhaust heights (feet) as follows: coal mills (63", 200'), transfer system #1 (18", 145'), transfer system #2 (18", 145'), transport vessel (12", 176'), Alstom mill (63", 200'), coal silo (8", 157'), truck loading (8", 12'). Exhaust gases must vent unobstructed vertically upwards except for the transport vessel, the coal silo, and the truck loading system, each of which may vent horizontal – Visual observation of the stacks during the inspection of 6/2/2017 did not raise a question of non-compliance with stack specifications, though stack height and diameter measurements were not performed.

**IX.1 – Compliance** – Comply with all applicable requirements of NSPS A and Y – Please see section below on NSPS Y.

#### **COAL HANDLING EQUIPMENT: NSPS Y FOR COAL PREPARATION PLANTS**

The federal New Source Performance Standards, Subparts A and Y (NSPS Y), regulates affected facilities at coal preparation and processing plants processing greater than 200 tons per day of coal that commenced construction or modification after October 27, 1974. NSPS Y was last amended on October 8, 2009. A coal preparation and processing plant is defined at 40 CFR 60.251(e) as a facility that "prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry cleaning, and thermal drying." The installation dates for the Zug Island (10/24/1996) and Severstal (7/31/2007) PCI equipment postdates the original applicability date (10/27/1974) and predates the applicability date (4/28/2008) for the NSPS revisions (60.250(b)). From the coal data given in the 8/25/2011 submittal, both processes utilized greater than 6200 tons of coal in nearly every month of operation from 7/2010 through 6/2011 (60.250(a)) and therefore exceed the 200 ton per day threshold.

The coal grinding mills reduce the size of the coal and therefore qualify as coal processing and conveying equipment (60.250(b) and 60.251(f)), and thus likewise the transfer, transport, and storage equipment are also

subject (60.250(b), 60.251(h) and (s)). In addition to grinding the coal, the heaters within the mills dry the bituminous coal via direct heat and therefore qualify as thermal dryers under the standard (60.250(b) and 60.251(r)(1)).

**60.8, 60.252(a)(2), 60.254(a)(2), 60.254(a) – Compliance** – Emission limits and initial performance tests. At 60.252(a)(1), the owner/operator of a coal preparation plant “shall not cause to be discharged into the atmosphere from any thermal dryer gases which contain particulate matter in excess of 0.070 g/dscm (0.031 gr/dscf).” At 60.252(a)(2) and 60.254(a), each thermal dryer, coal processing and conveying equipment, coal storage system, and coal transfer and loading system that is an affected facility under the standard is prohibited from emitting gases which “exhibit 20 percent opacity or greater.” Under 60.8, initial performance tests are required for applicable emission limits and visible emissions not later than 180 days after initial startup.

On 1/25/2010, DTE River Rouge submitted a 2/17/1997 report of particulate matter tests conducted on 1/9/1997 at the four original coal mills. On 3/22/2010, DTE River Rouge submitted a 9/8/2008 report of a particulate matter test conducted on 7/29/2008 at the Alstom mill. On 5/17/2010, DTE River Rouge submitted a report of visible emissions observations conducted in February and March of 2010 on the PCI equipment. The AQD accepted the results of each as a successful initial compliance test, despite noting certain deficiencies in the tests. Please see reports B281010158, B281009871, and B281009405 for AQD’s review of the initial performance tests.

**60.256(a)(1)(i) – Compliance** – Each thermal dryer shall have installed a device to continuously measure the temperature of the exhaust gas stream; the device is to be accurate to within 3°F and shall be recalibrated annually – Please see the evaluation for SC VI.9 of FG-PCI-COAL\_HAND above.

**COAL HANDLING EQUIPMENT: MI-ROP-B2810-2012b, FGRULE290**

R 336.1290 exempts from R 336.1201 those sources with limited emissions. The rule is divided into three general sections and further divided into subsections, depending on the type of emission (VOC, particulate, etc.), the carcinogenicity of the emissions, and the health-based screening level(s) of the emissions.

