AI-PART C

ATTACHMENT C.9.i.

Belle River Peaker CTGs

Startup, Shutdown, and Malfunction Plan (SSMP) for Minimizing Emissions

Revision 1

DTE Electric Company

Belle River Peaker CTGs

4505 King Road

China Township, Michigan 48054

Startup, Shutdown, & Malfunction Plan (SSMP)

for Minimizing Emissions

Issued: August 21, 2001

Updated: November 5, 2019

Start Up, Shutdown, and Malfunction Plan (SSMP)

For Minimizing Emissions

This Start Up, Shutdown, and Malfunction (SSMP) for minimizing emissions is written for the 3 combustion turbine generators ("CTGs") installed and operated at Belle River Peakers (Facility): CTG 12-1, CTG 12-2, and CTG 13-1. Special Condition 1.15, of the Supplement to Permit No. 331-98B, required that a plan be developed to minimize emissions during startup, shutdown and malfunction. This condition has since been incorporated into the Title V renewable operating permit (ROP). This Plan is required by SC III(4) of FG-CTG-BP Section 4 of ROP No: MI-ROP-B2796-2015c.

Rule 912 (R. 336.1912) of the Michigan Air Pollution Control Rules requires that a facility operate a source, to the extent reasonably possible, in a manner consistent with good air pollution control practices for minimizing emissions during periods of start-up, shutdown, and malfunction. During these periods, the simple-cycle CTGs at the Facility have variable NO_X and CO emissions that are, intermittently, higher and lower (on a mass per unit time basis) than when operations are at continuous operating loads.

Start-Up/Shutdown

Emissions will be minimized during start-up and shutdown periods by performing these operations based on the recommendations of the manufacturer, General Electric ("GE").

Start-up of the GE PG7121(EA) CTGs in use at the facility consists of a series of steps, each required to reach normal baseload operations. Because the simple cycle CTGs will generally operate as "peaking" units, most start-ups are considered "cold" starts. The following steps make up a normal start-up:

1. Primary Mode – Fuel is delivered to the primary combustion nozzles within the CTG, with flame in the primary zone only. This mode is used to ignite the fuel, accelerate the turbine, synchronize the turbine and generator at a no-load state, and to operate the CTG at low loads. Duration is approximately 15 minutes.
2. Lean-Lean Mode – Fuel is delivered to both the primary and secondary combustion nozzles, with flame in both the primary and secondary zones, for intermediate load conditions. Duration is approximately 5 minutes.
3. Secondary Mode – Fuel is only delivered to the secondary combustion nozzles, with flame in the secondary zone only. This transition mode is necessary to extinguish the flame and purge the primary zone, prior to reintroduction of fuel into what becomes the primary premixing zone. Duration is approximately 2 minutes.
4. Premix Mode – Fuel is delivered to both the primary and secondary combustion nozzles, with flame in the secondary zone only. Approximately 10 minutes is required to reach baseload conditions and for full utilization of the dry, low-NO_x ("DLN") burner system. Premixing of fuel and combustion air in the DLN system results in flame cooling, and therefore lower NO_x emissions. Full load operation in premix mode generally results in lower emissions of all constituents.

Start-up of a simple-cycle CTG at the facility from "cold start" conditions to normal base load operation therefore requires approximately 30 minutes.

During the shutdown sequence, fuel delivery to the primary and secondary combustion nozzles is gradually decreased to minimize thermal shock to the combustion zone equipment. This cooling stage continues for approximately 20 minutes before fuel delivery is discontinued so that combustion, and associated emissions, is halted.

Based on GE recommendations, start-up and shutdown of the facility CTGs follow these steps to assure that the CTGs are operated safely, and the potential for damage of the CTGs is minimized during start-up and shutdown. DTE Electric Company will strive to minimize emissions during start-up and shutdown by maintaining the CTGs per manufacturer recommendations and by minimizing the period of time the CTGs are not in normal base load operations.

