Boiler MACT Site-Specific Monitoring Plan

BOILER MACT SITE-SPECIFIC MONITORING PLAN

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ESCANABA, MI

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1. PURPOSE

Verso Escanaba, LLC (VE), Escanaba Mill (Escanaba or Mill), is subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR Part 63, Subpart DDDDD). This regulation is commonly referred to as the Boiler MACT. 40 CFR §63.7505(d) requires the development and implementation of a Site-Specific Monitoring Plan (SSMP) if compliance with an applicable emissions limit is demonstrated through performance testing or a Continuous Emissions Monitoring System (CEMS), and compliance with an applicable operating limit is demonstrated through the use of a Continuous Parametric Monitoring Systems (CPMS) or a Continuous Opacity Monitoring System (COMS). CEMS, CPMS, and COMS are collectively referred to as Continuous Monitoring Systems (CMS). An SSMP must be prepared according to the requirements in 40 CFR §§63.7505(d)(1) through (4), as well as certain requirements in 40 CFR §§63.8(c) and (d), and 40 CFR §§63.10(c) and (e), for the use of a CMS. This requirement also applies if VE petitions the U.S. Environmental Protection Agency (U.S. EPA) in accordance with 40 CFR §63.8(f) for alternative monitoring system quality assurance (QA) and quality control (QC) procedures in place of those specified in 40 CFR §63.7505(d).

VE must submit this SSMP, if requested, at least 60 days prior to conducting the initial performance evaluation of its CMS. Otherwise, VE must maintain this SSMP on site and make it available upon request for inspection.

As specified in 40 CFR §63.7505(d)(1), the requirement to develop, and submit upon request, an SSMP does not apply to affected sources with **existing** CEMS or COMS operated according to the performance specifications under Appendix B to 40 CFR Part 60 **and** that meet the requirements of 40 CFR §63.7525. VE's COMS meets the criteria in 40 CFR §63.7505(d)(1) and VE operates and maintains its COMS in accordance with its existing QA/QC Plan. Furthermore, to date, U.S. EPA has not promulgated performance specifications for CPMS (i.e., pressure monitors, scrubber flow meters, or steam flow meters) of the type used for Subpart DDDDD compliance. Therefore, VE has relied on manufacturer's specifications, Mill standard

operating procedures, standard industry practices, and U.S. EPA guidance[1] for the purposes of this SSMP.

This SSMP was developed in accordance with the version of Subpart DDDDD in effect as of the date of the document. Revisions to Subpart DDDDD in the future may require an update to this plan. Revisions of this plan are documented in Section 11 of this document.

1.1 MILL DESCRIPTION

VE is a bleached kraft pulp and paper mill that produces coated paper as its primary product. VE is located just north and adjacent to the town of Escanaba, in Delta County, Michigan. The Escanaba Mill includes the following general process operations: woodyard, refiner mechanical pulp (RMP) mill, kraft pulp mill, chemical recovery, recausticizing system, bleach plant, boilerhouse, and coated paper manufacturing operations.

The Mill uses four (4) power boilers to produce steam to drive turbines for electricity generation for internal Mill use, and to provide steam and/or heat for the pulping and paper making processes.

1.2 OVERVIEW OF BOILER MACT AFFECTED UNITS

VE operates the following four (4) boilers that are affected emissions units under Boiler MACT:

1. Boiler No. 7
2. Boiler No. 8
3. Boiler No. 9
4. Boiler No. 11

The following subsections describe the affected emissions units.

[1] http://www.epa.gov/ttnatw01/pulp/dps53101.pdf.

1.2.1 Boiler No. 7

Boiler No. 7 was installed in 1947 and has a nominal rated heat input capacity of 154 million British thermal units per hour (MMBtu/hr). Boiler No. 7 typically combusts natural gas, but is also permitted to combust fuel oil. Boiler No. 7 is equipped with an oxygen (O_2) trim system to maintain excess air at the desired level in the boiler.

Boiler No. 7 is an existing source with respect to Boiler MACT, and it meets the criteria of the ***unit designed to burn gas 1*** subcategory. As such, Boiler No. 7 is not subject to emissions limits or operating limits under Boiler MACT and is not addressed further in this SSMP.

1.2.2 Boiler No. 8

Boiler No. 8 was installed in 1968 and has a nominal rated heat input capacity of 594 MMBtu/hr. Boiler No. 8 typically combusts natural gas, but is also permitted to combust fuel oil. Boiler No. 8 is equipped with an induced flue-gas recirculation system to control nitrogen oxides (NO_X) emissions during the ozone control season and an O_2 trim system to maintain excess air at the desired levels in the boiler.

Boiler No. 8 is an existing source with respect to Boiler MACT, and it meets the criteria of the ***unit designed to burn gas 1*** subcategory. As such, Boiler No. 8 is not subject to emissions limits or operating limits under Boiler MACT and is not addressed further in this SSMP.

1.2.3 Boiler No. 9

Boiler No. 9 was installed in 1972 and has a nominal rated input capacity of 360 MMBtu/hr. Boiler No. 9 typically burns biomass (wood fuel) and natural gas. The boiler is also permitted to burn paper cores. Boiler No. 9 is equipped with a multi-clone and two (2) wet scrubbers to control emissions of particulate matter (PM) when combusting solid fuel. Boiler No. 9 includes an overfire air (OFA) system and an O_2 trim system to maintain excess air at the desired levels in the boiler.

Boiler No. 9 is an existing source with respect to Boiler MACT, and it meets the criteria of the ***unit in all categories designed to burn solid fuel*** subcategory and the ***hybrid suspension/grate burners designed to burn wet biomass/bio-based solid*** subcategory.

1.2.4 Boiler No. 11

Boiler No. 11 was installed in 1981 and has a nominal rated input capacity of 1,040 MMBtu/hr. Boiler No. 11 typically burns biomass [wood fuel and wastewater treatment plant (WWTP) residuals], coal, natural gas, and tire derived fuel (TDF). The boiler is also permitted to burn engineered fuel pellets. Boiler No. 11 is equipped with a multi-clone and a dry electrostatic precipitator (ESP), as well as a COMS. Boiler No. 11 includes an OFA system and an O_2 trim system to maintain excess air at the desired levels in the boiler.

Boiler No. 11 is an existing source with respect to Boiler MACT, and it meets the criteria of the ***unit in all categories designed to burn solid fuel*** subcategory and the ***hybrid suspension/grate burners designed to burn wet biomass/bio-based solid*** subcategory.

1.3 SSMP DESCRIPTION

The purpose of this SSMP is to address the installation, performance, operation and maintenance, quality control, and recordkeeping and reporting procedures related to the Mill's CMS. In addition to the regulatory requirements, this document also identifies the roles and responsibilities for VE personnel related to implementing this SSMP, and documents the periodic reviews, updates, and other revisions to the SSMP. In accordance with 40 CFR §63.7505(d)(1), VE has developed this SSMP which addresses the design, data collection, and the QA/QC procedures for each CMS required by Boiler MACT. Specific regulatory requirements and their location in the SSMP are provided in Table 1-1.

Table 1-1
Location of Boiler MACT SSMP Requirements within This Document

SSMP Requirements and Items to Address	Regulatory Citation (40 CFR)	Section in SSMP
Initial and subsequent calibrations	§63.8(d)(2)(i)	66-1
Determination and adjustment of calibration drift	§63.8(d)(2)(ii)	6
Preventative maintenance, including spare parts inventory	§63.8(d)(2)(iii)	6-18
Data recording, calculations, and reporting	§63.8(d)(2)(iv)	6
Accuracy audit procedures, including sampling and analysis methods	§63.8(d)(2)(v)	6
Program for corrective action for malfunctioning CMS	§63.8(d)(2)(vi)	6-129
Installation of CMS sampling probe	§63.7505(d)(1)(i)	**Error! Bookmark not defined.**4
Performance and equipment specifications for sample interface, pollutant concentration, or parametric signal analyzer	§63.7505(d)(1)(ii)	5-85
Performance evaluation procedures and acceptance criteria	§63.7505(d)(1)(iii) §63.8(e)	6
Ongoing operation and maintenance	§63.7505(d)(2)(i)	**Error! Bookmark not defined.**8
Keep parts for routine repair of CMS readily available	§63.8(c)(1)(ii)	8
CMS must be installed, operational, and data verified	§63.8(c)(3)	4 & 6
One (1) cycle of operation (sampling, analyzing, and data recording) must be completed each successive 15-minute period for each CEMS	§63.8(c)(4)	6
One (1) cycle of sampling and analyzing for each successive 10-second period and one (1) cycle of data recording for each successive six (6) minute period for each COMS	§63.8(c)(4)(i)	6
Reduce all data to six (6)-minute averages for each COMS	§63.8(g)(2)	6
Data QA procedures	§63.7505(d)(2)(ii)	6
Recordkeeping and reporting procedures	§63.7505(d)(2)(iii)	9-110
Performance evaluation of each CMS	§63.7505(d)(3)	6
Each CMS be operated and maintained according to SSMP	§63.7505(d)(4)	**Error! Bookmark not defined.**1

2. RESPONSIBILITIES

Table 2-1 identifies the designated responsible person (by title) for the elements and requirements within VE's SSMP.

Table 2-1
List of Responsibilities

Requirement	Responsible Person(s)	Section in SSMP
Installation requirements	Electrical Engineer/Maintenance E&I	4
Performance and equipment specifications for the sample interface, the parametric signal analyzer, and the data collection and reduction system	Electrical Engineer/Maintenance E&I/Process Control/IT	5
CMS calibrations	Maintenance E&I	6
CMS calibration recordkeeping	Maintenance E&I	10
CMS spare parts	Maintenance E&I	8
Determining CMS "out-of-control" periods	Environmental	6
Recordkeeping for CMS "out-of-control" periods and CMS "down time"	Environmental	10
CMS preventative maintenance	Maintenance	8
CMS preventative maintenance recordkeeping	Maintenance	10
CMS data recording and calculations	Environmental	7
Corrective actions for CMS	Maintenance	9
CMS monitoring data recordkeeping	Environmental	10
CMS reporting (per the SSMP)	Environmental	10

3. DEFINITIONS

The following definitions from 40 CFR §§63.2 and 63.7575 are provided for reference:

- *30-day rolling average* means the arithmetic mean of the previous 720 hours of valid operating data. Valid data exclude hours during startup and shutdown, data collected during periods when the monitoring system is out of control as specified in your SSMP, while conducting repairs associated with periods when the monitoring system is out of control, or while conducting required monitoring system quality assurance or quality control activities, and periods when this unit is not operating. The 720 hours should be consecutive, but not necessarily continuous if operations were intermittent.
- *Boiler* means an enclosed device using controlled flame combustion and having the primary purpose of recovering thermal energy in the form of steam or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. A device combusting solid waste, as defined in 40 CFR §241.3 of this chapter, is not a boiler unless the device is exempt from the definition of a solid waste incineration unit as provided in section 129(g)(1) of the Clean Air Act. Waste heat boilers are excluded from this definition.
- *CEMS* means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of emissions.
- *CMS* is a comprehensive term that may include, but is not limited to, CEMS, COMS, CPMS, or other manual or automatic monitoring that is used for demonstrating compliance with an applicable regulation on a continuous basis as defined by the regulation.
- *COMS* means a continuous monitoring system that measures the opacity of emissions.
- *CPMS* means the total equipment that may be required to meet the data acquisition and availability requirements of this part, used to sample, condition (if applicable), analyze, and provide a record of process or control system parameters.