**1.2 and 3, III.1, VI.1 through 3 – Compliance** – Emissions less than 1000 pounds per month uncontrolled, and 500 pounds per month controlled; 0.01 lbs. particulate per 1000 lbs. gas; controlled by dust collector or equivalent installed and maintained; 5% opacity limit and monthly visible emission observation; description on file and records maintained.

DTE River Rouge claims the Rule 290 exemption for the coal handling transfer points in the coal yard and in the coal bunkers. These are coal processing emission units with the potential to emit particulate. Each emission point is controlled with either a dust collector or with the application of a dust suppressant. There were not coal handling/transfer activities occurring at the time of the plant tour during the inspection of 6/2/2017; therefore, no visible emissions were observed on viewing at any of the coal transfer points.

Required records are as follows for each emission unit: written description of the emission unit and control device, including the design control efficiency and exhaust gas flowrate; identify air contaminants emitted, carcinogenicity, screening level, and level of control; monthly emissions calculations; record of monthly visible emission readings.

The 6/20/2017 email submittal listed the estimated PM10 emissions from each dust collector unit for the month of May 2017. AQD noticed that the emission factor EF (0.013 lb/ton) and the control efficiency (50%) used in the calculations to estimate PM10 emissions for the month of May 2017 differs from the values used by DTE River Rouge in the MAERS emission estimates for year 2016. In the 2016 MAERS report the controlled emissions were calculated based on 99% control efficiency and the EF was 0.006 lb./ton. However, even when the calculations are done using a higher EF (compared to the MAERS’ EF), the PM10 emissions from each emission unit of the flexible group FGRULE 290, are still below the limit of 1000 pounds per month for uncontrolled emissions. AQD will discuss with DTE River Rouge the cited differences in PM10 emission calculations during the MAERS season (i.e. March 2018).

For the month of May 2017, the PM10 emissions for each emission unit showed values from 41.71 pounds to 422.17pounds. An example of visible emissions recordkeeping for the month of May 2017 is included in the 6/20/2017 email submittal. The logs records show no visible emissions and not much activity at the coal loading and transfer operations compared to previous years.

**FUGITIVE DUST SOURCES: MI-ROP-B2810-2012b, FG-FUGITIVEDUST**

Comprises the collection of fugitive dust sources at the site.

**I.1 and 2, V.1 – Compliance** – Visible emissions not to exceed 5% opacity from any lot, storage pile, or material handling activity, and not to exceed 20% opacity otherwise; opacity to be determined by the average of 12 consecutive readings recorded at 15-second intervals in accordance with Test Method 9D; visible emissions readings to be conducted upon request of AQD.

At the time of the plant tour on 06/2/2017, there was no activity taken place at the coal handling operations including the conveyors, front end loaders, ash loading, and vehicular traffic; no opacity observations or Method 9D readings were conducted from any of these operations.

**III.1, VI.1, VII.4, IX.1 – Compliance** – Fugitive dust plan in Appendix 9-1 shall be implemented and maintained, and required records kept; quarterly report required within 30 days after the calendar quarter identifying each day an emission limit, operational requirement, or recordkeeping requirement was not met, the reason why, and the remedial action taken; conditions that are solely from the SIP Consent Order 9-1993 are void upon the termination of the order.

Please see section below on Appendix 9-1. SC VII.4 requires a quarterly report detailing instances of non-compliance with the provisions of the SIP Order. The SIP Order pre-dates the ROP for the source and the semiannual deviation reports attendant to it. While DTE River Rouge has not been submitting quarterly reports, the SIP Order has been incorporated into the ROP and the facility is required to report deviations with ROP requirements on a semiannual basis. Therefore, AQD considers DTE River Rouge to be in compliance with this requirement.

**FUGITIVE DUST SOURCES: MI-ROP-B2810-2012b, APPENDIX 9-1 AND SIP CONSENT ORDER 9-1993**

Appendix 9-1 includes the fugitive dust provisions of SIP Consent Order 9-1993, revised and reissued on 9/9/1994.

**A through F – Compliance** – General provisions for paved roads, unpaved roads, storage piles, and materials handling, as specified below, with recordkeeping requirements.