Rule 912 requires that a facility provide notice to AQD of an abnormal condition, start-up, shutdown, or malfunction that results in an emission of a hazardous air pollutant in excess of an applicable emission standard, and continuing for more than one hour. Rule 912 also mandates notice for a facility's operation that results in emissions of any contaminant continuing for more than 2 hours in excess of an applicable emission standard. The facility shall provide notice and a written report in the event of an abnormal condition, start-up, shutdown, or malfunction that results in either of these circumstances within the time frame identified in Rule 912.

Based on the anticipated duration of normal start-up and shutdown events, DTE Electric Company does not anticipate that start-up and shutdown periods will typically necessitate notification of the Air Quality Division ("AQD") pursuant to the requirements of Rule 912, although all required notification will be performed, as necessary.

Malfunction

Emissions will be minimized during malfunctions by performing regular maintenance, testing, and service on the CTGs, based on the recommendations of GE. Proper maintenance of the CTGs will minimize the number of malfunctions during operation.

In addition, DTE Electric Company personnel will quickly respond to CTG malfunctions, performing the required repairs to allow the CTG to continue normal operation in a timely fashion, or shutting the CTG down in a safe and efficient manner to allow troubleshooting of the problem while the CTG is off-line. The timely repair or shutdown of the CTGs during malfunctions will also minimize the potential for elevated emissions generated during these periods.

As noted previously, Rule 912 requires that a facility provide notice to AQD of an abnormal condition of malfunction that results in an emission of a hazardous air pollutant in excess of an applicable emission standard, and continuing for more than one hour. Rule 912 also mandates notice for a facility's operation that results in emissions of any contaminant continuing for more than 2 hours more than an applicable emission standard. The facility shall provide notice and a written report in either of these circumstances within the time frame identified in Rule 912.

The Facility shall complete a review and evaluation of the SSMP for Minimizing Emissions as needed. Evidence of these reviews shall be recorded in the plan.

Revision No.	Changes	Author	Date
0	Initial submittal of Plan to SEMI MDEQ AQD	Brian Greenwald *(Horizon Environmental)*	8/21/2001
1	• Input into Word Document from PDF • Updated general formatting (previous version was from 2001) o Added cover page (including DTE logo & adding the owner/operator "DTE Electric Company") o Added header & footer o Added revision tracking • Updated owner from "Detroit Edison" to "DTE Electric Company" throughout plan • Added CTG #s • Changed MAR to exact rule reference (Rule 219) throughout Plan • Added verbiage that the ROP has been issued and specified the permit condition # requiring this plan (in the 1st paragraph of the Plan)	Lisa Fishbeck & Stefanie Ledesma	11/5/2019

AI-PART C

ATTACHMENT C.9.ii.

St. Clair Peakers

Startup, Shutdown, and Malfunction (SSM) and Continuous Parameter Monitoring System (CPMS) Plans

Revision 0

DTE Electric Company

St. Clair Site - Remote Peaker Units

Startup, Shutdown, Malfunction (SSM) and Continuous Parameter Monitoring System (CPMS) Plans

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July 2015

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Appendix H - RICE Test Plan 2015

Appendix I - Procedure Responding to Catalyst Alarm

SECTION 1: INTRODUCTION

1.1 Purpose and Requirements

This document includes the systems and procedures for the DTE Energy (DTE) remote peaking units located at 4901 Pointe Drive, East China, MI, 48054, hereafter referred to as the St. Clair Peaker Station (SRN B2796). The peaking units are maintained by the Peakers Group within DTE, and are diesel-fired reciprocating internal combustion engines (RICE). Each of these engines are subject to the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Source Categories, 40 CFR Par 63. The regulations are referred to as the MACT standards and the applicable rules for the remote peaking units are contained in 40 CFR Part 63, Subpart A; the General Provisions applicable to all Part 63 source categories and Subpart ZZZZ.

The remote peaking units are required to be equipped with emission control devices and associated monitoring equipment. Monitoring parameters must be implemented for each control device and must demonstrate compliance with the standards. A source that is required to use a Continuous Monitoring System (CMS) for measurement of the above mentioned operating parameters must also develop and implement a CPMS quality control program, pursuant to 40 CFR 63.6625(b)(1) and 63.8 (d).