- *Corrective actions* means an activity performed in response to failed quality assurance activity by a CEMS and/or CMS.
- *Daily block average* means the arithmetic mean of all valid emissions concentrations or parameter levels recorded when a unit is operating measured over the 24-hour period from 12 a.m. (midnight) to 12 a.m. (midnight), except for periods of startup and shutdown or downtime.
- *Deviation:*
    (i) Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:
        (1) Fails to meet any applicable requirement or obligation established by this subpart including, but not limited to, any emissions limit, operating limit, or work practice standard; or
        (2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit.
    (ii) A deviation is not always a violation.
- *Excess emissions* occur if a valid quality assured opacity reading exceeds the numerical emissions limit pursuant to 40 CFR Part 63, Subpart DDDDD consistent with the averaging period or if valid quality assured data from a performance evaluation result in emissions above the specific numerical emissions limit for a pollutant (PM, CO, HCl, and/or Hg) pursuant to 40 CFR Part 63, Subpart DDDDD consistent with the averaging period by using a specified U.S. EPA reference method.
- *Exceedances* occur when valid quality assured parametric monitor values exceed limits pursuant to 40 CFR Part 63, Subpart DDDDD consistent with the averaging period.
- *Hourly average* means the arithmetic average of at least four (4) CMS data values representing the four (4) 15-minute periods in an hour, or at least two (2) 15-minute data values during an hour when CMS calibration, quality assurance, or maintenance activities are being performed.
- *Hybrid suspension grate boiler* means a boiler designed with air distributors to spread the fuel material over the entire width and depth of the boiler combustion zone. The biomass

fuel combusted in these units exceeds a moisture content of 40% on an as-fired annual heat input basis as demonstrated by monthly fuel analysis. The drying and much of the combustion of the fuel takes place in suspension, and the combustion is completed on the grate or floor of the boiler. Fluidized bed, dutch oven, and pile burner designs are not part of the hybrid suspension grate boiler design category.

- *Malfunction* means 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 emissions limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.
- *Oxygen analyzer system* means all equipment required to determine the oxygen content of a gas stream and used to monitor oxygen in the boiler or process heater flue gas, boiler or process heater, firebox, or other appropriate locations. This definition includes oxygen trim systems. The source owner or operator must install, calibrate, maintain, and operate the oxygen analyzer system in accordance with the manufacturer's recommendations.
- *Oxygen trim system* means a system of monitors that is used to maintain excess air at the desired level in a combustion device. A typical system consists of a flue gas oxygen and/or carbon monoxide CO monitor that automatically provides a feedback signal to the combustion air controller.
- *Performance evaluation* means the conduct of relative accuracy testing, calibration error testing, and other measurements used in validating the CMS data.
- *Performance test* means the collection of data resulting from the execution of a test method [usually three (3) emission test runs] used to demonstrate compliance with a relevant emissions standard as specified in the performance test section of the relevant standard.
- *Shutdown* means the period in which cessation of operation of a boiler or process heater is initiated for any purpose. Shutdown begins when the boiler or process heater no longer supplies useful thermal energy (such as heat or steam) for heating, cooling, or process purposes and/or generates electricity or when no fuel is being fed to the boiler or process heater, whichever is earlier. Shutdown ends when the boiler or process heater no longer

supplies useful thermal energy (such as steam or heat) for heating, cooling, or process purposes and/or generates electricity, and no fuel is being combusted in the boiler or process heater. *Solid fossil fuel* includes, but is not limited to, coal, coke, petroleum coke, and tire derived fuel.

- *Solid fuel* means any solid fossil fuel or biomass or bio-based solid fuel.
- *Startup (Definition 1)* means either the first-ever firing of fuel in a boiler or process heater for the purpose of supplying useful thermal energy for heating and/or producing electricity, or for any other purpose, or thee firing of fuel in a boiler after a shutdown event for any purpose. Startup ends when any of the useful thermal energy from the boiler or process heater is supplied for heating, and/or producing electricity, or for any other purpose.[2]
- *Unit designed to burn biomass/bio-based solid category* includes any boiler or process heater that burns at least 10% biomass or bio-based solids on an annual heat input basis in combination with solid fossil fuels, liquid fuels, or gaseous fuels.
- *Unit designed to burn gas 1 subcategory* includes any boiler or process heater that burns only natural gas, refinery gas, and/or other gas 1 fuels. Gaseous fuel boilers and process heaters that burn liquid fuel for periodic testing of liquid fuel, maintenance, or operator training, not to exceed a combined total of 48 hours during any calendar year, are included in this definition. Gaseous fuel boilers and process heaters that burn liquid fuel during periods of gas curtailment or gas supply interruptions of any duration are also included in this definition.
- *Unit designed to burn solid fuel subcategory* means any boiler or process heater that burns only solid fuels or at least 10% solid fuel on an annual heat input basis in combination with liquid fuels or gaseous fuels.

[2] VE has chosen to use Definition 1 of startup. Definition 2 – The period in which operation of a boiler is initiated for any purpose. Startup begins with either the first-ever firing of fuel in a boiler or process heater for the purposes of supplying useful thermal energy (such as steam or heat) for heating, cooling or process purposes, or producing electricity, or the firing of fuel in a boiler or process heater for any purpose after a shutdown event. Startup ends four hours after when the boiler or process heater supplies useful thermal energy (such as heat or steam) for heating, cooling, or process purposes, or generates electricity, whichever is earlier.

4. AFFECTED SOURCES AND CMS

4.1 BOILER NO. 9

Table 4-1 summarizes the applicable Boiler MACT emissions limits and operating parameters associated with Boiler No. 9.

Table 4-1
Boiler No. 9 Summary of Applicable Emissions Limits and Operating Parameters

Pollutant	Emissions Limit[(a)]	Control Device	Operating Parameter
Filterable PM	0.44 lb/MMBtu heat input	Multi-Cyclone, Wet Scrubbers	Scrubber liquid flow and differential pressure
Carbon Monoxide (CO)	3500 ppmvd @ 3% O_2[(b)]	N/A	O_2 trim system set point
Mercury (Hg)	5.7E-06 lb/MMBtu heat input	Multi-Cyclone, Wet Scrubbers	Mercury (Hg) input loading to boiler
Hydrogen Chloride (HCl)	2.2E-02 lb/MMBtu heat input	N/A	Hydrogen chloride (HCl) input loading to boiler
All	N/A	N/A	Operating Load (as steam flow rate)

(a) Emissions limits are for boilers under the subcategory of ***hybrid suspension/grate burners designed to burn wet biomass/bio-based solids.***
(b) Parts per million by volume, dry basis, corrected to 3% O_2 concentration on a three (3)-run average.

The applicable operating limits and compliance methodology for each parameter are summarized in Table 4-2. Note that the operating limits in Table 4-2 do not apply when Boiler No. 9 is combusting solely natural gas. While burning only natural gas, Boiler No. 9 meets the criteria of the ***unit designed to burn gas 1*** subcategory. As such, it is not subject to the operating limits under Boiler MACT (see Appendix C for Alternative Monitoring Approval). Operating limits are set through initial performance testing and can be modified based on subsequent testing.

Table 4-2
Boiler No. 9 Summary of Operating Limits

Parameter	Compliance Methodology[(a)(b)]	Operating Limit[(c)]
O_2 Content[(d)]	Conduct initial and annual performance testing for CO. Operate the O_2 trim system set no lower than the lowest hourly average O_2 concentration measured during the most recent CO performance test.	At or above the set-point established during the most recent performance test
Differential Pressure	Conduct initial and annual performance testing for filterable PM. Maintain the 30-day rolling differential pressure at or above the value corresponding to the lowest one (1)-hour average pressure drop measured during the most recent performance test.	Not to exceed the level established during the most recent performance test
Scrubber Flow	Conduct initial and annual performance testing for filterable PM. Maintain the 30-day rolling average liquid flow rate at or above the lowest one (1)-hour average liquid flow rate measured during the most recent performance test.	Not to exceed the level established during the most recent performance test
Operating Load	Conduct initial and annual performance testing for filterable PM, CO, Hg, and HCl. Maintain the operating load such that the 30-day rolling average steam flow rate does not exceed 110% of the highest hourly average operating load recorded during the most recent performance test.	Not to exceed the level established during the most recent performance test

(a) Per Boiler MACT, if your performance tests for a given pollutant for at least two (2) consecutive years show that your emissions are at or below 75% of the emissions limit for the pollutant, and if there are no changes in the operation of the individual boiler or air pollution control equipment that could increase emissions, performance test frequency for the pollutant may be decreased to once every three (3) years.
(b) As described in the Alternative Monitoring Approval located at Appendix C, operating limits do not apply when Boiler No. 9 is combusting natural gas only.
(c) The most recent performance tests can be found at the location referenced in Appendix A.
(d) Boiler MACT does not specifically address O_2 trim system range requirements. VE will assign the set point based on performance testing.

Table 4-3 summarizes the monitoring equipment used by Boiler No. 9 covered by this SSMP.

Table 4-3
Boiler No. 9 Summary of Boiler MACT CMS

Equipment	Location	Manufacturer	Model	Measurement	Data Collection Method
O_2 Sensor[(a)]	East side of Boiler No. 9 – Column K-8.9	Rosemount	3000/3008 probe	% O_2	Distributive Control System (DCS) Output to PI and VIM
#2 Scrubber dP Transducer[(b)]	East side of #2 scrubber - monitoring at inlet and outlet of scrubber	Rosemount	1151HP4S22	Inches water column (WC)	DCS Output to VIM
#3 Scrubber dP Transducer[(b)]	East side of #3 scrubber - monitoring at inlet and outlet of scrubber	Rosemount	1151HP4S22	Inches WC	DCS Output to VIM
North Scrubber Flow Meter	Between #1 and #2 stacks at pump discharge	Yokogawa	AE215MG-AA1-PSA-AIDH/BR/HA	Gallons per minute (GPM)	DCS Output to VIM
South Scrubber Flow Meter	Between #2 and #3 stacks at pump discharge	Yokogawa	AXF150CE1A L1LCA1121BF F1	GPM	DCS Output to VIM
Steam Flow Meter	High pressure steam header inlet, 5th floor, NW corner	Rosemount	MDL3051S1C D3A3F12A1A B3D2E5L4M5	KPPH	DCS Output to VIM

(a) O_2 set point is monitored on a minute basis. The set point value is transferred to VIM.
(b) Boiler No. 9 is followed by two (2) parallel scrubbers each with their own stack. Pressure taps are located at the inlet and outlet of each scrubber. There is one (1) dP transducer for each scrubber connected to the inlet and outlet taps.

4.1.1 Boiler No. 9 Monitoring Equipment

4.1.1.1 Flow Meters

Boiler No. 9 is equipped with two (2) wet scrubbers and is complying with the PM standard using performance testing. Therefore, the scrubbers are required to have liquid flow meters as a CMS for the indication of the proper operation of the control devices. The flow meters were installed in accordance with manufacturer specifications and 40 CFR §§63.7525(e)(1) and (3)

such that the flow meters are positions that minimize swirling or abnormal velocity distributions due to upstream or downstream disturbances and provide representative flow measurements.

4.1.1.2 Scrubber Differential Pressure Sensors

Boiler No. 9 is equipped with two (2) wet scrubbers and is complying with the PM standard using performance testing. Therefore, the unit is required to have readings of scrubber differential pressure as a CMS for the indication of the proper operation of the control device. Differential pressure transducers are mounted with pressure taps on the high and low pressure side of each scrubber. The pressure transducers were installed in accordance with manufacturer specifications and 40 CFR §§63.7525(f)(1) and (2) such that the pressure sensors are in positions that minimize pulsating pressure, vibration, internal and external corrosion, and provide representative measurements of the pressure. The transducers were mounted solidly to prevent tilting, as a shift in the physical transducer could cause a zero shift in the output. The transducers were also positioned close to the process to achieve best accuracy.