Paved roads: (i) speed limit of 15 mph posted and enforced; (ii) paved roads to be swept or flushed in the spring, summer, fall, and winter when freezing is not a concern. In general, a semimonthly frequency is required for travel lanes and a monthly frequency for non-travel lanes; at a minimum, all non-travel portions of paved lots must be treated once each spring, once each summer, and once each fall.

Unpaved roads: (i) sprayed with suppressant at rate of 0.1 gallons per square yard at a frequency of either once per year or three times per year, depending on location; (ii) additional control measures to be taken to reduce fugitive dust.

Storage piles: (i) compacted and configured to reduce emissions; (ii) pile height a maximum of 50 feet; (iii) haul roads watered weekly unless recent rain or unless freezing is a concern; (iv) mobile equipment exhaust to be directed upwards; (v) excessive spillage removed within 48 hours; (vi) additional control measures taken as necessary.

Materials Handling: (i) rail delivery in enclosed rotary dumper; (ii) pile unloading by underground reclaiming and surface conveyors; (iii) conveyors covered and maintained; (iv) dust collectors and physical curtains in use when dry loading ash trucks; (v) ash to be wetted prior to loading in trucks leaving the site; (vi) ash truck wheels cleaned prior to leaving ash silo area; (vii) ash area flushed each day after loading is complete.

Documentation of required activities to be kept in a log for a period of three years; information generally as follows: date of treatment or control activity, location of application, control measures used, quantity of control measures used, responsible person.

Speed limit signage was noted, and plant roadways were clean.

No emissions were observed in the area of coal transfer and stockpiling operations, due to inactivity in the area at the time of the plant tour. No visible emissions were observed exiting the Rail Car Dumper House since coal unloading was not occurring. Ash loading was not observed.

In general, the roads and storage piles are watered five times a week from April to June.

The 6/20/2017 submittal indicated that the sweeper was used quite frequently during the months of May and June of 2017, but not in April due to recurrent heavy rains.

**EMERGENCY GENERATORS: FG-EMERDG FSUPPLY; MACT ZZZZ and NSPS IIII FOR ENGINES**

Three emergency generators are installed at the plant: each 10 kW operating on diesel fuel and with an order date of 10/18/2006. Each generator is exempt from the requirements to obtain a permit to install. R 336.1285(g) exempts internal combustion engines with a heat input capacity less than 10 MMBtu per hour. Assuming a thermal to mechanical conversion of approximately 33% a 10-kW output generator requires a fuel input of about 0.1 MMBtu per hour; each emergency generator qualifies for Rule 285(g) exemption.

The federal National Emissions Standards for Hazardous Air Pollutants (NESHAP), Subparts A and ZZZZ (MACT ZZZZ) regulates hazardous air pollutants (HAP) emissions from reciprocating internal combustion engines (RICE) and these regulations integrate the requirements from within the NSPS Subpart IIII for stationary compression ignition (i.e. diesel fueled) internal combustion engines. The three emergency generators are each rated at 10 kW (or 13.4 hp) and were ordered from the manufacturer on 10/18/2006 (8/9/2011 submittal), therefore, each generator is classified as a new stationary RICE under 63.6590(a)(2)(ii) because each was constructed after 6/12/2006. Per 63.6590(c) and (c)(6), emergency generators such as these (less than 500 hp) need only comply with the NSPS IIII requirements. Based on the order date, these generators are subject to the NSPS IIII through 60.4200(a)(2)(i). The Part 60 and Part 63 requirements are incorporated into the ROP at FG-EMERDG\_FSUPPLY.

**I.1 through 3, VI.1 – Compliance** – Per 60.4205(a), each generator limited to 6.6 grams CO per kilowatt-hour, 9.5 grams NO<sub>x</sub> + NMHC per kilowatt-hour, and 0.80 grams PM per kilowatt-hour; tests, if conducted, to be performed in accordance with the procedures at 60.4212; compliance to be determined by one of the methods listed at 60.4211(b)(1) through (5).