The Peakers facilities have also developed and implemented a Startup, Shutdown and Malfunction (SSM) plan in order comply with the specific startup, shutdown and malfunction requirements of 40 CFR 63 Subpart ZZZZ. This plan can be found in Section 4 of this document. This SSM plan does not address the general SSM plan requirements of 40 CFR 63 Subpart A, as they are not applicable to the Peakers facilities, pursuant to Table 8 of 40 CFR 63 Subpart ZZZZ.

1.2 Plan Maintenance and Updates

DTE maintains a complete copy of both the CPMS and SSM Plan (Plan) on-site. Copies of the Plan are maintained in the control room, or at other operations areas on-site. DTE has the overall responsibility to ensure that the Plan is maintained and updated as required by the rules. Environmental Management & Resources (EM&R) works with the Operations/Maintenance personnel to obtain the information needed to maintain and update the Plan. Specific requirements governing maintenance for the CPMS and SSM plans can be found as a subpart in their respective sections.

1.3 Site Overview

The Peaker units located at this facility were manufactured by GM Power Electro-Motive Division, La Grange, Illinois, with a rating of 2.5 Megawatts (MW) and a Maximum Load of 2.75 MW. The site consists of identical units as shown in Table 1-1, and are physically located near the South gate of the facility. Unlike other Peaker sites, this site consists of two Peakers, as opposed to the typical five, and has two active aboveground storage tanks (AST) with capacities of 10,000 gallons each. A 30,000 gallon AST is also on site, but is empty. A facility layout is provided in Figure 1.1.

Table 1-1: St. Clair Peaker Station Emission Unit Inventory

Location Title	Unit ID	Manufacturer	Model Type	Serial No.	Installation Date	Rating (MW)
St. Clair Peaker Station	12-1	GM Power	MP45-A	63850	Jul-70	2.5
	12-2	GM Power	MP45-B	63851	Jul-70	2.5

