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# **BOILER MACT SITE-SPECIFIC MONITORING PLAN**

**VERSO CORPORATION**

**QUINNESEC MILL – QUINNESEC, MI**

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**Prepared For:**



**Verso Corporation**  
**Quinnesec Mill**  
W-6791 US Highway 2  
Quinnesec, MI 49876

**Prepared By:**



2393 Kimberton Road  
PO Box 299  
Kimberton, PA 19442-0299

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## 1. PURPOSE

Verso Corporation, Quinnesec 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 Verso 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).

Verso must submit this SSMP, if requested, at least 60 days prior to conducting the initial performance evaluation of its CMS. Otherwise, Verso 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. Verso's COMS meets the criteria in 40 CFR §63.7505(d)(1) and Verso 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, Verso has relied on manufacturer's specifications, Mill



standard operating procedures, standard industry practices, and U.S. EPA guidance<sup>1</sup> 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**

The Quinnesec Mill is a bleached kraft pulp and paper mill that produces coated paper. The Quinnesec Mill is located in Dickinson County, Michigan. The Quinnesec Mill includes the following general process operations: woodyard, kraft pulp mill, chemical recovery, recausticizing system, bleach plant, boilerhouse, and coated paper manufacturing operations.

The Quinnesec Mill uses two (2) 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**

Verso operates the following two (2) boilers that are affected emissions units under Boiler MACT:

1. Package Boiler (PB)
2. Waste Fuel Boiler (WFB)

The following subsections describe the affected emissions units.

### **1.2.1 Package Boiler (PB)**

The PB was installed in 1989 and has a nominal rated heat input capacity of 419 million British thermal units per hour (MMBtu/hr). The PB is designed to combust natural gas and is equipped with an oxygen (O<sub>2</sub>) trim system to maintain excess air at the desired level in the boiler.

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<sup>1</sup> <http://www.epa.gov/ttnatw01/pulp/dps53101.pdf>.



The PB 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, PB is not subject to emissions limits or operating limits under Boiler MACT and is not addressed further in this SSMP.

### **1.2.2 Waste Fuel Boiler (WFB)**

The WFB was installed in 1981 and has a nominal rated heat input capacity of 660 MMBtu/hr. The WFB burns biomass [wood fuel], coal, and natural gas. The WFB is equipped with a multi-clone and a dry electrostatic precipitator (ESP), as well as a COMS. The WFB includes an OFA system along with an O<sub>2</sub> trim system to maintain excess air at the desired levels in the boiler.

The WFB 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 *stokers/sloped grate/others designed to burn wet biomass fuel* 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 Verso 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), Verso 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)	6-1
Determination and adjustment of calibration drift	§63.8(d)(2)(ii)	8
Preventative maintenance, including spare parts inventory	§63.8(d)(2)(iii)	8
Data recording, calculations, and reporting	§63.8(d)(2)(iv)	7
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)	9
Installation of CMS sampling probe	§63.7505(d)(1)(i)	4
Performance and equipment specifications for sample interface, pollutant concentration, or parametric signal analyzer	§63.7505(d)(1)(ii)	5-1
Performance evaluation procedures and acceptance criteria	§63.7505(d)(1)(iii) §63.8(e)	6
Ongoing operation and maintenance	§63.7505(d)(2)(i)	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)	7
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)	7
Reduce all data to six (6)-minute averages for each COMS	§63.8(g)(2)	7
Data QA procedures	§63.7505(d)(2)(ii)	6
Recordkeeping and reporting procedures	§63.7505(d)(2)(iii)	10
Performance evaluation of each CMS	§63.7505(d)(3)	6
Each CMS be operated and maintained according to SSMP	§63.7505(d)(4)	1





## 2. RESPONSIBILITIES

Table 2-1 identifies the designated responsible person (by title) for the elements and requirements within EPC’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. 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 cessation of operation of a boiler or process heater for any purpose. Shutdown begins either when none of the steam from the boiler is supplied for heating and/or producing electricity, or for any other purpose, or at the point of no fuel being fired in the boiler or process heater, whichever is earlier. Shutdown ends when there is

no steam and no heat being supplied and no fuel being fired in the boiler or process heater.<sup>2</sup>

- *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* means either the first-ever firing of fuel in a boiler or process heater for the purpose of supplying steam or heat for heating and/or producing electricity, or for any other purpose, or the firing of fuel in a boiler after a shutdown event for any purpose. Startup ends when any of the steam or heat from the boiler or process heater is supplied for heating, and/or producing electricity, or for any other purpose.<sup>3</sup>
- *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.