Based on the 9/29/2015 submittal provided as part of the previous AQD facility inspection, DTE River Rouge chose to comply with the above cited requirements based on a manufacturer's certification per 60.4211(b) (1). From AQD's view of the Generac website, Generac publishes a warranty entitled "United States Environmental Protection Agency & California Warranty Statement (Stationary Compression-Ignition Generators)". The warranty states that for 1996 and later model year, non-road diesel engines; the engine was designed, built, and equipped to conform with all applicable regulations adopted by the EPA and CARB pursuant to their respective authority. The warranty expires after 5 years or 3,000 hours of use; nevertheless, it is presumed that the Generac model engines at DTE River Rouge were EPA certified at the time of purchase. AQD did not request the manufacturer certification during the inspection of 6/2/2017 because it should be on file from the previous inspection.

**I.4, II.1.a, VI.2 – Compliance** – Sulfur dioxide emissions from each generator not to exceed 120 parts per million by volume at 50% excess air – The ppmv emission limit correlates to a sulfur in fuel oil content of 0.30 percent by weight, or 3,000 ppmw. Provided DTE River Rouge continues to demonstrate compliance with the 15 ppmw sulfur requirement for nonroad diesel fuel at SC II.1.a, the AQD will presume the sulfur in exhaust gas concentration is achieved.

**II.1.a and b, VI.2 – Compliance** – Per DTE River Rouge's submittal of 8/11/2011, each generator has a displacement of 0.6 liters per cylinder, therefore by 60.4207(b) these units are required to use diesel fuel that meets the requirements at 80.510(b) for nonroad diesel fuel; 80.510(b) limits the fuel to a maximum sulfur content of 15 ppmw and either a minimum cetane index of 40 or a maximum aromatic content of 35% by volume; compliance demonstration is not required by the MACT or NSPS but is included as a condition of the ROP– According to an 8/11/2011 submittal, DTE River Rouge utilizes ultra-low sulfur diesel fuel from Marathon Petroleum which, by contract, meets the sulfur and cetane requirements. In the year 2013 DTE River Rouge submitted a letter from Marathon Petroleum indicating that all Certificates of Analyses for the fuel oil sold within the previous five years show the sulfur content was less than 15 ppm by weight. For the inspection of 6/2/2017 AQD requested records of fuel data for the last three fuel deliveries to evaluate the sulfur content and the cetane. DTE River Rouge responded that the Marathon Petroleum contract previously submitted is still in effect.

**III.1 through 2 – Compliance** – Each generator to be operated and maintained according to manufacturer's instructions and so as to achieve emission standards over the life of the unit (60.4206, 60.4211(a)(1) and (2)) – Each of the three Generac units were viewed during the inspection of 6/2/2017 and appeared well-maintained. An example of maintenance activities is provided in the 6/23/2017 submittal.

**III.3, IV.1, VI.3 – Unknown** – Each emergency unit limited to 100 hours per year of non-emergency use, including readiness testing and maintenance, and within the 100 hours, not more than 50 hours of unspecified use, though peak shaving or income generation is prohibited (60.4211(f)); there is no limitation on the use of the units in emergency situations; each unit is to be equipped with a non-resettable hour meter (60.4209(a)); records on reasons for use.

The email dated 6/23/2017 included the Emergency Generators Maintenance Logs recorded on 6/19/2017. The meters clocked 667.3 hours for Generac 1, 962.3 hours for Generac 2, and 697.9 hours for Generac 3. Please

note that although all generators were installed on the same date the reason for the differing clock totals among the three units is because upon initial installation, faulty electronics caused some of the units to start abruptly and operate without cause until the manufacturer was able to correct the circuitry.

For each generator AQD used the hours recorded on 6/19/2017 and subtracted them from previous records on file, which were obtained on 7/15/2015. The results represent the numbers of hours each generator was operated during a 23-month period. Approximately, in average, Generac 1 was used 59.5 hours per year, Generac 2 was used 135.5 hours per year, and Generac 3 was used 104 hours per year.

According to DTE River Rouge information, the generators are only run for about 20 minutes each week for readiness testing and maintenance to ensure reliability. However, based on the cited records and the estimated calculations, the number of hours for Generac 2 seem to be exceeding the 100-hour allowed for emergency generators. AQD needs to further investigate the specific usage of Generac 2 to determine the percentage of the time the generator was used for emergency and non-emergency situations.