4.1.1.3 O_2 Sensor

Boiler No. 9 is complying with CO standard using performance testing. To demonstrate continuous, proper operation of the boiler, an O_2 trim system is in place. An O_2 sensor provides feedback signal to the fuel feed system and boiler air flow. Using a DCS controller, O_2 is controlled by adjusting fuel feed rates and air flow to maintain O_2 at the established O_2 set point control level. The minimum set point is the lowest hourly average O_2 concentration measured during the most recent performance test. Note that there are inherent operating situations which may require the oxygen trim control system to be operated in the manual mode to ensure operational safety and boiler stability. Examples of these operating situations include startup and shutdown, oxygen analyzer calibration, and combustion control system adjustments. These periods of manual operation are of limited duration and will not be considered as compliance deviations. The O_2 sensor was installed in accordance with manufacturer specifications and 40 CFR §63.7525 such that it is in a location which provides a representative measurement of boiler O_2. The sensor is located between the economizer outlet and the dust collector inlet.

4.1.1.4 Boiler Steam Flow

Boiler No. 9 is equipped with a steam flow meter and is complying with the applicable emissions limits using performance testing. To demonstrate continuous compliance of the boiler with the operating load limit, a steam flow meter is in place. The operating load limit is established as 110% of the highest hourly average operating load measured during the most recent performance test. The steam flow meter was installed in accordance with manufacturer specifications in a location on the main steam line exiting the boiler that provides a representative measurement of steam flow from the boiler.

4.2 BOILER NO. 11

Table 4-4 summarizes the applicable Boiler MACT emissions limits and operating parameters associated with Boiler No. 11.

Table 4-4
Boiler No. 11 Summary of Applicable Emissions Limits and Operating Parameter

Pollutant	Emissions Limit	Control Device	Operating Parameter
Filterable PM	0.44 lb/MMBtu heat input	Multi-Cyclone, Dry ESP	Opacity
CO	3500 ppmvd @ 3% O_2[(a),(b)]	N/A	O_2 Trim System Set point
Hg	5.7E-06 lb/MMBtu heat input	Multi-Cyclone, Dry ESP	Hg input loading to boiler
HCl	2.2E-02 lb/MMBtu heat input	N/A	HCl input loading to boiler
All	N/A	N/A	Operating Load (as steam flow)

(a) Emissions limits for filterable PM and CO are for boilers under the subcategory of ***hybrid suspension/grate burners designed to burn wet biomass/bio-based solids.***
(b) Parts per million by volume, dry basis, corrected to 3% O_2 concentration.

The applicable operating limits and compliance methodology for each parameter are summarized below in Table 4-5. Operating limits are set through initial performance testing and can be modified based on subsequent testing.

Table 4-5
Boiler No. 11 Summary of Operating Limits

Parameter	Compliance Methodology[(a)]	Operating Limit[(b)]
Opacity	Conduct initial and annual performance testing for filterable PM. Maintain opacity to less than or equal to 10% (daily block average)	≤10%
O_2 Content[(c)]	Conduct initial and annual performance testing for CO. Operate the O_2 trim system set no lower than the lowest hourly average O_2 concentration measured during the most recent CO performance test.	At or above the set point established during the most recent performance test
Operating Load	Conduct initial and annual performance testing for filterable PM, CO, Hg, and HCl. Maintain the operating load such that the 30-day rolling average steam flow rate does not exceed 110% of the highest hourly average operating load recorded during the most recent performance test.	Not to exceed the level established during the most recent performance test

(a) Per Boiler MACT, if your performance tests for a given pollutant for at least two (2) consecutive years show that your emissions are at or below 75% of the emissions limit for the pollutant, and if there are no changes in the operation of the individual boiler or air pollution control equipment that could increase emissions, performance test frequency for the pollutant may be decreased to once every three (3) years.
(b) The most recent performance tests can be found in at the location referenced in Appendix A.
(c) Boiler MACT does not specifically address O_2 trim system range requirements. VE will assign the set point based on performance testing.

Table 4-6 summarizes the monitoring equipment used by Boiler No. 11 covered by this SSMP.

Table 4-6
Boiler No. 11 Summary of Boiler MACT CMS

Equipment	Location	Manufacturer	Model	Measurement	Data Collection Method
COMS	Precipitator Outlet Duct	Sick Optics	OMD41	% Opacity	PLC Output to VIM
O_2 Sensor[(a)]	Middle – Above Boiler No. 11 Access Platform	Rosemount	3000/3008 probe	% O_2	DCS Output to PI and VIM
O_2 Sensor[(a)]	East – Above Boiler No. 11 Access Platform	Yokogawa	ZR22G200SC ETQEA	% O_2	DCS Output to PI and VIM
O_2 Sensor[(a)]	West – Above Boiler No. 11 Access Platform	Yokogawa	ZR22G200SC ETQEA	% O_2	DCS Output to PI and VIM
Steam Flow Meter	High presser header inlet, 6th floor, N Wall	Rosemount	MDL3051S1C D3A3F12A1A B3D2E5L4M5	Kilo-pounds per hour (KPPH)	DCS Output to VIM

(a) O_2 set point is monitored on a minute basis. The set point value is transferred to VIM.

4.2.1 Boiler No. 11 Monitoring Equipment

4.2.1.1 O_2 Sensors

Boiler No. 11 is complying with the CO emissions limit using performance testing. To demonstrate continuous, proper operation of the boiler, an O_2 trim system is in place. Readings from three (3) O_2 sensors are averaged to provide a combined feedback signal to the combustion air flow. Using a DCS controller, O_2 is controlled by adjusting air flow to maintain the established O_2 set point control level. The minimum set point is the lowest hourly average O_2 concentration measured during the most recent performance test. Note that there are inherent operating situations which may require the oxygen trim control system to be operated in the manual mode to ensure operational safety and boiler stability. Examples of these operating situations include startup and shutdown, oxygen analyzer calibration, and combustion control system adjustments. These periods manual operation are of limited duration and will not be considered as compliance deviations. The O_2 sensors were installed in accordance with

manufacturer specifications and 40 CFR §63.7525 such that they are in locations which provide a representative measurement of boiler O_2. Three (3) sensors are located across the boiler between the generating section outlet and the economizer inlet.

4.2.1.2 Boiler Steam Flow

Boiler No. 11 is equipped with a steam flow meter and is complying with the emissions limits using performance testing. To demonstrate continuous compliance of the boiler with the operating load limit, a steam flow meter is in place. The operating load limit is established as 110% of the highest hourly average operating load measured during the most recent performance test. The steam flow meter was installed in accordance with manufacturer's specifications in a location on the main steam line exiting the boiler that provides a representative measurement of steam flow from the boiler.

4.2.1.3 Opacity

Boiler No 11 is complying with the PM emissions limit through performance testing. To demonstrate continuous compliance, a COMS is in place. The COMS is installed, operated, and maintained according to Performance Specification 1 at Appendix B of 40 CFR Part 60 and 40 CFR §63.7525. Continuous compliance is demonstrated by maintaining the daily block average opacity at or below 10%.

5. PERFORMANCE AND EQUIPMENT SPECIFICATIONS

Pursuant to 40 CFR §63.7505(d)(1)(ii), VE must address performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction systems in the SSMP.

5.1 BOILER NO. 9 PERFORMANCE AND EQUIPMENT SPECIFICATIONS

Performance and equipment specifications applicable to the CMS monitoring equipment for Boiler No. 9 are outlined in Table 5-1.

Table 5-1
Boiler No. 9 Performance and Equipment Specifications

Equipment	Type	Sample Interface	Manufacturer Specified Accuracy	Parametric Signal Analyzer/Monitor Range/Output	Data Collection and Reduction Systems
O_2 Meter	Rosemount 3000/3008 Probe	Zirconia electrochemical cell positioned in the boiler	0.1% of O_2 or 3% of reading (whichever is greater)	Calibrated range: 0 - 10% O_2 4-20 mA (max range 25% O_2)	Data is collected in a DCS system. VIM and PI software are used to reduce and manage the data from the DCS system.
#2 Scrubber dP Transducer	Rosemount 1151HP4S22	Pressure taps on scrubber inlet and outlet	±0.25% of calibrated range	Calibrated range: 0-20" H_2O 4-20 mA (max range 150" H_2O)	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.
#3 Scrubber dP Transducer	Rosemount 1151HP4S22	Pressure taps on scrubber inlet and outlet	±0.25% of calibrated range	Calibrated range: 0-20 "H_2O/ 4-20 mA (max range 150" H_2O)	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.
North Scrubber Flow Meter	Yokogawa AA1-PSA-AIDH/BR/HAL	Magnetic flow meter on water recirculation line from scrubber	±0.5% of rate	Calibrated Range: 0-2,500 GPM/4-20 mA (max range 2,891 GPM)	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.
South Scrubber Flow Meter	Yokogawa AXF150CE1AL1LCA1121BFF1	Magnetic flow meter on water recirculation line from scrubber	±0.35% of rate	Calibrated range: 0-2,500 GPM/4-20 mA (Max range 2,800 GPM)	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.
Steam Flow Meter	Rosemount MDL3051S1CD3A3F12A1AB3D2E5L4M5	Coplanar differential pressure in steam line to distribution header	0.025% of span	0-250" H_2O, 4-20 mA, 0-350 KPPH	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.

5.2 BOILER NO. 11 PERFORMANCE AND EQUIPMENT SPECIFICATIONS

Performance and equipment specifications applicable to the CMS monitoring equipment for Boiler No. 11 are outlined in Table 5-2.

Table 5-2
Boiler No. 11 Performance and Equipment Specifications

Equipment	Type	Sample Interface	Manufacturer Specified Accuracy	Parametric Signal Analyzer/Monitor Range/Output	Data Collection and Reduction Systems
Opacity Meter	Sick Optics Dusthunter T200	Light transmission = transmitter/ receiver unit and reflector unit on precipitator outlet duct to stack	±2% full scale	System span 0-80%/ 4-20 mA (max range 100%)	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.
Center O_2 Meter	Rosemount 3000/3008 Probe O_2 Sensor	Zirconia electrochemi-cal cell positioned in the boiler	0.1% of O_2 or 3% of reading (whichever is greater)	Calibrated range: 0-10% O_2 4-20 mA (max range 25% O_2)	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.
East and West O_2 Meters	Yokogawa ZR22G200 SCETQEA O_2 Sensors	Zirconia electrochemi-cal cell positioned in the boiler	Zero and span drift <2% of range maximum	Calibrated range: 0-10% O_2/ 4-20 mA (max range 25% O_2)	Data is collected in a DCS system. VIM and PI software are used to reduce and manage the data from the DCS system.
Steam Flow Meter	Rosemount MDL3051S 1CD3A3F1 2A1AB3D2 E5L4M5	Coplanar differential pressure in steam line to distribution header	0.025% of span	0-331" H_2O, 4-20 mA, 0-900 KPPH	Data is collected in a DCS system. VIM software is used to reduce and manage the data from the DCS system.