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<sup>2</sup> U.S. EPA is proposing to revise the definition of shutdown per the proposed reconsideration of Boiler MACT for major sources (80 FR 3090). U.S. EPA is proposing to clarify that shutdown begins when the boiler or process heater no longer makes useful thermal energy and ends when the boiler or process heater no longer makes useful thermal energy and no fuel is fired in the boiler or process heater. The SSMP will be modified as needed based on amendments to Subpart DDDDD, if any, due to the proposed rule.

<sup>3</sup> U.S. EPA is proposing to add an alternate definition to the definition of startup per the proposed reconsideration of Boiler MACT for major sources (80 FR 3090). The alternate definition of startup will clarify that, in terms of the first-ever firing of fuel, startup begins when fuel is fired for the purpose of supplying useful thermal energy (such as steam or heat) for heating, process, cooling, and/or producing electricity. It will also clarify that startup ends four (4) hours after when the boiler or process heater makes useful thermal energy. The SSMP will be modified as needed based on amendments to Subpart DDDDD, if any, due to the proposed rule.





## 4. AFFECTED SOURCES AND CMS

### 4.1 WFB

Table 4-1 summarizes the applicable Boiler MACT emissions limits and operating parameters associated with the WFB.

**Table 4-1**

**WFB Summary of Applicable Emissions Limits and Operating Parameter**

Pollutant	Emissions Limit	Control Device	Operating Parameter
Filterable PM	0.037 lb/MMBtu heat input	Multi-Cyclone, Dry ESP	Opacity
CO	1,500 ppmvd @ 3% O <sub>2</sub> <sup>(a),(b)(c)</sup>	N/A	O <sub>2</sub> Trim
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 (steam flow )

- (a) Emissions limits for filterable PM and CO are for boilers under the subcategory of stoker/sloped grate/others designed to burn wet biomass fuel
- (b) Parts per million by volume, dry basis, corrected to 3% O<sub>2</sub> concentration.
- (c) Per U.S. EPA's proposed reconsideration of Boiler MACT for major sources (80 FR 3090), the CO emissions limit is 1,500 ppmvd @ 3% O<sub>2</sub>. The SSMP will be modified as needed based on amendments to Subpart DDDDD, if any, due to the proposed rule.

The applicable operating limits and compliance methodology for each parameter are summarized below in Table 4-2. Operating limits are set through initial performance testing and can be modified based on subsequent testing.

**Table 4-2  
WFB Summary of Operating Limits**

Parameter	Compliance Methodology <sup>(a)</sup>	Operating Limit <sup>(b)</sup>
Opacity	Conduct initial and annual performance testing for filterable PM. Maintain opacity to less than or equal to 10% (daily block average)	≤10%
O <sub>2</sub> Content <sup>(c)</sup>	Conduct initial and annual performance testing for CO. Operate the O <sub>2</sub> trim system set no lower than the lowest hourly average O <sub>2</sub> 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<sub>2</sub> trim system range requirements. Verso will assign the set point based on performance testing.

Table 4-6 summarizes the monitoring equipment used by the WFB covered by this SSMP.

**Table 4-3  
WFB Summary of Boiler MACT CMS**

Equipment	Location	Manufacturer	Model	Measurement	Data Collection Method
COMS	Precipitator Outlet Duct	SICK MAIHAK, Inc.	Dusthunter T200	% Opacity	PLC Output to VIM
O <sub>2</sub> Sensor <sup>(a)</sup>	WFB 6 <sup>th</sup> Floor	Rosemount	1U05717G02/ 3D39440G02	% O <sub>2</sub>	DCS Output to PI
Steam Flow Meter	WFB 5 <sup>th</sup> Floor	Rosemount	115DP5E12	Kilo-pounds per hour (KPPH)	DCS Output to PI

- (a) O<sub>2</sub> set point is monitored on a minute basis. The set point value is transferred to Proficy.