**IX.1 and 2 – Compliance** – Comply with all applicable requirements of NSPS IIII and MACT ZZZZ – Requirements are incorporated into the ROP and the facility appears to be in compliance.

### **COLD CLEANERS: MI-ROP-B2810-2012b, FGCOLDCLEANERS**

This flexible group encompasses each cold cleaner currently installed or to be installed at the plant that is exempt from the requirement to obtain a Permit to Install requirements at Rule 201(1) pursuant to either the Rule 281(h) or the Rule 285(r)(iv) exemptions. As indicated earlier in the plant tour discussion, four cold cleaners are currently installed at the facility: two in the boilerhouse maintenance machine shop, a third in the tractor house, and a fourth in the fuel supply maintenance shop. All are alike in structure and use Zep Dyna 143 as the cleaning solvent. In 2015, the cold cleaners in the boilerhouse maintenance machine shop had not been used regularly, but on 6/2/2017 I was told that they have recently returned to service. The other two-part cleaners, at the tractor house fuel supply and at the fuel supply maintenance shop, were all inspected. There are no changes in the chemicals used for cleaning, therefore, the MSDS for the cleaning solvent provided in the previous inspection on 9/29/2015 is still current.

**II.1 – Compliance** – Cleaning solvents shall not exceed more than 5% by weight in aggregate of methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chloroform; these are federal hazardous air pollutants (HAPs) – Section 15 of the MSDS on file indicates no HAPs were found in the solvent.

**III.1 and 2, IV.1 through 3, VI.3 – Compliance** – Each cold cleaner must either have an air/vapor interface of not more than 10 square feet or, if cleaning metal parts, emissions only released into the general in-plant environment; cleaners to be equipped with a devices to drain parts and parts to be drained not less than 15 seconds or until dripping ceases; cover to be closed when not in use; written operating procedures posted near the cleaner; routine maintenance performed as recommended by manufacturer.

In the 6/20/2017 submittal DTE River Rouge reports the air/vapor interface of each cold cleaner at 4.7 square feet (no changes from previous inspection). Based on visual observations of the cold cleaners on 6/2/2017, the value seems to be accurate. Emissions are released into the general in-plant environment. The cleaners were not in use during the inspection and the covers were observed to be closed. The cleaners appeared in good repair.

**IV.4 and 5, VI.1 – Not Applicable** – Cover mechanically assisted if Reid vapor pressure greater than 0.3 psia or if solvent is heated or agitated; if solvent has vapor pressure greater than 0.6 psia or heated above 120°F additional controls and monitoring are required.

Three cold cleaners were observed during the inspection. There are no changes in the solvent used in the cold-cleaners. The solvents is neither heated nor agitated, and according to the MSDS provided on 9/29/2015, as part of the past inspection submittal, the solvent (CAS number 64742-88-7) is a light aliphatic naphtha with a vapor pressure < 0.01 psia (0.5 mmHg) at 20°C. Therefore, the covers need not be mechanically assisted, and additional controls are not required.

**VI.2 – Compliance** – Required records include the date of installation of each cold cleaner, the identification number, the air/vapor interface area, and the type of solvent including the Reid vapor pressure and VOC content – Cold cleaner characteristics were given in the 6/20/2017 submittal.

**VI.4 – Compliance** – Storage in non-closed containers prohibited unless a safety hazard and then further requirements apply – DTE River Rouge reuses the solvent enclosed within the cleaner until evaporative loss requires addition.

**PEAKING UNITS: MI-ROP-B2810-2012b, FG-DG PEAKERS**

This flexible group comprises four peaking units, each diesel fueled and each with a heat input of 28.4 million Btu per hour (2.75 MW). The peaking units were installed on or before 1/1/1967.

**I.1, II.1, V.1, VI.2 – Compliance** – Sulfur dioxide emissions from each peaker not to exceed 120 parts per million by volume at 50% excess air; verification by stack testing upon request of AQD; sulfur content of fuel oil not to exceed 0.30 percent by weight on the basis of an instantaneous sample; documentation to be maintained of sulfur content in fuel oil – The sulfur content information was not provided during the inspection of 6/2/2017. However, we assume that the information provided with the 9/29/2015 submittal is still valid. In that submittal, DTE River Rouge included a letter from Marathon Petroleum indicating that all Certificates of Analyses for the fuel oil sold within the last five years show the sulfur content was less than 15 ppm by weight.