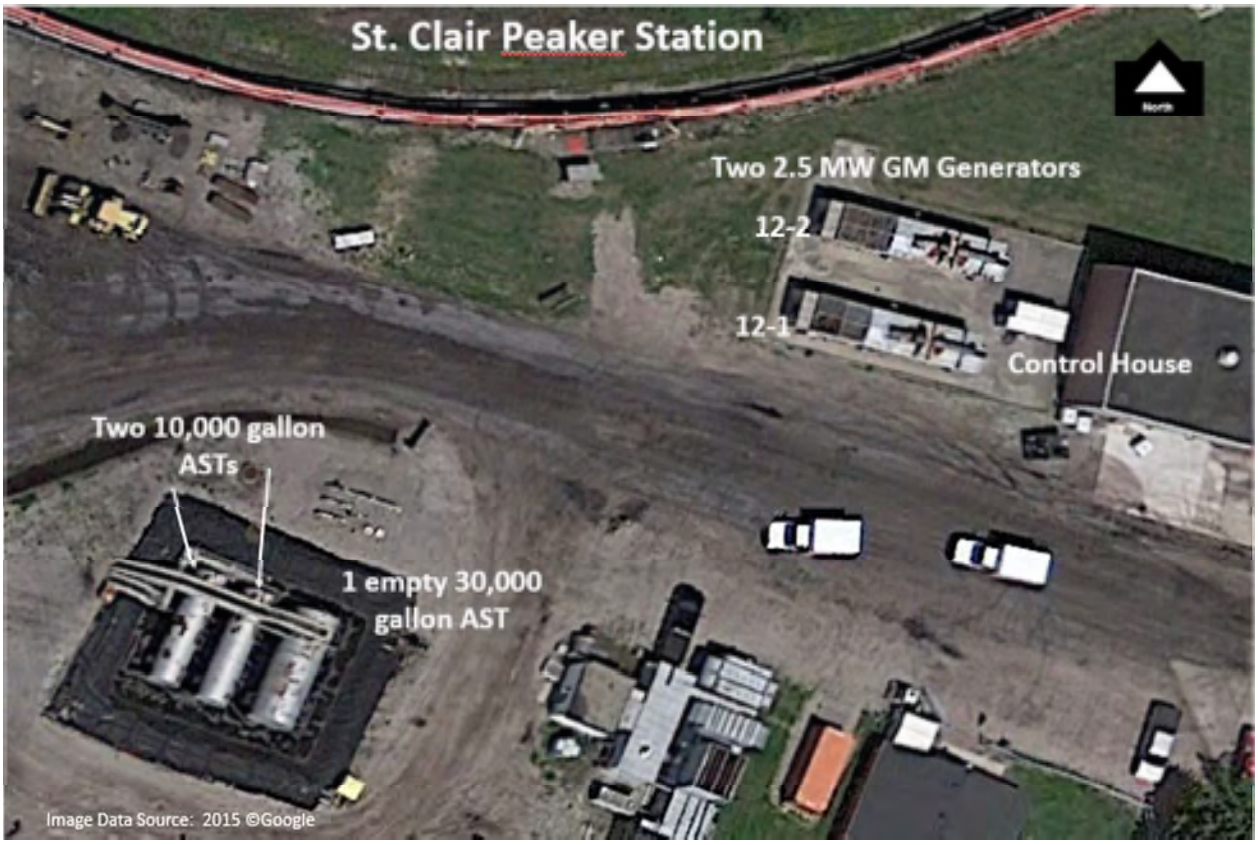

Figure 1-1. The facility consists of two 2.5 MW generators, an empty 30,000 gallon aboveground storage tank (AST), two 10,000 gallon AST, a control house and a substation.

SECTION 2: PROCESS DESCRIPTION

DTE remotely operates multiple remote Peaker facilities used during peak power demand times to provide additional power to the grid at predetermined locations. The remote Peaker facilities operate diesel-fired reciprocating internal combustion engines. Each stationary RICE is equipped with a diesel oxidation catalyst (DOC) for the purpose of reducing emissions during operation. Included with this system is a continuous parameter monitoring system (CPMS) consisting of DOC monitoring points that record: control device inlet gas temperature, pressure drop across the catalyst bed, and date / time stamps of all records. These data points are then archived by DTE's PI system. These RICE are typically utilized during peak power demand times and are operated remotely to provide additional power to the grid at predetermined locations. The generators located at the St. Clair Peaker Station are unique among the network in that they are "blackstart" units, which may be used to initiate combustion in the main units at St. Clair Power Plant. Additionally, these units must be started from the control room on-site, and not by the System Operations Center (SOC).

SECTION 3: CONTINUOUS PARAMETER MONITORING SYSTEM PLAN (CPMS)

3.1 Monitoring Plan

This monitoring plan addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in the paragraphs 40 CFR 63.6625 Part (b)(1) and in § 63.8(d). Each CPMS is installed, operated, and maintained according to procedures in this monitoring plan.

3.1.1 Equipment Performance Criteria and Design Specifications

The Dynalco Catalyst Monitor (Catalyst Monitor) provides continuous monitoring of catalyst inlet temperature and differential pressure, which is mandated by RICE NESHAP on diesel ignited engines. This monitoring system reads up to six input channels, calculates differential values, provides alarm / shutdown outputs, as well as allows all parameters to be logged to internal flash memory. Internal flash memory may be remotely accessed by DTE staff via the PI computer program, or is downloaded by DTE staff directly from the unit.

The Catalyst Monitor is in "stopped" mode until a run indication is sensed by either a contact closure or magnetic pickup input. Once the "running" mode is sensed, the Catalyst Monitor reads all six channel inputs at a rate of 100 milliseconds per channel. Additionally, the temperature sensor has an appropriate sensitivity of 2.8 degrees Celsius (minimum tolerance), or 1 percent of the measurement range, whichever is larger. If an input crosses an over or under threshold (See the Table 3-1), the unit will show a flashing red LED on the front panel of the monitor, as well as initiate an output trip (solid-state relay) that can be used for alarm or shutdown. Whenever a trip threshold is crossed the Catalyst Monitor stamps the event with a date and time. These events are also logged by the Peaker Operator (DTE employee) and the SOC staff. The monitor logs the last ten events for each channel input. The Catalyst monitor's operating manual is included in this report as Appendix A.