6. PERFORMANCE EVALUATION PROCEDURES

Pursuant to §63.7505(d)(3), VE must address performance evaluation procedures and acceptance criteria (e.g., calibrations, accuracy audits, analytical drift) in the SSMP. Out-of-control (OOC) periods are addressed in 40 CFR §63.8(c)(7). This section of the regulation addresses the following:

40 CFR §63.8(c)(7):

(i) A CMS is out of control if –

(A) The zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two (2) times the applicable CD specification in the applicable performance specification or in the relevant standard; or

(B) The CMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit; or

(C) The COMS CD exceeds two (2) times the limit in the applicable performance specification in the relevant standard.

(ii) When the CMS is out of control, the owner or operator of the affected source shall take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out of control. The owner or operator shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the out-of-control period is the hour the owner or operator conducts a performance check (e.g., calibration drift) that indicates an exceedance of the performance requirements established under this part. The end of the out-of-control period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. During the period the CMS is out of control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

Pursuant to 40 CFR §63.8(c)(7), VE must take the necessary corrective actions to repair the CPMS. During the period the monitoring equipment is OOC, VE does not use the recorded data in data averages and calculations or to meet data availability requirements.

The OOC periods, as defined in 40 CFR §63.8(c)(7)(i), address COMS and CEMS. Except for the COMS used for compliance purposes for Boiler No. 11, these definitions do not apply to the SSMP for VE. The type of monitoring equipment that is used for compliance with the Boiler MACT does not typically involve frequent periodic drift tests because the monitoring equipment is not designed for that purpose. Furthermore, to date, U.S. EPA has not promulgated performance specifications for CPMS (i.e., pressure monitors, scrubber flow meters, or steam flow meters) of the type used for Subpart DDDDD compliance. The performance evaluation procedures outlined above apply to CMS with promulgated performance specifications. VE has developed their own performance evaluation procedures for the CMS without a promulgated performance specification using manufacturer specifications.

Therefore, VE has developed the following general definition of an OOC period for the non-COMS CMS for the Mill:

- *The beginning of the OOC period* is defined by the Mill as the hour that the CPMS reading is noted to be operating outside of the quality control limits. This can include a review of operating data in order to identify events, such as power outages, that may have caused the meter to go OOC.
- *The end of the OOC period* is defined by the Mill as the hour following the completion of corrective action and successful demonstration that the system is within the allowable quality control limits.

6.1 BOILER NO. 9 CMS PERFORMANCE EVALUATION PROCEDURES

VE has developed and implemented the following performance evaluation procedures for Boiler No. 9 CMS in Table 6-1. Additional details regarding the performance evaluation procedures, including calibration and adjustment procedures, can be found at the location referenced in Appendix A.

Table 6-1
Boiler No. 9 CMS Calibration Frequency and Calibration Acceptance Criteria

Measurement Type	Instrument Type	Calibration Frequency	Calibration Acceptance Criteria
O_2 Meter	Rosemount 3000/3008 Probe	Annual (Performance Evaluation)	Minimum tolerance of ±0.2% O_2
#2 Scrubber dP Transducer[(a)]	Rosemount 1151HP4S22	Annual (Performance Evaluation)	Minimum tolerance of ½-inch of water or 1% of pressure monitoring system operating range (whichever is less)
#3 Scrubber dP Transducer[(a)]	Rosemount 1151HP4S22	Annual (Performance Evaluation)	Minimum gauge tolerance of ½-inch of water or 1% of pressure monitoring system operating range (whichever is less)
North Scrubber Flow Meter[(a)]	Yokogawa AA1-PSA-AIDH/BR/HAL	Annual (Performance Evaluation)	Flow sensor with minimum tolerance of 2% of design flow rate
South Scrubber Flow Meter[(a)]	Yokogawa AXF150CE1AL1LCA1121BFF1	Annual (Performance Evaluation)	Flow sensor with minimum tolerance of 2% of design flow rate
Steam Flow Meter[(a)]	Rosemount MDL3051S1CD3A3F12A1AB3D2E5L4M5	Performance Evaluation During Scheduled Boiler Outage	Flow sensor with minimum tolerance of 2% of design flow rate

(a) Calibration is conducted through a performance evaluation at the time of each performance test, but no less frequently than annually.

6.1.1 Boiler No. 9 O_2 Performance Evaluation Procedures

To ensure on-going compliance with CO emissions limits, an O_2 trim system is utilized. The boiler excess air O_2 trim system set point is continuously monitored to ensure that it is no lower than the established operating limit. The requirement for a boiler using an O_2 trim system to demonstrate compliance with CO is defined in 40 CFR §63.7525(a)(7) and Table 8 of Subpart DDDDD. The operating limit will be the lowest hourly average O_2 measured during the most recent CO performance test. Periodic O_2 meter accuracy audits will be conducted to determine and/or adjust for drift.

6.1.1.1 *Initial Performance Evaluation*

Pursuant to 40 CFR §63.7525(a), boilers subject to CO emissions limits require the installation of an O_2 analyzer system. According to 40 CFR §63.7575, the O_2 analyzer was installed and initially validated based on the manufacturer recommendations.

6.1.1.2 *Daily*

The O_2 analyzer system is monitored continuously to ensure the O_2 sensors are functioning properly. The DCS monitoring system is built with "watchdogs" that track the communication between the different components of the tracking system. Loss of communication triggers an alarm which is followed-up on by an E&I and/or Process Control Engineer.

6.1.1.3 *Annually*

A performance evaluation will be conducted by the Mill personnel prior to performance testing and as part of the ongoing routine maintenance for the system. The calibration will be checked by applying known gas concentrations to the probe and then calculating the percent error (difference between the transmitter value and the known signal value). During the audit, the instrumentation will be inspected for conformance with manufacturer specifications. In addition to the calibration checks, the facility will perform an inspection of all components for integrity, of all electrical connections for continuity, and of all mechanical connections for leakage.

Results of the performance audits are documented on the CPMS Evaluation Form printed from the SAP system (See Appendix B for an example of the required information). If an adjustment is required, the technician will indicate this on the evaluation form and record the readings before and after adjustment. Audit results will be maintained for five (5) years.

6.1.1.4 *Acceptance Criteria*

Should the annual audit readings exceed ±0.2% O_2, the O_2 meter is OOC and subject to CMS downtime. When the meter is OOC, corrective action must be initiated as described in Section 9.

If corrective action is required, the action taken will be recorded in the SAP Maintenance Tracking System.

Table 6-2
Boiler No. 9 O_2 Corrective Action Trigger Points

Source/Monitor	Point of Corrective Action	OOC Period Begins	OOC Period Ends
O_2 Analyzer System	Audit difference ±0.2% O_2	Upon failure of audit	Upon successful completion of audit

6.1.2 Boiler No. 9 Scrubber Differential Pressure Monitor Performance Evaluation Procedures

To ensure on-going compliance, the differential pressure is continuously monitored, and periodic accuracy audits are conducted to determine and adjust for calibration drift. The pressure monitoring requirements for boilers using a wet scrubbers to control PM emissions are defined in 40 CFR §63.7525(f). Differential pressure must be measured at least once each 15-minute period. The pressure sensor must be certified by the manufacturer to have a pressure gauge with a minimum tolerance of 1.27 centimeters (cm) of H_2O or a transducer with a minimum tolerance of 1% of the pressure range, pursuant to 40 CFR §63.7525(f)(3). Differential pressure 30-day rolling averages must meet the minimum operating limit established during the most recent performance test compliance demonstration, pursuant to 40 CFR §63.7575. The operating limit will be the lowest hourly average scrubber pressure drop measured during the most recent performance test.

6.1.2.1 *Initial Performance Evaluation*

The pressure sensors are calibrated at the factory. The pressure sensors were installed and initially validated based on the manufacturer's recommendations.

6.1.2.2 *Daily*

The scrubber differential pressure measurement systems are monitored continuously to ensure the units are functioning properly. The VIM data collection system performs "flat-line" and

"out-of-range" check on the meter signals. If the values received into the VIM data collection system have not shown a change in the readings (using a maximum minus minimum average greater than zero over a 30-minute period) the system will create an alarm, which requires a corrective action by operations. If at any time the measured pressure exceeds the manufacturer specified maximum operating pressure range, an alarm will be triggered. Maintenance will conduct a performance evaluation of the pressure monitoring system and will confirm that the pressure monitoring system continues to meet the performance requirements in this plan. Alternatively, maintenance will install and verify the operation of a new pressure sensor pursuant to 40 CFR §63.7525(f)(6). In addition, the DCS monitoring system is built with "watchdogs" that track the communication between the different components of the tracking system. Loss of communication triggers an alarm which is followed-up on by an E&I and/or Process Control Engineer. If the signals meet the required periodic checks, the signal is valid and no manual inspection for pluggage is required. Continuous flat-line monitoring constitutes compliance with the daily check provision pursuant to 40 CFR §63.7525(f)(4). All periods of monitor downtime, along with cause and corrective action, will be tracked in the VIM data collection system.

6.1.2.3 *Annually*

Pressure transducer performance audits will be conducted annually by the Mill personnel prior to performance testing pursuant to 40 CFR §63.7525(f)(5). The calibration will be checked by applying known test signal values to the transducer and then calculating the percent error. The procedure will be performed by starting with a low signal value and increasing upwards to the max calibration value. During the audit, the transducer will be inspected for conformance with manufacturer specifications, and a zero check will be conducted. Results of the performance audits are documented on the CPMS Evaluation Form in the SAP system (See Appendix B for an example of the required information). If an adjustment is required, the technician will indicate this on the evaluation form and record the readings before and after adjustment. Audit results will be maintained for five (5) years.

6.1.2.4 *Acceptance Criteria*

Should the audit readings be outside of ±0.5 inches H_2O, the monitor is OOC and subject to CMS downtime. When the monitor is OOC, corrective action must be initiated as described in Section 9. Data collected during this period must not be used in data averages, calculations, or to meet the data availability requirements. If corrective action is required, the action taken will be recorded on the performance audit form, with documentation maintained in the SAP Maintenance Tracking System.

Table 6-3
Boiler No. 9 Pressure Transducer Corrective Action Trigger Points

Source/Monitor	Point of Corrective Action	OOC Period Begins	OOC Period Ends
Differential Pressure Transducers	Pressure reading audit difference >0.5 in. H_2O	Upon failure of audit and/or when readings exceed the maximum operating range	Upon successful completion of audit

6.1.3 Boiler No. 9 Scrubber Flow Meter Performance Evaluation Procedures

To ensure on-going compliance, the flow rate will be continuously monitored, and periodic accuracy audits will be conducted to determine and/or adjust for calibration drift. The flow monitoring requirements for a boiler using a wet scrubber to control PM emissions is defined in 40 CFR §63.7525(e). This requires the flow to be measured at least once each 15-minute period and certified by the manufacturer to be accurate within ±2% of the flow rate. The 30-day rolling averages must meet the minimum operating limit established during the most recent performance test compliance demonstration pursuant to 40 CFR §63.7575. The operating limit will be the lowest hourly average liquid flow rate measured during the most recent performance stack test.

6.1.3.1 *Initial Performance Evaluation*

The flow sensors are wet calibrated at the factory and do not require further calibration upon installation. The flow meter was installed and initially validated based on manufacturer recommendations.

6.1.3.2 *Daily*

The scrubber flow meters are monitored continuously to ensure they are functioning properly. The DCS monitoring system is built with "watchdogs" that track the communication between the different components of the monitoring system. Loss of communication triggers an alarm which is followed-up on by an E&I and/or Process Control Engineer. In addition, the VIM data collection system will perform flat-line checks on the meter's signal. If the value received into VIM system has not shown a change in the reading (analyzing a change in flow readings over a 15-minute period) the system will create an alarm, which will require acknowledgement and entry of a cause and corrective action by operations. This alarm must be followed-up on by operations and/or maintenance. The VIM data collection system will also track all periods of monitor downtime, along with cause and corrective actions.