**VI.1 – Compliance** – Monitor and record monthly fuel usage in gallons – Monthly fuel use records at each peaker are maintained by DTE River Rouge but were not provided during the inspection of 6/2/2017; hence, AQD accessed the 2016 MAERS records. For the 12-month period, from January to December of 2016, the diesel fuel usage for all four peakers was reported to be 23,569 gallons.

**IX.1 – Compliance** – Comply with all applicable requirements of MACT ZZZZ – Please see section below on MACT ZZZZ.

**PEAKING UNITS: MACT ZZZZ AND NSPS IIII FOR ENGINES – COMPLIANCE UNKNOWN**

The federal National Emissions Standards for Hazardous Air Pollutants (NESHAP), Subparts A and ZZZZ (MACT ZZZZ) regulates hazardous air pollutants (HAP) emissions reciprocating from internal combustion engines (RICE) and these regulations integrate NSPS Subpart IIII for stationary compression ignition (i.e. diesel fueled) internal combustion engines.

The four-diesel fired peaking units were installed in 1967 and therefore prior to the 7/11/2005 applicability date in NSPS IIII (60.4200(a)). For MACT ZZZZ, each peaking unit is classified as an existing stationary RICE under 63.6590(a)(1)(i) because each is a 2.75 MW unit (3,683 hp) constructed prior to 12/19/2002 located at a major HAP source. These are non-emergency units and therefore the first compliance date for emissions and operating limitations is 5/3/2013 (63.6595(a)(1)). However, at 63.6590(b)(3) and (b)(3)(iv), an existing limited use stationary RICE of this type (i.e. greater than 500 hp at a major HAP source) "does not have to meet the requirements of this subpart [ZZZZ] and of subpart A of this part [63], including initial notification requirements". At 63.6675, a limited use stationary RICE is defined as "any stationary RICE that operates less than 100 hours per year".

During the inspection of 6/2/2017 DTE River Rouge did not provide the hours of operation for the peakers for year 2016. AQD will evaluate this issue in future inspections to verify that they are not operating above the 100 hours per year limit. The last records available for compliance evaluation is the one provided with the 9/29/2015 submittal. The peakers operating hours for a 12-month period from 7/01/2014 through 7/30/2015 total 86.4 run hours. This total accounts for the combined operation of all peakers (Peaker #1, Peaker #2, Peaker #3, and Peaker #4) in a year-operation. Therefore, each peaker and the combined source (when all of them are running) currently qualified as a limited use stationary RICE and they are not subject to the requirements of MACT ZZZZ. However, the four peakers still remain a part of the affected source and will become subject to the requirements within the MACT standard if ever the operating hours exceed 100 per year.

**PEAKING UNITS: PART 8 RULES FOR NOX SOURCES**

Michigan's Part 8 rules were promulgated in response to interstate ozone transport issues identified under Section 110(a)(2)(D)(i)(I) of the Clean Air Act. The Part 8 rules incorporate requirements imposed first by the federal NOx Budget Program and by the federal CAIR program, with some additional provisions. Broadly, the Part 8 rules apply to fossil fuel-fired steam generating units producing electricity for sale while serving a generator with a nameplate capacity of 25 MW or more (e.g. Rules 801(2), 802(1)(a), 821(1)(a), 821(1)(b)) and any other source of NOx with a heat input capacity greater than 250 MMBtu per hour (e.g. Rules 801(4), 802(1)(b), 821(1)(c)). Each of the four peaking units is used to generate electricity for the grid, however, at 2.5 MW and 28.4 MMBtu per hour each unit does not qualify for regulation under either category.

Rule 818 regulates NOx emissions from certain internal combustion engines. Under R 336.1818(2), "the requirements of this rule apply to the owner or operator of a large NOx SIP call engine located in the Michigan fine grid zone defined in R 336.1803(1)." Wayne County is in the fine grid zone. A large NOx SIP call engine is defined at R 336.1818(1)(f) as "a stationary internal combustion engine emitting more than 1 ton of oxides of nitrogen per average ozone control period day in 1995."