Once the initial system configuration is complete, the Catalyst Monitor will set off an alarm when channel or differential values are above or below the limits specified in the set up procedure (See Table 3-1). The Catalyst Monitor allows the user to configure any one channel to monitor the catalyst inlet temperature based on a 4 hour rolling average per the RICE NESHAP requirement. Once set up, this channel will log the inlet temperature at 15 minute intervals while the engine is running. In addition to inlet temperature, the Catalyst Monitor logs the catalyst differential pressure at defined intervals.

Table 3-1: Diesel Oxidation Catalyst Alarm Thresholds

Monitored Parameter	Malfunction Threshold
Pressure drop across the catalyst	Less than 2 inches of water
Engine exhaust temperature at catalyst inlet	1350 °F ≥ Temperature ≥450 °F

3.1.2 Sampling Interface

Catalyst bed inlet temperatures are taken via thermocouple located at the inlet to the DOC. Pressure drop is calculated via pressure measurements at the inlet and outlet of the DOC.

3.1.3 Equipment Performance Evaluations

Performance evaluations, system accuracy audits and other audit procedures are conducted in accordance with the Catalyst Monitor manual and manufacturer recommendations. These performance evaluations are conducted on a calendar year basis.

American Sensor Technologies Inc. does not have a documented evaluation process and stated that there is no calibration for their AST5100 Low Differential Pressure Transmitter, however based on the parameters outlined in Appendix F, the unit is functioning properly.

Duro-Sense also does not have a documented evaluation process for their K-type Thermocouple. However, through consultation with Duro-Sense, it was determined that a verification will be conducted annually. This verification will consist of placing another thermometer or thermocouple in the same medium as the thermocouple and comparing the temperature readings. The results should be within the standard specification limits indicated in Appendix G.

The Peakers Group will ensure that these performance evaluations are documented and supplied to EM&R.

3.1.4 Operating and Maintenance Procedures

The Peaker site keeps the necessary parts for routine repairs on the Catalyst Monitor equipment readily available in the Control House in accordance with 40 CFR 63.8(c)(1)(ii). Refer to Catalyst Monitor manual (Appendix A) for a spare parts list. The Catalyst Monitor was installed in accordance with the Manufacturer's written recommendations for installation, operation, and calibration of the system. Information on the Catalyst Monitor installation, operation, calibration, and design can be found in the Catalyst Monitor manual or operation records available from the Peakers Group or EM&R.

3.1.5 Reporting and Recordkeeping

DTE maintains the following records for the Catalyst Monitor System to ensure compliance with 40 CFR 63.10(c) and (e):

- Catalyst inlet temperature and pressure drop;
- The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks;
- The date and time identifying each period during which the CMS was out of control;
- The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during startups, shutdowns, and malfunctions of the affected source;
- The specific identification (i.e., the date and time of commencement and completion) of each time period of excess emissions and parameter monitoring exceedances, as defined in the relevant standard(s), that occurs during periods other than startups, shutdowns, and malfunctions of the affected source;
- The nature and cause of any malfunction (if known);

- The corrective action taken or preventive measures adopted;
- The nature of the repairs or adjustments to the CMS that was inoperative or out of control;
- The total process operating time during the reporting period; and
- All procedures that are part of a quality control program developed and implemented for CMS under § 63.8(d).

All performance evaluations are kept on record for the life of the affected source or until the affected source no longer falls under § 63.8(d)(3). The records are available for inspections or upon request. DTE keeps previous versions of the performance evaluation plan on record for a period of 5 years after each revision of the plan.

The facility also maintains records of maintenance conducted on all stationary RICE located on-site in order to demonstrate compliance with operating procedures and the equipment maintenance plan.

SECTION 4: STARTUP, SHUTDOWN, MALFUNCTION (SSM) PROCEDURES

It is the facilities obligation to ensure that each stationary RICE, including its associated oxidation catalyst and monitoring equipment, is operated and maintained, in such a way that minimizes emissions. This Startup, Shutdown, Malfunction (SSM) plan complies with the specific startup, shutdown and malfunction requirements of 40 CFR 63 Subpart ZZZZ. This SSM plan does not address the general SSM plan requirements of 40 CFR 63 Subpart A as they are not applicable to the Peakers facilities pursuant to Table 8 of 40 CFR 63 Subpart ZZZZ.