6.1.3.3 *Annually*

Flow sensor calibration checks or audits will be performed annually pursuant to 40 CFR §63.7525(e)(4). The zero calibration will be checked by isolating the flow and checking the zero reading. The percent error will be calculated as the ratio of the zero reading to the full scale reading. During the audit, the sensor will be inspected for conformance with manufacturer specifications. An inspection of all components for integrity, of all electrical connections for continuity, and of all mechanical connections for leakage will be conducted.

Results of the performance audits are documented on the CPMS Evaluation Form in the SAP system (See Appendix B for an example of the required information). If an adjustment is required, the technician will indicate this on the evaluation form and record the readings before and after adjustment. Audit results will be maintained for five (5) years.

6.1.3.4 *Acceptance Criteria*

Should the annual audits exceed 2%, the meter is OOC and subject to CMS downtime. When the meter is OOC, corrective action must be initiated as described in Section 9. Data collected during this period must not be used in data averages, calculations, or to meet the data availability requirements. If corrective action is required, the action taken will be recorded on the performance audit form, with documentation maintained in the SAP Maintenance Tracking System.

Table 6-4
Boiler No. 9 Scrubber Flow Meter Corrective Action Trigger Points

Source/Monitor	Point of Corrective Action	OOC Period Begins	OOC Period Ends
Scrubber Flow Meters	Audit error >2% of design flow rate (flow zero reading >50 GPM)	Upon failure of audit	Upon successful completion of audit

6.1.4 Boiler No. 9 Steam Flow Meter Performance Evaluation Procedures

To ensure on-going compliance with boiler operating loads, the steam flow rate will be continuously monitored, and periodic accuracy audits will be conducted to determine and/or adjust for calibration drift. For boilers demonstrating compliance through performance testing, the requirement for an operating load limit is described in Table 4 of Subpart DDDDD. This requires maintaining the operating load such that it does not exceed 110% of the highest hourly average recorded during the most recent performance test. Compliance will be determined on a 30-day rolling average.

6.1.4.1 *Initial Performance Evaluation*

The steam flow meter is factory calibrated. The steam flow meter was installed and initially validated based on manufacturer recommendations.

6.1.4.2 *Daily*

The steam flow meter will be continuously monitored, pursuant to 40 CFR §63.8(c)(6), to ensure the unit is functioning properly. Flat-line checks on the meter's signal will be performed by the VIM data collection system. If the value received into VIM system has not shown a change in the reading (analyzing a change in flow readings over a 15-minute period) the system will create an alarm which will require acknowledgement by operations, evaluation of monitor status, and entry of a cause and corrective action. In addition, the DCS monitoring system is built with "watchdogs" that track the communication between the different components of the tracking system. Loss of communication triggers an alarm which is followed-up on by an E&I and/or Process Control Engineer. All periods of monitor downtime, along with cause and corrective action, will be tracked in the VIM data collection system.

6.1.4.3 *Annually*

Because performance evaluations of these meters require the boiler to be offline, evaluations will be conducted by maintenance personnel during scheduled boiler outages. Results of performance evaluations will be documented in the Mill's SAP maintenance tracking system. The calibration will be checked by applying known test signal values to the flow transmitter and then calculating the percent error (difference between the transmitter value and the known signal value). The procedure will be performed by starting with a low signal value and increasing upwards to the maximum calibration value, then back down to the low point signal. During the audit, flow tubes will be inspected for conformance with manufacturer specifications, and a zero check will be conducted on the sensors.

In addition to the calibration checks, the facility will perform an inspection of all components for integrity, of all electrical connections for continuity, and of all mechanical connections for leakage.

Results of the performance audits are documented on the CPMS Evaluation Form in the SAP system (See Appendix B for an example of the required information). If an adjustment is

required, the technician will indicate this on the evaluation form and record the readings before and after adjustment. Audit results will be maintained for five (5) years.

6.1.4.4 *Acceptance Criteria*

Should the annual audit error exceed 2%, the meter is OOC and subject to CMS downtime. When the meter is OOC, corrective action must be initiated as described in Section 9. Data collected during this period must not be used in data averages, calculations, or to meet the data availability requirements. If corrective action is required, the action taken will be recorded on the performance audit form, with documentation maintained in the SAP Maintenance Tracking System.

Table 6-5
Boiler No. 9 Steam Flow Meter Corrective Action Trigger Points

Source/Monitor	Point of Corrective Action	OOC Period Begins	OOC Period Ends
Steam Flow Meter	Audit error >2% of design flow rate (flow zero reading >7 KPPH)	Upon failure of audit	Upon successful completion of audit

6.2 BOILER NO. 11 CMS PERFORMANCE EVALUATION PROCEDURES

VE has developed and implemented the following performance evaluation procedures for Boiler No. 11 CMS in Table 6-6. Additional details regarding the CMS performance evaluation procedures, including calibration and adjustment procedures can be found at the location referenced in Appendix A.

Table 6-6
Boiler No. 11 CMS Calibration Frequency and Calibration Acceptance Criteria

Measurement Type	Instrument Type	Calibration Frequency	Calibration Acceptance Criteria
Opacity Meter	Sick Optics Dusthunter T200	Daily (Zero and Span)	≤ 4% Opacity
		Quarterly (Performance Audit)	Zero Compensation: ≤ 4% Opacity
			Audit Zero: ≤ 1% Opacity
			Audit Calibration Error:

Measurement Type	Instrument Type	Calibration Frequency	Calibration Acceptance Criteria
			≤ 3% Opacity
			Optical Alignment: Light beam outside of acceptable alignment area
		Annual (Zero Alignment)	≤ 2% Opacity
Center O_2 Meter	Rosemount 3000/3008 Probe O_2 Sensor	Annual (Performance Audit)	Minimum tolerance of ±0.2% O_2
East and West O_2 Meters	Yokogawa ZR22G200SCETQEA O_2Sensors	Annual (Performance Audit)	Minimum tolerance of ±0.2% O_2
Steam Flow Meter	Rosemount MDL3051S1CD3A3F 12A1AB3D2E5L4M5	Performance Evaluation During Scheduled Boiler Outage	Flow sensor with minimum tolerance of 2% of flow rate

6.2.1 Boiler No. 11 O_2 Performance Evaluation Procedures

To ensure on-going compliance with CO emissions limits, an O_2 trim system system is utilized. The boiler excess air O_2 trim system set point is continuously monitored to ensure that it is no lower than the established operating level. Periodic O_2 meter accuracy audits will be conducted to determine and/or adjust for drift. The requirement for a boiler using an O_2 trim system to demonstrate compliance with CO is defined in 40 CFR §63.7525(a)(7) and Table 8 of Subpart DDDDD. The operating limit will be the lowest hourly average O_2 measured during the most recent CO performance test.

6.2.1.1 *Performance Evaluation*

Pursuant to 40 CFR §63.7525(a), boilers subject to CO emissions limits require the installation of an O_2 analyzer system. In accordance with 40 CFR §63.7575, the O_2 analyzer was installed and initially validated based on the manufacturer recommendations.

6.2.1.2 *Daily*

The O_2 analyzer system is monitored continuously to ensure the O_2 sensors are functioning properly. The DCS monitoring system is built with "watchdogs" that track the communication

between the different components of the tracking system. Loss of communication triggers an alarm which is followed-up on by an E&I and/or Process Control Engineer.

6.2.1.3 *Annually*

The O_2 analyzer system calibration checks or audits will be performed annually, at a minimum, pursuant to 40 CFR §63.7525(d)(4). The calibration will be checked by applying known gas concentrations to the probe and then calculating the percent error (difference between the transmitter value and the known signal value). During the audit, the instrumentation will be inspected for conformance with manufacturer specifications. In addition to the calibration checks, the facility will perform an inspection of all components for integrity, of all electrical connections for continuity, and of all mechanical connections for leakage.

Results of the performance audits are documented on the CPMS Evaluation Form printed from the SAP system (See Appendix B for an example of the required information). If an adjustment is required, the technician will indicate this on the evaluation form and record the readings before and after adjustment. Audit results will be maintained for five (5) years.

6.2.1.4 *Acceptance Criteria*

Should the annual audit exceed ±0.2% O_2, the meter is OOC and subject to CMS downtime. When the meter is OOC, corrective action must be initiated as described in the Mill's SSM and Emission Minimization plan. If corrective action is required, the action taken will be recorded in the SAP Maintenance Tracking System.

Table 6-7
Boiler No. 11 O_2 Corrective Action Trigger Points

Source/Monitor	Point of Corrective Action	OOC Period Begins	OOC Period Ends
O_2 Analyzer System	Audit difference ±0.2% O_2	Upon failure of audit	Upon successful completion of audit

6.2.2 Boiler No. 11 Steam Flow Meter Performance Evaluation Procedures

To ensure on-going compliance with boiler operating loads, the steam flow rate will be continuously monitored, and periodic accuracy audits will be conducted to determine and/or adjust for calibration drift. For boilers demonstrating compliance through performance testing, the requirement for an operating load limit is described in Table 4 of Subpart DDDDD. This requires maintaining the operating load such that it does not exceed 110% of the highest hourly average recorded during the most recent performance test. Compliance will be determined on a 30-day rolling averages.

6.2.2.1 *Performance Evaluation*

Flow meters are calibrated at the factory and do not require further calibration upon installation. The flow meter was installed and initially validated based on the manufacturer's recommendations.

6.2.2.2 *Daily*

The steam flow meter will be continuously monitored, pursuant to 40 CFR §63.8(c)(6), to ensure the unit is functioning properly. Flat-line checks on the meter's signal will be performed by the VIM data collection system. If the value received into VIM system has not shown a change in the reading (analyzing a change in flow readings over a 15-minute period) the system will create an alarm which will require acknowledgement by operations, evaluation of monitor status, and entry of a cause and corrective action. In addition, the DCS monitoring system is built with "watchdogs" that track the communication between the different components of the tracking system. Loss of communication triggers an alarm which is followed-up on by an E&I and/or Process Control Engineer. All periods of monitor downtime, along with cause and corrective action, will be tracked in the VIM data collection system.

6.2.2.3 *Annually*

Because performance evaluations of this meter require the boiler to be offline, evaluations will be conducted by maintenance personnel during scheduled boiler outages. Results of

performance evaluations will be documented in the Mill's SAP maintenance tracking system. The calibration will be checked by applying known test signal values to the flow transmitter and then calculating the percent error (difference between the transmitter value and the known signal value). The procedure will be performed by starting with a low signal value, increasing upwards to the max calibration value, then back down to the low point signal. During the audit, flow tubes will be inspected for conformance with manufacturer specifications, and a zero check will be conducted on the sensors.

In addition to the calibration checks, the facility will perform an inspection of all components for integrity, of all electrical connections for continuity, and of all mechanical connections for leakage.

Results of the performance audits are documented on the CPMS Evaluation Form in the SAP system (See Appendix B for an example of the required information). If an adjustment is required, the technician will indicate this on the evaluation form and record the readings before and after adjustment. Audit results will be maintained for five (5) years.

6.2.2.4 *Acceptance Criteria*

Should the annual audit error exceed 2%, the meter is OOC and subject to CMS downtime. When the meter is OOC, corrective action must be initiated as described in Section 9. Data collected during this period must not be used in data averages, calculations, or to meet the data availability requirements. If corrective action is required, the action taken will be recorded on the performance audit form, with documentation maintained in the SAP Maintenance Tracking System.