On 4/5/2007 AQD-Detroit Office received from AQD's Emissions Reporting Unit a spreadsheet of the 1995 emissions inventory data supplied by DTE River Rouge. The peaking units are referenced as point source #4 on B2810\_POINT\_1995 and named River Rouge DG11. Four pieces of equipment are identified in this group. The capacity of each piece is given at 200 gallons of diesel fuel per hour (at 0.137 MMBtu per gallon of diesel fuel, this equates to 25.4 MMBtu per hour and approximates the 28.4 MMBtu per hour maximum rate given by DTE). DTE River Rouge reports the peaking units operated for 12 days in 1995 and combusted 48,240 gallons of diesel fuel (B2810\_SEGMENT\_1995). AQD estimated 11.312 tons NOx (B2810\_SEGMENT\_EMISSION\_1995) were emitted due to this activity. In addition, DTE's 9/21/2007 submittal reports total NOx emissions from the peaking units at 0.91 tons for calendar year 1995.

The ozone season, for purposes of the Part 8 rules, extends from May through the end of September, or 153 days. To be regulated under R 336.1818 NOx emissions from an emission unit must exceed 153 tons during this time period. Based on the information from the 1995 emissions inventory and from the 9/21/2007 submittal, none of the peaking units emitted 153 tons or greater during the 1995 ozone season and therefore none of these four peaking units are regulated under Rule 818.

#### **STORAGE TANKS: NSPS KB, R 336.1281(E), AND R 336.1281(M)**

The federal New Source Performance Standards at Subparts A and Kb regulates volatile organic liquid storage tanks that commenced construction or modification after July 23, 1984. The affected facility is defined at 40 CFR 60.110b as storage vessels containing volatile organic liquids (as defined in the subpart) and with capacities greater than or equal to 75 cubic meters (19813 gallons).

Two open-topped storage tanks are constructed on the western edge of the boilerhouse. According to DTE (submittals of 8/26/2005 and 9/21/2007), the northern tank has a capacity of 590,000 gallons and is used to temporarily store boiler blowdown water and waste chemical cleaning solutions that are used to de-rust the boilers every 10-20 years. The southern tank has a capacity of 237,000 gallons and is used to store "oily waste". DTE informs the chemical waste is typically an aqueous detergent with small amounts of ammonia and EDTA. The oily waste is typically a synthetic hydrocarbon with vapor pressure less than 0.1 mmHg. Therefore, DTE argues the materials stored in these tanks have vapor pressures less than the threshold limits of NSPS Kb (5.2 kPa) and the Part 6 rules (1.5 psia). DTE claims Rule 281(e) exempts the chemical waste tank and Rule 285(m) exempts the oily waste because "the oil is not a VOC".

Based on the vapor pressures of the materials, it appears these tanks are not subject to the NSPS K-series of storage tank regulations or the State Part 6 storage tanks regulations. Rule 281(e) applies, provided the vapor pressure of the VOC does not exceed 0.1 mmHg, as it appears not to. There is no minimum vapor pressure in Rule 285(m); however, wastewater tanks are exempt provided the primary purpose of the treatment is not for VOCs, and it appears not to be in this case.

Therefore, based on the information known at this time, these tanks appear to be exempt from the regulations mentioned above.

#### **EPA NOV/FOVs**

On 7/24/2009 and again on 3/13/2013, the U.S. EPA Region 5 issued a Notice of Violation and Finding of Violation (NOV/FOV) to DTE Energy for the Monroe, St. Clair, River Rouge, Belle River, and Trenton Channel power plants. EPA cites violations of Rule 301, major New Source Review, NSPS Da, and Title V at the DTE River Rouge Plant. The asserted violations have been unresolved for several years.

## **6 - CONCLUSION**

At the time of completion of this report, DTE River Rouge is substantively in compliance with the applicable state and federal requirements that were evaluated during the inspection period. The NOV/FOVs of 7/24/2009 and 3/13/2013 issued by the U.S. EPA's to DTE River Rouge remain outstanding.

NAME     *G. Mendonca*    

DATE     1/8/2018     SUPERVISOR     *JK*