4.1 Startup Procedures

A startup is defined as "the setting in operation of an affected source or portion of an affected source for any purpose." [§63.2]

This procedure has been set to minimize the engine's time spent at idle and minimize the engine's overall startup time in order to allow for the appropriate and safe loading of the engine. At all times, including startup, the engine exhaust is vented through the oxidation catalyst to reduce emissions. Under EPA regulation, startup time is not to exceed 30 minutes, after which time non-startup emission regulations apply [§63.6600(d)(Table 2c and 2d)]. Additionally, excessive idling at Startup may result in DOC error report (i.e., the temperature and pressure values violate the conditions in Table 3-1.

Normal Start

The facility initiates the startup procedure of the stationary RICE from the Control Room at Colfax, either at their own initiative, or by the SAC's request. These are the only Peakers in the network with DOCs that cannot be initiated by the SAC. During a normal start, once initiated, the startup consists of a rolling unit start where each unit has a 90 second start and idle delay, then goes in to a 10 second acceleration, 10-20 second synchronizing period, and then a 10-30 second loading period. The maximum total startup time for the units to come to loading is 180 seconds from the time of startup initiation.

Emergency Start

During a deadline emergency start, a startup similar to the normal startup occurs with a rolling unit start where each unit has a 26-36 second start and oil pressure delay, 10 second acceleration, 10-20 second synchronizing period, and then the loading breaker closes once the last unit has synchronized. The maximum total startup time for a deadline emergency start is 76 seconds from the time of startup initiation.

The Engine Operating Manual contains further details on the startup procedures and is attached as Appendix D, and can also be obtained from the Peakers Group or EM&R.

4.2 Shutdown Procedures

A shutdown is defined as "the cessation of operation of an affected source or portion of an affected source for any purpose." [§63.2]

During shutdown of each engine, exhaust is vented through the existing oxidation catalyst to minimize emissions.

4.3 Malfunction Procedures

A malfunction is defined as "any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions." [§63.2]

Procedures for responding to an alarm are identified in the *Peakers Catalyst Alarm Response Process Map* (Appendix I) and the "Step-by-Step" procedure used by the Peakers Group (Appendix E). In general, the procedure is as follows:

Upon receiving a Peaker trouble alarm, the System Operations Center (SOC) dispatches an operator to the facility. Once on site, the operator will evaluate the alarm to determine whether it is a nuisance alarm or an actual malfunction/system problem. If it is a nuisance alarm, the operator will acknowledge the alarm & continue operation as normal.

If the alarm is not a nuisance alarm, the operator will report to the SOC that the unit is out of control. The SOC will arrange to have the unit shut down. The Peakers Group will contact PSI to trouble shoot the alarm using the unit manual (Appendix C). Should maintenance be required, the unit will not be restarted until the situation is addressed.

All alarms and responses will be documented in the log book at the facility. Additionally RICE MACT testing is completed every 3 years. The most recent year for testing will be 2015, the methodology and schedule of which is contained in Appendix H.

4.4 Recordkeeping and Reporting

Records are retained for all operations for a period of five years in accordance with 40 CFR 63.10(b)(1).

If a malfunction occurs during the reporting period, this is included in the semiannual compliance report. In accordance with 40 CFR 63.10(b)(2), each malfunction instance will include the following:

- The number, duration, and description of the malfunction;
- Actions taken to minimize emissions; and
- Actions taken to correct the malfunction.