Table 6-8
Boiler No. 11 Steam Flow Meter Corrective Action Trigger Points

Source/Monitor	Point of Corrective Action	OOC Period Begins	OOC Period Ends
Steam Flow Meter	Audit error >2% of design flow rate (flow zero reading >18 KPPH)	Upon failure of audit	Upon successful completion of audit

6.2.3 Boiler No. 11 COMS Performance Evaluation Procedures

The Boiler No. 11 COMS is operated according to the performance specifications under Appendix B to 40 CFR Part 60 and meets the requirements of 40 CFR §63.7525. Additional details regarding the COMS quality assurance and performance evaluation procedures, including calibration and adjustment procedures can be found in the Mill's CEMS Quality Assurance Plan. VE has developed specific definitions for OOC for the COMS. The definition is based on the general premise of defining when the data is "valid" versus when the data is "invalid". The definition is presented in Table 6-9.

Table 6-9
Boiler No. 11 COMS Definition of "Out-of-Control"

Measurement Type	Instrument Type	Definition of "Out'-of-Control"
Opacity Meter	Sick Optics COMS	The data is considered "out of control" if the zero, or high-level calibration drift (CD) exceeds two (2) times the applicable CD specification in the applicable performance specification.

7. DATA COLLECTION AND REDUCTION

Pursuant to 40 CFR §§63.8(g)(2) and 63.7505(d), data from COMS shall be reduced to six (6)-minute averages calculated from 36 or more data points equally spaced over each six (6)-minute period. Data from CEMS for measurement other than opacity shall be reduced to one (1)-hour averages computed from four (4) or more data points equally spaced over each one (1)-hour period, except during periods when calibration, QA, or maintenance activities pursuant to provisions of this part are being performed. During these periods, a valid hourly average shall consist of at least two (2) data points with each representing a 15-minute period. The following paragraphs describe how data is collected and reduced at the Escanaba Mill to meet the regulations.

Continuous output from CMS monitors is converted to parameter readings using the DCS, PI, and VIM data collection systems. VIM data collection system utilizes the data to determine 15-minute, one (1)-hour, and ultimately 30-day rolling averages. In accordance with 40 CFR §63.7525(d)(1), the CPMS must complete a minimum of one (1) cycle of operation for each successive 15-minute period, and a minimum of four (4) successive cycles to have a valid hour of data. Any data recorded during monitoring malfunctions, associated repairs, OOC periods, or QA/QC activities are invalid and will not be used in calculating data averages. Valid data also exclude hours during startup and shutdown. In accordance with 40 CFR §63.7535(d), except for periods of monitoring system malfunctions, repairs associated with monitoring system malfunctions, and required monitoring system QA/QC activities (including, as applicable, system accuracy audits, calibration checks, and required zero and span adjustments), failure to collect required data is a deviation of the monitoring requirements.

A 15-minute block value is reported as long as there is at least one (1) valid data point available during the time period in accordance with 40 CFR §63.7525(d)(1). If more than one (1) valid data point is available, the system will average the data to create the 15-minute block value. The system will then calculate a one (1)-hour block average from the previous four (4) 15-minute block values. There must be four (4) valid 15-minute values available to calculate the one (1)-

hour block average, otherwise the system will report monitor downtime for the one (1)-hour block period. The exceptions to the four (4) 15-minute period requirement are:

1. If QA/QC activities are being performed, then a minimum of two (2) valid 15-minute block values may be used to calculate the one (1)-hour block average [40 CFR §63.8(g)(2)]
2. If the unit (i.e., boiler) operating time is less than one (1)-hour, then the following criteria will be used[3]:

Table 7-1
Valid Data & Averaging Time

Operating Time	Minimum Number of 15-minute data blocks
Less than 30 minutes	Will Not Calculate
30 minutes	Two (2) 15-minute blocks
30 to 45 minutes	Three (3) 15-minute blocks
Greater than 45 minutes	Four 15-minute blocks

Note that data from the O_2 trim system O_2 sensors are transferred directly from the DCS to the O_2 trim system controller. The O_2 trim system utilizes a feedback controller configured to handle the variability associated with data from the O_2 sensor because the O_2 system must be responsive to changes in O_2 levels. For this reason, the O_2 trim system set point data are not reduced to 15-minute averages. Furthermore, VE believes that data reduction of O_2 trim system set point is not required as there is no parametric limit (e.g., 30-day rolling average) associated with this compliance option.

The system will then calculate the 30-day rolling average by averaging the previous valid one (1)-hour block average pursuant to 40 CFR §63.7525(d)(4). The 30-day rolling average (except for the O_2 trim system set point) will be calculated with all recorded readings as arithmetic mean of the previous 720 hours of valid operating data. The 720 hours should be consecutive, but not necessarily continuous if operations were intermittent. The 30-day rolling average will be calculated at midnight each day.

[3] Adopted from EPA ADI Control Number 9800094

8. PREVENTATIVE MAINTENANCE

The primary objective of a comprehensive preventative maintenance program is to help ensure the timely and effective completion of a measurement effort. VE's preventative maintenance program is designed to minimize the downtime of CMS equipment due to component failures.

Routine maintenance and performance audit procedures are documented and scheduled using the Mill's SAP Maintenance Planning and Tracking Systems. The SAP Maintenance Tracking System will be used to track the maintenance history of the equipment. All maintenance activities performed on CMS equipment are recorded in SAP along with completion dates by E&I or Mechanical Maintenance Personnel.

The maintenance frequency will be based on the manufacturer's recommendations, equipment history, or the industry standard. Adjustments in the frequency will be made as necessary. Mechanical problems identified during basic care routes will be identified in the work order system and repaired at the next available opportunity or during the next shutdown depending on the severity of the problem and the potential environmental impact.

Preventative maintenance procedures are conducted based on standard industry practices and facility maintenance experience. Complete preventative maintenance procedures can be found at the location referenced in Appendix A.

8.1 SPARE PARTS

VE maintains a spare parts and replacement equipment inventory based on manufacturer recommendations and Mill maintenance experience for routine repair of the monitoring equipment required by the Boiler MACT. An adequate spare parts inventory is required to minimize equipment downtime. The spare parts inventory targets those parts and supplies which are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner should an equipment failure occur. Spare parts necessary for routine maintenance are stocked in the storeroom, and in some cases the maintenance areas. The spare parts inventory is maintained by the SAP tracking system.

9. CORRECTIVE ACTION PROGRAM FOR MALFUNCTIONING CMS

When a monitor is OOC, corrective action must be initiated. Data collected during this period must not be used in data averages or calculations or to meet the data availability requirements. If corrective action is required, the action taken will be documented in SAP Maintenance Tracking System. Corrective actions resulting from performance audits will be recorded on the performance audit form, with documentation maintained in the SAP Maintenance Tracking System. Corrective action procedures can be found at the location referenced in Appendix A. Resources that the Mill uses for corrective actions for malfunctioning CMS include manufacturer guidelines, maintenance procedures, and maintenance experience. CMS malfunctions and downtime are tracked using the automated electronic recordkeeping and reporting system (VIM). Records of all corrective actions are maintained in the SAP maintenance tracking system and COMS electronic logbook.

10. RECORDKEEPING AND REPORTING REQUIREMENTS

Pursuant to 40 CFR §63.7505(d)(2)(iii), VE must address ongoing recordkeeping and reporting procedures in accordance with the general requirements of 40 CFR §§63.10(c) (as applicable in Table 10 to Subpart DDDDD), (e)(1), and (e)(2)(i). VE must also address ongoing recordkeeping and reporting procedures pursuant to 40 CFR §§63.7535(c) and (d), 63.7550(d) and (e), 63.7555(b), (c), (d)(1-8) and (d)(10-11), and 63.7560.

In order to comply with these requirements, VE will maintain the following records in a form suitable and readily available for review for a minimum of five (5) years:

- Required monitoring data including monitoring data from the beginning of startup until the end of shutdown, as defined in Section 3. This includes monitoring data recorded during unavoidable CPMS breakdowns and OOC periods, as well as monitoring data for COMS during a performance evaluation. Records are maintained electronically.
- Required measurements needed to demonstrate compliance with a relevant standard (e.g., 15-minute readings and hourly averages of CMS data and/or raw performance testing measurements).
- The occurrence and duration of each startup or shutdown when the startup or shutdown caused the source to exceed any applicable emissions limitation in the relevant emissions limits.
- The occurrence and duration of each malfunction of operation (i.e., process equipment) or the required air pollution control and monitoring equipment, as defined in Section 3.
- The nature and cause of each malfunction (if known) of the CMS.
- The date and time identifying each period during which the CMS was inoperative except for zero (low-level) and high-level checks.
- All required maintenance and adjustments performed on the air pollution control and monitoring equipment.
- The nature of the repairs or adjustments to the CMS that was inoperative or out of control. Records are maintained electronically.
- Results of performance tests/audits, CMS performance evaluations, and opacity.

- Measurements as may be necessary to determine the conditions of performance tests and performance evaluations.
- CMS calibration checks.
- Previous (i.e., superseded) versions of the performance evaluation plan, which is presented in this SSMP.
- Request for alternatives to relative accuracy tests for CEMS.
- The data and time that each deviation started and stopped.
- Nature of the deviation (i.e., what you deviated from).
- A summary of the total duration of the deviation during the reporting period and the total duration as a percent of the total source operating time during the reporting period.
- A characterization of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes.
- A summary of the total duration of CMS downtime during the reporting period and the total duration for CMS downtime as a percent of the total source operating time during that reporting period.
- A brief description of the source for which there was a deviation.
- A description of any changes in CMS, processes, or controls since the last reporting period for the source for which there was a deviation.
- Monitoring data and calculated averages for applicable operating limits.
- Monthly fuel use including type(s) and amount(s) used.
- The type(s) and amount(s) of fuels used during each startup and shutdown.
- The calendar date, time, occurrence, and duration of each startup and shutdown.
- Actions taken during periods of malfunction to minimize emissions.
- Dates and duration of periods when the CMS is out of control, as defined in Section 6, to completion of the corrective actions necessary to return the CMS to operation consistent with the SSMP.
- A copy of calculations and supporting documentation of maximum mercury fuel input.
- A copy of calculations and supporting documentation of maximum chlorine fuel input.

- The specific identification (i.e., the date and time of commencement and completion) of each period of excess emissions and parametric monitoring exceedances, as defined in Section 3.
- The corrective action taken or preventive measures adopted, as defined in Section 9.
- The total process operating time during the reporting period.
- Procedures that are part of a quality control program developed and implemented for the monitoring equipment.

11. REVISIONS OF THE SSMP

Revisions of the SSMP are the responsibility of VE.

11.1 REVISIONS REQUIRED BY THE PERMITTING AUTHORITY

As stated in 40 CFR §63.7507(d), VE must develop this SSMP and make it available for inspection by the Michigan Department of Environment, Great Lakes, and Energy (EGLE). If EGLE inspects the plan and determines that any portion of the plan is not adequate, VE will address the issues as agreed upon with EGLE.

11.2 REVISIONS INITIATED BY VE

VE may periodically revise this plan, as necessary, to satisfy the requirements of the regulation or to reflect changes in equipment or procedures at an affected source. Revisions to the plan are documented in Table 11-1. In order to make these changes, VE will use the following procedure:

- VE will review the SSMP periodically, at a frequency no less than annually, and amend the SSMP accordingly when there is a change that materially affects the design, operation, or maintenance of a CMS.
- VE will develop the revised plan and can implement the changes, as appropriate, upon completion of the revisions.
- The Mill will maintain copies of the previous versions of this plan for a minimum of five (5) years.