## **4.1.1 WFB Monitoring Equipment**

### **4.1.1.1 Trim System (O<sub>2</sub> Sensor)**

The WFB is complying with the CO emissions limit using performance testing. To demonstrate continuous, proper operation of the boiler, an O<sub>2</sub> trim system is in place. Readings from an O<sub>2</sub> sensor provides a feedback signal to the combustion air flow. Using a DCS controller, O<sub>2</sub> is controlled by adjusting air flow to maintain the established O<sub>2</sub> set point control level. The minimum set point is the lowest hourly average O<sub>2</sub> 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<sub>2</sub> sensor was installed in accordance with manufacturer specifications and 40 CFR §63.7525 such that the location provides a representative measurement of boiler O<sub>2</sub>. The sensor is located in the boiler combustion zone.

### **4.1.1.2 Boiler Steam Flow**

The WFB 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.

### **4.1.1.3 Opacity**

The WFB 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



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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), Verso 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 WFB PERFORMANCE AND EQUIPMENT SPECIFICATIONS

Performance and equipment specifications applicable to the CMS monitoring equipment for the WFB are outlined in Table 5-1.

**Table 5-1  
WFB 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 MAIHAK, Inc., 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.
O <sub>2</sub> Meter	Rosemount 1U05717G 02/3D3944 0G02	Zirconium Oxide Oxygen Probe positioned in the boiler	±3% of range maximum	Calibrated range: 0-21% O <sub>2</sub> / 4-20 mA (max range 21% O <sub>2</sub> )	Data is collected in a DCS system. PI/Proficy software are used to reduce and manage the data from the DCS system.
Steam Flow Meter	Rosemount 115DP5E12	Flow Nozzle in steam line to distribution header	±1% full scale	0-253" H <sub>2</sub> O, 4-20 mA, 0-450 KPPH	Data is collected in a DCS system. PI/Proficy software is used to reduce and manage the data from the DCS system.

## 6. PERFORMANCE EVALUATION PROCEDURES

Pursuant to §63.7505(d)(3), Verso 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), Verso must take the necessary corrective actions to repair the CPMS. During the period the monitoring equipment is OOC, Verso 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 the WFB, these definitions do not apply to the SSMP for Verso. 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. Verso has developed their own performance evaluation procedures for the CMS without a promulgated performance specification using manufacturer specifications.

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

## **6.1 WFB CMS PERFORMANCE EVALUATION PROCEDURES**

Verso has developed and implemented the following performance evaluation procedures for the WFB CMS in Table 6-1. Additional details regarding the CMS performance evaluation



procedures, including calibration and adjustment procedures can be found at the location referenced in Appendix A.

**Table 6-1  
WFB CMS Calibration Frequency and Calibration Acceptance Criteria**

Measurement Type	Instrument Type	Calibration Frequency	Calibration Acceptance Criteria
Opacity Meter	SICK MAIHAK Dust Hunter T200	Daily (Zero and Span)	≤ 4% Opacity
		Quarterly (Performance Audit)	Zero Compensation: ≤ 4% Opacity
			Audit Zero: ≤ 1% Opacity
			Audit Calibration Error: ≤ 3% Opacity
		Annual (Zero Alignment)	Optical Alignment: Light beam outside of acceptable alignment area
		Annual (Zero Alignment)	≤ 2% Opacity
O <sub>2</sub> Meter	Rosemount O <sub>2</sub> Sensor	Annual (Performance Audit)	% error <3% of maximum range
Steam Flow Meter	Rosemount Flow Sensor	Performance Evaluation During Scheduled Boiler Outage	Flow sensor with minimum tolerance of 2% of flow rate

### 6.1.1 WFB O<sub>2</sub> Performance Evaluation Procedures

To ensure on-going compliance with CO emissions limits, an O<sub>2</sub> trim system system is utilized. The boiler excess air O<sub>2</sub> trim system set point is continuously monitored to ensure that it is no lower than the established operating level. Periodic O<sub>2</sub> meter accuracy audits will be conducted to determine and/or adjust for drift. The requirement for a boiler using an O<sub>2</sub> 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<sub>2</sub> measured during the most recent CO performance test.

#### 6.1.1.1 Performance Evaluation

Pursuant to 40 CFR §63.7525(a), boilers subject to CO emissions limits require the installation of an O<sub>2</sub> analyzer system. In accordance with 40 CFR §63.7575, the O<sub>2</sub> analyzer was installed and initially validated based on the manufacturer recommendations.