SECTION 5: QUALITY CONTROL PROGRAM

The owner or operator of an affected source that is required to use a CMS and is subject to the monitoring requirements of this section and a relevant standard shall develop and implement a CMS quality control program. As part of the quality control program, the owner or operator shall develop and submit to the Administrator for approval upon request a site-specific performance evaluation test plan for the CMS performance evaluation required in paragraph 40 CFR 63.8(e)(3)(i) of this section, according to the procedures specified in paragraph (e). In addition, each quality control program shall include, at a minimum, a written protocol that describes procedures for each of the following operations [40 CFR 63.8(d)(2)]:

5.1 Calibrations [40 CFR 63.8(d)(2)(i) and (ii)]

The initial calibration of the Catalyst Monitor follows the installation directions in the monitor manual. Any subsequent calibrations follow the guidelines and recommendations also mentioned in the monitor manual. Procedures in the determination and/or adjustments required during calibration in order to account for calibration drifts are contained in the catalyst monitor manual.

5.2 Preventative Maintenance [40 CFR 63.8(d)(2)(iii) and (iv)]

All maintenance conducted on the monitoring system is done in accordance with the manual. A list of the spare parts needed for regular maintenance of the catalyst monitor is also included in the Catalyst Monitor manual. Maintenance records are available from the Peakers Group.

5.3 Audit Procedures [40 CFR 63.8(d)(2)(v)]

The continuous catalyst monitor system date / time stamps all data collected and stores the data in an internal database. The catalyst monitor observes the inlet temperature and pressure, calculates the differentials, and sounds an alarm in the case that an over or under threshold has been crossed. See Section 3.1.1 for more details.

Performance evaluations, system accuracy audits and other audit procedures are conducted in accordance with the Catalyst Monitor manual and recommendations. These performance evaluations are conducted at least annually.

5.5 Record Keeping [40 CFR 63.8(d)(3)]

These written procedures are kept on record for the life of the affected source or until the affected source is no longer subject to the regulations.

DTE Electric Company

Dean Peakers

4490 North River Road

East China, Michigan 48054

Startup, Shutdown, & Malfunction Plan (SSMP)

for Minimizing Emissions

Issued: February 14, 2002

Updated: November 5, 2019

Start Up, Shutdown, and Malfunction Plan (SSMP)

For Minimizing Emissions

This Start Up, Shutdown, and Malfunction (SSMP) for minimizing emissions is written for all combustion turbine generators ("CTGs") installed and operated at Dean Peakers (Facility): CTG 12-2, CTG 12-1, CTG 11-1, and CTG 11-2. Special Condition 15, on page 8 of the Permit to Install (permit No. 116-01), required that a written plan be developed to minimize emissions during startup, shutdown and malfunction. This condition has since been incorporated into the Title V renewable operating permit (ROP). This Plan is required by SC III(7) of Section 5 of ROP No: MI-ROP-B2796-2015c.

Rule 912 (R. 336.1912) of the Michigan Air Pollution Control Rules requires that a facility operate a source, to the extent reasonably possible, in a manner consistent with good air pollution control practices for minimizing emissions during periods of start-up, shutdown, and malfunction. During these periods, the simple-cycle CTGs at the Facility have variable NO_X and CO emissions that are, intermittently, higher and lower (on a mass per unit time basis) than when operations are at continuous operating loads.

Start-Up/Shutdown

Emissions will be minimized during start-up and shutdown periods by performing these operations based on the recommendations of the manufacturer, General Electric ("GE").

Start-up of the GE PG7121(EA) CTGs in use at the Facility consists of a series of steps, each required to reach normal baseload operations. Because the simple cycle CTGs will generally operate as "peaking" units, most start-ups are considered "cold" starts. The following steps make up a normal start-up:

1. Primary Mode – Fuel is delivered to the primary combustion nozzles within the CTG, with flame in the primary zone only. This mode is used to ignite the fuel, accelerate the turbine, synchronize the turbine and generator at a no-load state, and to operate the CTG at low loads. Duration is approximately 15 minutes.
2. Lean-Lean Mode – Fuel is delivered to both the primary and secondary combustion nozzles, with flame in both the primary and secondary zones, for intermediate load conditions. Duration is approximately 5 minutes.
3. Secondary Mode – Fuel is only delivered to the secondary combustion nozzles, with flame in the secondary zone only. This transition mode is necessary to extinguish the flame and purge the primary zone, prior to reintroduction of fuel into what becomes the primary premixing zone. Duration is approximately 2 minutes.
4. Premix Mode – Fuel is delivered to both the primary and secondary combustion nozzles, with flame in the secondary zone only. Approximately 10 minutes is required to reach baseload conditions and for full utilization of the dry, low-NOx ("DLN") burner system. Premixing of fuel and combustion air in the DLN system results in flame cooling, and therefore lower NOx emissions. Full load operation in premix mode generally results in lower emissions of all constituents.