Table 11-1
SSMP Revisions Summary

Date	Description of Activity	Reviewer	Management Approval
Revision 0, 9/18/15	Added manual operation exceptions to operating O2 trim system		
June 22, 2020	Updated daily check language		

APPENDIX A –
LOCATION OF CMS DOCUMENTATION

Table A-1
CMS Documentation Location

Document	Record Retention	Location
Performance Test and Continuous Monitoring System Performance Evaluation Results	*C+5*	Environmental Files
Daily Assessments	*C+5*	PI/Proficy/VIM System
Performance Evaluation Procedures and Results	*C+5*	SAP Maintenance Tracking System, Environmental Files
Monitor Downtime & Corrective Actions	*C+5*	VIM System, Environmental Files
Preventative Maintenance Procedures, Corrective Action Procedures	*C+5*	Inside Utilities Maintenance Shop Files Maintenance Sharepoint, Shared Documents\CEMS electronic files
CEMS Quality Assurance Plan	*C+5*	Environmental Files Maintenance Sharepoint, Shared Documents\CEMS electronic files
Routine Maintenance, Corrective Action Maintenance Documentation	*C+5*	SAP Maintenance Tracking System
Spare Parts List	*C*	SAP Maintenance Tracking System

C – Current Year
C+5 – Current Year and previous five (5) years of records

APPENDIX B –
CPMS PERFORMANCE EVALUATION FORMS

BOILER MACT CONTINUOUS MONITORING SYSTEM (CMS) PERFORMANCE AUDIT FORM
NO. 9 BOILER OXYGEN ANALYZER

Maintenance Plan 63741
Audit Frequency – 6 month and as required
Functional Location: EM-PBW-BL09-030111

Procedure

1. Notify operations of intent to perform work on analyzer.
2. Have operator put excess air control in manual if boiler is not down.
3. Run calibration gases.
4. Verify signal from the analyzer to I/A for accuracy.
5. Clean and rebuild if performance deems necessary:
    a. Remove one probe at a time. Have operator INCREASE DRAFT. Handle with CARE, use HOT GLOVES!
    b. Re-install and warm analyzer back up. Perform steps 3 and 4 above.
6. Document the As Found and As Left (if applicable) values – If the % oxygen reading is within +/- 0.2 % O_2, circle PASS, if not, circle FAIL. Notify the Environmental Department in case of failure.
7. Contact operator to inform them when all work is completed.
8. Complete this sheet, save it in the maintenance files and send a copy to the Environmental Department (Adam Becker, Mailbox 3).
9. Document completion and all changes "AS FOUND", "AS LEFT" in SAP Activities History and SharePoint.

Instrument calibration range: 0 – 10% O_2

Date of Calibration _____
Person Conducting Test _____

No. 9 Boiler Oxygen Analyzer
Model: Rosemount 3000/3008
Loop #: L-03-0111

As Found (before adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
0.4% _____		
8.0%_____		

As Left (after adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
0.4% _____		
8.0%_____		

As Found O2 Difference (circle PASS or FAIL):	**O2 Difference within +/- 0.2% O2 PASS**	**O2 Difference outside of +/- 0.2% O2 FAIL**

As Found O2 Difference (circle PASS or FAIL):	**O2 Difference within +/- 0.2% O2 PASS**	**O2 Difference outside of +/- 0.2% O2 FAIL**

Comments:

BOILER MACT CONTINUOUS MONITORING SYSTEM (CMS) PERFORMANCE AUDIT FORM
NO. 9 BOILER SCRUBBER DIFFERENTIAL PRESSURE TRANSMITTERS

Maintenance Plan 63737
Audit Frequency – Annual and as required
Functional Location: EM-PWB-BL09-330800

Procedure

1. Notify operations of intent to perform work on transmitters.
2. Put loop in manual control if boiler is not down.
3. Close isolation valves and remove transmitter.
4. Bring transmitter to shop and perform calibration using Fluke Calibrator.
5. Document the As Found and As Left (if applicable) values - Calculate the difference between the actual mV reading and the expected mV reading and note in table. If difference is < 0.4 mA, circle PASS, if > 0.4 mA circle FAIL. Notify the Environmental Department in case of failure.
6. Reinstall transmitter. Open isolation valves slowly. Let operations put back to normal.
7. Complete this sheet, save it in the maintenance files and send a copy to the Environmental Department (Paula LaFleur, Mailbox 3).
8. Record completion in SAP Activities History.

Instrument calibration range: 0 – 20 inches H_2O = 4 – 20 mA
(Maximum instrument operating range = 150 inches H_2O)

Date of Calibration _____
Person Conducting Test _____

No. 2 Scrubber dP Transmitter
Model: Rosemount 1151HP4S22
Loop #: L-33-0800B

Inches of H_2O	As Found (before adjustments)			As Left (after adjustments)		
	Expected mA	Actual mA	Difference (Actual – Expected)	Expected mA	Actual mA	Difference (Actual – Expected)
0”	4			4		
4”	7.2			7.2		
8”	10.4			10.4		
12”	13.6			13.6		
16”	16.8			16.8		
20”	20			20		

As Found Maximum mA Difference (circle PASS or FAIL):	**< 0.4 PASS**	**> 0.4 FAIL**	**As Left Maximum mA Difference (circle PASS or FAIL):**	**< 0.4 PASS**	**> 0.4 FAIL**

Date of Calibration _____
Person Conducting Test _____

No. 3 Scrubber dP Transmitter
Model: Rosemount 1151HP4S22
Loop #: L-33-0800C

Inches of H_2O	As Found (before adjustments)			As Left (after adjustments)		
	Expected mA	Actual mA	Difference (Actual – Expected)	Expected mA	Actual mA	Difference (Actual – Expected)
0”	4			4		
4”	7.2			7.2		
8”	10.4			10.4		
12”	13.6			13.6		
16”	16.8			16.8		
20”	20			20		

As Found Maximum mA Difference (circle PASS or FAIL):	**< 0.4 PASS**	**> 0.4 FAIL**	**As Left Maximum mA Difference (circle PASS or FAIL):**	**< 0.4 PASS**	**> 0.4 FAIL**

Note: The acceptance criteria of 0.4 mA is equivalent to 0.5 inches of H_2O.

Comments:

BOILER MACT CONTINUOUS MONITORING SYSTEM (CMS) PERFORMANCE AUDIT FORM
NO. 9 BOILER SCRUBBER FLOW TRANSMITTERS

Maintenance Plan 63735
Audit Frequency – Annual and as Required
Functional Locations: EM-PWB-BL09-030602 / EM-PWB-BL09-030603

Procedure

Note: This zero check must be performed while the scrubber is not in operation under conditions of a full pipe with no flow.

1. Notify operations of intent to perform work on transmitters.
2. Locate the horizontal pipe where the flow meter is located.
3. Fill pipe section where meter is located with water and close valves to ensure there is no flow in the pipe.
4. Record flow readings (DCS PI values).
5. Document the As Found and As Left (if applicable) values – If the flow zero reading is within 0 +/- 50 GPM, circle PASS, if not, circle FAIL. Notify the Environmental Department in case of failure.
6. Complete this sheet, save it in the maintenance files and send a copy to the Environmental Department (Adam Becker, Mailbox 3).
7. Record completion in SAP Activities History.

Instrument calibration range: 0 – 2500 GPM = 4 – 20 mA

Date of Calibration _____
Person Conducting Test _____

North Scrubber Flow Transmitter
Model: Yokogawa – Integral type ceramic magnetic flow model AE215MG-AA1-PSA-AIDH/BR/HAL (old style)
Loop #: L-03-0602

As Found Zero Flow (before adjustments)	
Expected GPM	Actual GPM
0	

As Left Zero Flow (after adjustments)	
Expected GPM	Actual GPM
0	

As Found GPM (circle PASS or FAIL):	**Flow within -50 to 50 GPM PASS**	**Flow outside of -50 to 50 GPM FAIL**

As Left GPM (circle PASS or FAIL):	**Flow within -50 to 50 GPM PASS**	**Flow outside of -50 to 50 GPM FAIL**

South Scrubber Flow Transmitter
Yokogawa – Integral type ceramic magnetic flow model AXF150CE1AL1LCA1121BFF1
Loop #: L-03-0603

As Found (before adjustments)	
Expected GPM	Actual GPM
0	

As Left (after adjustments)	
Expected GPM	Actual GPM
0	

As Found GPM (circle PASS or FAIL):	**Flow within -50 to 50 GPM PASS**	**Flow outside of -50 to 50 GPM FAIL**

As Left GPM (circle PASS or FAIL):	**Flow within -50 to 50 GPM PASS**	**Flow outside of -50 to 50 GPM FAIL**

Comments:

BOILER MACT CONTINUOUS MONITORING SYSTEM (CMS) PERFORMANCE AUDIT FORM
NO. 9 BOILER STEAM FLOW TRANSMITTER

Maintenance Plan 63736
Audit Frequency – Annual and as Required
Functional Location: EM-PBW-BL09-030115

Procedure

1. Notify operations of intent to perform work on transmitters.
2. Put loop in manual control if boiler is not down.
3. Isolate at orifice plate taps. Verify by opening blowdown valves slowly.
4. Close isolation valves at Anderson Greenwood manifold
5. Bring transmitter to shop and perform calibration using Fluke Calibrator.
6. Document the As Found and As Left (if applicable) values - Calculate the difference between the actual mA reading and the expected mA reading and note in table. If difference is < 0.32 mA, circle PASS, if > 0.32 mA circle FAIL. Notify the Environmental Department in case of failure.
7. Reinstall transmitter with new gaskets. Open isolation valves slowly. Let operations put back to normal.
8. Complete this sheet, save it in the maintenance files and send a copy to the Environmental Department (Adam Becker, Mailbox 3).
9. Record completion in SAP Activities History.

Instrument calibration range: 0 – 250 inches H2O = 4 – 20 mA = 0-350 KPPH

Date of Calibration _____
Person Conducting Test _____

No. 9 Boiler Steam Flow Transmitter
Model: Rosemount MDL3051S1CD3A3F12A1AB3D2E5L4M5
Loop #: L-03-0115

Inches of H2O	As Found (before adjustments)			As Left (after adjustments)		
	Expected mA	Actual mA	Difference (Actual – Expected)	Expected mA	Actual mA	Difference (Actual – Expected)
0”	4			4		
50”	7.2			7.2		
100”	10.4			10.4		
150”	13.6			13.6		
200”	16.8			16.8		
250”	20			20		

As Found Maximum mA Difference (circle PASS or FAIL):	**< 0.32 PASS**	**> 0.32 FAIL**	**As Left Maximum mA Difference (circle PASS or FAIL):**	**< 0.32 PASS**	**> 0.32 FAIL**

Note: The acceptance criteria of 0.32 mA equivalent to 2% of the calibrated steam flow range and equates to 7 KPPH steam flow (or or a pressure reading of 5 inches H_2O).