#### **6.1.1.2      *Daily***

The O<sub>2</sub> analyzer system will be checked daily, to ensure the O<sub>2</sub> sensors are functioning properly. This task will be performed by the Mill's monitoring system by performing "flat-line" and "out-of-range" checks on the signals. If the values received into the PI/Proficy system have not shown a change in the readings (using a max minus min average greater than zero over a 15-minute period in Proficy) or the values are outside the instrument ranges the system will create an alarm, which requires a corrective action by operations. In addition to the "flat-line" and "out-of-range" checks, 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 mill personnel.

#### **6.1.1.3      *Annually***

The O<sub>2</sub> 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.

#### **6.1.1.4      *Acceptance Criteria***

Should the annual audit % error exceed  $\pm 0.3\%$  of maximum range, 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 maintenance plan. If corrective action is required, the action taken will be recorded in the SAP Maintenance Tracking System.

**Table 6-2**  
**WFB O<sub>2</sub> Corrective Action Trigger Points**

Source/Monitor	Point of Corrective Action	OOB Period Begins	OOB Period Ends
O <sub>2</sub> Analyzer System	Audit difference ±0.63% O <sub>2</sub>	Upon failure of audit	Upon successful completion of audit

### 6.1.2 WFB 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.

#### 6.1.2.1 *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.

#### 6.1.2.2 *Daily*

The steam flow meter will be checked daily, pursuant to 40 CFR §63.8(c)(6), to ensure the unit is functioning properly. This task will be performed by the VIM Data collection system by performing 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 by operations, evaluation of monitor status, and entry of a cause and corrective action. 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***

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.

### **6.1.2.4      *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 6-3**  
**WFB Steam Flow Meter Corrective Action Trigger Points**

Source/Monitor	Point of Corrective Action	OOB Period Begins	OOB Period Ends
Steam Flow Meter	Audit error >2% of design flow rate	Upon failure of audit	Upon successful completion of audit

### 6.1.3 WFB COMS Performance Evaluation Procedures

The WFB 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. Verso has developed specific definitions for OOB 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 6-4.

**Table 6-4**  
**WFB 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 (i.e., steam flow monitor, O<sub>2</sub> monitor) is converted to parameter readings using the DCS, PI, and Proficy data collection systems. The Proficy 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<sup>4</sup>:

**Table 7-1  
Valid Data & Averaging Time**

<b>Operating Time</b>	<b>Minimum Number of 15-minute data blocks</b>
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<sub>2</sub> trim system O<sub>2</sub> sensors are transferred directly from the DCS to the O<sub>2</sub> trim system controller. The O<sub>2</sub> trim system utilizes a feedback controller configured to handle the variability associated with data from the O<sub>2</sub> sensor because the O<sub>2</sub> system must be responsive to changes in O<sub>2</sub> levels. For this reason, the O<sub>2</sub> trim system set point data are not reduced to 15-minute averages. Furthermore, Verso believes that data reduction of O<sub>2</sub> 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<sub>2</sub> 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.

<sup>4</sup> 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. Verso'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**

Verso 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), Verso 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). Verso 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, Verso 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.





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- 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 Verso.

### **11.1 REVISIONS REQUIRED BY THE PERMITTING AUTHORITY**

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

### **11.2 REVISIONS INITIATED BY VERSO**

Verso 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, Verso will use the following procedure:

- Verso 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.
- Verso 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,	Original SSMP developed	Rich Menard	
Revision 1 - September 1, 2017	Added language to 4.1.1.1 to allow for circumstances where O2 trim setpoint could be set below the established value. In table 5.1 changed the calibrated range for O2 to 0-21% and the steam flow output to 0-253” and 0-450 KPPH. Changed O2 audit acceptance criteria to +/- 0.63% O2 (=3% of range maximum).	Paula LaFleur	

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**APPENDIX A –  
LOCATION OF CMS DOCUMENTATION**

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**Table A-1  
CMS Documentation Location**

<b>Document</b>	<b>Record Retention</b>	<b>Location</b>
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
Monitor Downtime & Corrective Actions	C+5	PI/Proficy/VIM System, Environmental Files
Preventative Maintenance Procedures, Corrective Action Procedures	C+5	Inside Utilities Maintenance Shop Files SAP Maintenance Tracking System
CEMS Quality Assurance Plan	C+5	Environmental 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

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**APPENDIX B –  
CPMS PERFORMANCE EVALUATION DOCUMENTATION**

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Performance evaluations conducted by Maintenance are documented in SAP and the Loveland Maintenance tracking system. Performance evaluations conducted by the Central Lab are kept on file in the Environmental Department.

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