Start-up of a simple-cycle CTG at the facility from "cold start" conditions to normal base load operation therefore requires approximately 30 minutes.

During the shutdown sequence, fuel delivery to the primary and secondary combustion nozzles is gradually decreased to minimize thermal shock to the combustion zone equipment. This cooling stage continues for approximately 20 minutes before fuel delivery is discontinued so that combustion, and associated emissions, is halted.

Based on GE recommendations, start-up and shutdown of the Facility CTGs follow these steps to assure that the CTGs are operated safely, and the potential for damage of the CTGs is minimized during start-up and shutdown. The Facility will strive to minimize emissions during start-up and shutdown by maintaining the CTGs per manufacturer recommendations and by minimizing the period of time the CTGs are not in normal base load operations.

Rule 912 requires that a facility provide notice to AQD of an abnormal condition, start-up, shutdown, or malfunction that results in an emission of a hazardous air pollutant in excess of an applicable emission standard, and continuing for more than one hour. Rule 912 also mandates notice for a facility's operation that results in emissions of any contaminant continuing for more than 2 hours in excess of an applicable emission standard. The Facility shall provide notice and a written report in the event of an abnormal condition, start-up, shutdown, or malfunction that results in either of these circumstances within the time frame identified in Rule 912.

Based on the anticipated duration of normal start-up and shutdown events, the Facility does not anticipate that start-up and shutdown periods will typically necessitate notification of the Air Quality Division ("AQD") pursuant to the requirements of Rule 912, although all required notification will be performed, as necessary.

Malfunction

Emissions will be minimized during malfunctions by performing regular maintenance, testing, and service on the CTGs, based on the recommendations of GE. Proper maintenance of the CTGs will minimize the number of malfunctions during operation.

In addition, Facility personnel will quickly respond to CTG malfunctions, performing the required repairs to allow the CTG to continue normal operation in a timely fashion, or shutting the CTG down in a safe and efficient manner to allow troubleshooting of the problem while the CTG is off-line. The timely repair or shutdown of the CTGs during malfunctions will also minimize the potential for elevated emissions generated during these periods.

As noted previously, Rule 912 requires that a facility provide notice to AQD of an abnormal condition of malfunction that results in an emission of a hazardous air pollutant in excess of an applicable emission standard, and continuing for more than one hour. Rule 912 also mandates notice for a facility's operation that results in emissions of any contaminant continuing for more than 2 hours more than an applicable emission standard. The facility shall provide notice and a written report in either of these circumstances within the time frame identified in Rule 912.

The Facility must complete a review and evaluation of the SSMP for Minimizing Emissions as needed. Evidence of these reviews shall be recorded in the plan.

Revision No.	Changes	Author	Date
0	Initial submittal of Plan to SEMI MDEQ AQD	Timothy Gehring	2/14/2002

1	• Input into Word Document from PDF
	• Updated general formatting (previous versions were from 2014 & 2002)
	  ○ Added cover page (including DTE logo & adding the owner/operator "DTE Electric Company")
	  ○ Added header & footer
	  ○ Added revision tracking
	• Updated facility name from "DTE East China, LLC" to "Dean Peakers" throughout plan
	  ○ Confirmed no references to "DTE Energy Services" as the owner/ operator in Plan
	• Changed MAR to exact rule reference (Rule 219) throughout Plan
	  • Added verbiage that the ROP has been issued and specified the permit condition # requiring this plan (in the 1st paragraph of the Plan)
	• Removed the word facility from the 1st paragraph
	• Added CTG #s
	• Frequency of review of this plan from annually to as needed to be consistent with other SSMPs
		Lisa Fishbeck & Stefanie Ledesma	11/05/2019