Comments:

BOILER MACT CONTINUOUS MONITORING SYSTEM (CMS) PERFORMANCE AUDIT FORM
NO. 11 BOILER OXYGEN ANALYZER

Maintenance Plan 53281
Audit Frequency – 6 month and as required
Functional Location: EM-PBW-BL11-680408

Procedure

1. Notify operations of intent to perform work on analyzer.
2. Have operator put excess air control in manual if boiler is not down.
3. Run calibration gases (see notes below comments).
4. Verify signal from the analyzer to I/A for accuracy.
5. Clean and rebuild if performance deems necessary:
    a. Remove one probe at a time. Have operator INCREASE DRAFT. Handle with CARE, use HOT GLOVES!
    b. Re-install and warm analyzer back up. Perform steps 3 and 4 above.
6. Document the As Found and As Left (if applicable) values – If the % oxygen reading is within +/- 0.2 % O_2, circle PASS, if not, circle FAIL. Notify the Environmental Department in case of failure.
7. Contact operator to inform them when all work is completed.
8. Complete this sheet, save it in the maintenance files and send a copy to the Environmental Department (Adam Becker, Mailbox 3).
9. Document completion and all changes "AS FOUND", "AS LEFT" in SAP Activities History and SharePoint.

Instrument calibration range: 0 – 10% O_2

Date of Calibration _____
Person Conducting Test _____

No. 11 Boiler <u>Center</u> Oxygen Analyzer
Model: Rosemount 3000/3008 (68-AE-0408)
Loop #: L-68-0408

As Found (before adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
0.4% _____		
8.0%_____		
Other %_____ (Cyl. # _____) (Exp. Date_____)		

As Left (after adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
0.4% _____		
8.0%_____		
Other %_____ (Cyl. # _____) (Exp. Date_____)		

As Found O2 Difference (circle PASS or FAIL):	**O2 Difference within +/- 0.2% O2 PASS**	**O2 Difference outside of +/- 0.2% O2 FAIL**
As Found O2 Difference (circle PASS or FAIL):	**O2 Difference within +/- 0.2% O2 PASS**	**O2 Difference outside of +/- 0.2% O2 FAIL**

No. 11 Boiler West Oxygen Analyzer
Model: Yokogawa ZR22G (68-AE-0408A)
Loop #: L-68-0408

As Found (before adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
1% _____ (Cyl #_____) (Exp.Date_____)		
5% _____ (Cyl #_____) (Exp.Date_____)		

As Left (after adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
1% _____ (Cyl. #_____) (Exp.Date_____)		
5% _____ (Cyl #_____) (Exp.Date_____)		

As Found O2 Difference (circle PASS or FAIL):	O2 Difference within +/- 0.2% O2 PASS	O2 Difference outside of +/- 0.2% O2 FAIL

As Found O2 Difference (circle PASS or FAIL):	O2 Difference within +/- 0.2% O2 PASS	O2 Difference outside of +/- 0.2% O2 FAIL

No. 11 Boiler East Oxygen Analyzer
Model: Yokogawa ZR22G (68-AE-0408B)
Loop #: L-68-0408

As Found (before adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
1% _____ (Cyl #_____) (Exp.Date_____)		
5% _____ (Cyl #_____) (Exp.Date_____)		

As Left (after adjustments)		
Cylinder Concentration	Analyzer Reading	Difference
1% _____ (Cyl #_____) (Exp.Date_____)		
5% _____ (Cyl #_____) (Exp.Date_____)		

As Found O2 Difference (circle PASS or FAIL):	O2 Difference within +/- 0.2% O2 PASS	O2 Difference outside of +/- 0.2% O2 FAIL

As Found O2 Difference (circle PASS or FAIL):	O2 Difference within +/- 0.2% O2 PASS	O2 Difference outside of +/- 0.2% O2 FAIL

Comments:

Procedure Notes:
East and West Analyzers

Bring two two-way radios set to channel 1. Have one person with the data sheet in the #11 Boiler 4th floor Foxboro rack room. Have the proper AIN block called up (408A – west or 408B – east) on the Foxboro I/A X-Terminal work station. The person in the rack room should also have a stopwatch to time the 4-minute calibration check periods.

The rack room person will instruct the boiler operator de-select the analyzer to be tested. (if 408A - west is deselected, the 408-center and 408B-east will be used for the average measurement boiler control signal.) When the boiler operator completes the de-selection process, the E&I at the analyzer can control the cal gas selection box to send the proper gas, either 1% or 5% O2.

For the 1% O2 checks on the east and west Yokogawa probes, go to the gas selection box above the appropriate analyzer. Turn on zero gas solenoid's manual operation by rotating clockwise. Also turn on the block valve solenoid to manual operation by rotating clock wise. This will send 1% gas to the probe. Wait approximately 4 minutes then record the measured reading at the transmitter display and on the Foxboro I/A AIN block. To test at 5% O2, run a long, ¼" nylon tubing from the 5% O2 protocol gas cylinder regulator output and connect it to the zero-gas supply inlet port* on the left side of the gas selection box and run calibration gas as previous. The 5% cylinder can be borrowed from the cylinder storage rack or the cylinder used for the center probe 5% calibration check.

> *Note that the reason the 5% O2 gas cannot be applied to the span gas supply port is that the proper 20.9% reference air would then be 5% gas. The analyzer will not work properly! This is due to the tubing path design of the gas selection box. 20.9% reference air must be maintained to the probes at all times.

BOILER MACT CONTINUOUS MONITORING SYSTEM (CMS) PERFORMANCE AUDIT FORM
NO. 11 BOILER STEAM FLOW TRANSMITTER

Maintenance Plan 13351, Item 14144
Audit Frequency – Annual and as required
Functional Location: EM-PBW-BL011-681813

Procedure

1. Notify operations of intent to perform work on transmitters.
2. Put loop in manual control if boiler is not down.
3. Isolate at orifice plate taps. Verify by opening blowdown valves slowly.
4. Close isolation valves at Anderson Greenwood manifold
5. Bring transmitter to shop and perform calibration using Fluke Calibrator.
6. Document the As Found and As Left (if applicable) values - Calculate the difference between the actual mA reading and the expected mA reading and note in table. If difference is < 0.32 mA, circle PASS, if > 0.32 mA circle FAIL. Notify the Environmental Department in case of failure.
7. Reinstall transmitter with new gaskets. Open isolation valves slowly. Let operations put back to normal.
8. Complete this sheet, save it in the maintenance files and send a copy to the Environmental Department (Adam Becker, Mailbox 3).
9. Record completion in SAP Activities History.

Instrument calibration range: 0 – 331 inches H2O = 4 – 20 mA = 0-900 KPPH

Date of Calibration _____
Person Conducting Test _____

No. 11 Boiler Steam Flow Transmitter
Model: Rosemount MDL3051S1CD3A3F12A1AB3D2E5L4M5
Loop #: L-68-1813

Inches of H2O	As Found (before adjustments)			As Left (after adjustments)		
	Expected mA	Actual mA	Difference (Actual – Expected)	Expected mA	Actual mA	Difference (Actual – Expected)
0”	4			4		
50”	6.42			6.42		
82.75”	8			8		
165.5”	12			12		
248.25”	16			16		
331”	20			20		

As Found Maximum mA Difference (circle PASS or FAIL):	**< 0.32 PASS**	**> 0.32 FAIL**	**As Left Maximum mA Difference (circle PASS or FAIL):**	**< 0.32 PASS**	**> 0.32 FAIL**

Note: The acceptance criteria of 0.32 mA equivalent to 2% of the calibrated steam flow range and equates to 18 KPPH steam flow (or or a pressure reading of 6.62 inches H_2O).

Comments:

APPENDIX C –
ALTERNATIVE MONITORING APPROVAL – NO. 9 BOILER

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

OCT - 9 2015

REPLY TO THE ATTENTION OF:

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Paula LaFleur
Environmental Manager
Verso Corporation
Escanaba Paper Company
7100 County 426
PO Box 757
Escanaba, Michigan 49829-0757

RE: Response to Alternative Monitoring Request for No. 9 Boiler
Industrial Boiler MACT, 40 C.F.R. 63 Subpart DDDDD

Dear Ms. LaFleur:

The U.S. Environmental Protection Agency has received and reviewed Escanaba Paper Company's (EPC) July 16, 2015 alternative monitoring requests for EPC's No. 9 Boiler in accordance with 40 C.F.R. 63.8(f) and 40 C.F.R. 63.7500(a)(2).

Based on your submittal we understand that the No. 9 Boiler is an approximately 360 million Btu per hour heat input, hybrid suspension grate (HSG) boiler that combusts both wood residue and natural gas. In the submittal, EPC requests that the applicable emission, monitoring, and operating limits for the HSG subcategory be waived for periods when the No. 9 Boiler is combusting only natural gas. Although we understand that the combustion of natural gas is inherently less emissive, 40 C.F.R. Part 63, does not provide a mechanism which allows EPA to completely exempt the No. 9 Boiler just for periods of natural gas combustion and therefore EPA is unable to approve this request.

Secondly, in its submittal, EPC requests that EPA allow compliance with the 30-day rolling averages for scrubber flow, pressure drop, and operating load to be calculated as the arithmetic mean of the previous 720 hours of valid operating data during periods when any wood fuel is combusted in the boiler. Based on your submittal, it is our understanding that the scrubbers are not operated during periods when only natural gas is combusted in the boiler. For this reason, EPA agrees with EPC and approves its request. EPA also agrees with EPC that an alternative oxygen trim set point should be utilized during periods when only natural gas is being combusted based on boiler tuning evaluations.

EPC is also requesting flexibility in the annual (or every 3 years, if applicable) stack testing requirement contained in 40 C.F.R. 63.7515 to allow the boiler to be tested while burning the fuel (or fuel mixtures) with the highest potential emissions. EPA understands that the schedule for combusting wood and/or natural gas is variable and based on operational and economic considerations however the rule allows tests to be conducted up to 13 months apart and already has built in flexibility. To accommodate EPC concerns however, EPA is willing to grant the flexibility to allow EPC to conduct stack tests on an annual calendar basis (or every 3rd year calendar basis), if such flexibility is helpful.

Lastly, EPC in an October 5, 2015, email correspondence to EPA, requested that in the event that EPC should choose to demonstrate No. 9 Boiler compliance with the HCl, mercury, and/or TSM limits through fuel sampling and analysis, that monthly fuel sampling only be required during months when wood fuel is combusted in the No. 9 Boiler. EPA understand and grants this alternative monitoring/sampling request. We further grant EPC request that the provisions at 63.7515(e) allowing for reduced, quarterly sampling would apply when all the analysis results during a 12-month time period are 75% or less of the compliance levels, but only if adequate sampling (at least half of the sampling) is conducted during that 12-month period. Further, we agree that quarterly sampling would only be required during the quarters when wood fuel is combusted at any time during the quarter in the No. 9 boiler.

If you have any further questions please contact Ethan Chatfield of my staff at (312) 886-5112.

Sincerely,

Sara Breneman

Sara Breneman
Chief
Air Enforcement and Compliance Assurance Branch

cc: Chris Hare, District Supervisor
MDEQ/AQD
Saginaw Bay District Office
401 Ketchum Street, Suite B
Bay City, Michigan 48708

CERTIFICATE OF MAILING

I, Loretta Shaffer, certify that I sent a NSPS determination by Certified Mail, Return Receipt Requested, to:

Paula LaFleur
Environmental Manager
Verso Corporation
Escanaba Paper Company
7100 County 426
PO Box 757
Escanaba, Michigan 49829-0757

I also certify that I sent a copy of the Request to Provide Information Pursuant to the Clean Air Act by First Class Mail to:

Chris Hare, District Supervisor
MDEQ/AQD
Saginaw Bay District Office
401 Ketchum Street, Suite B
Bay City, Michigan 48708

On the 13 day of October, 2015

CSHaun (for)

Loretta Shaffer,
Administrative Program Assistant
Planning and Administration Section

Certified Mail Receipt Number: 7014 2870 0001 9581 3284