**Compliance Assurance Monitoring (CAM) Plan**

**Weyerhaeuser FGDRYERS**

**I. BACKGROUND**

**Emission Unit**

Description: Four rotary strand dryers with associated heat sources

Identification: FGDRYERS

Facility: Weyerhaeuser NR Company

4111 West Four Mile Road

Grayling MI 49738

**Applicable Regulation, Emission Limit, Monitoring Requirements**

Renewable Operating Permit No: MI-ROP-B7302-2021

Emission Limits subject to CAM:

Primary:

PM10 (normal operation): 29.8 pph

PM10 (bypass operation): 56.6 pph

Monitoring requirements:

RTO Firebox temperature and continuous opacity monitor during normal operation and during 1-unit bypass. The appropriate 3-hour block average minimum temperature range is determined through stack testing every five years or when 50% or more of the RTO media is replaced. Opacities will be determined by COMs and recorded in hourly average readings. The facility is also required to follow the malfunction abatement plan as approved by EGLE.

The facility has an allowance to bypass the RTO combustion chambers only during approved routine maintenance exemption conditions. The maximum time allowed is 3% of operating time.

**Control Technology**

Cyclone separators followed by a wet electrostatic precipitator (WESP) and two Regenerative Thermal Oxidizers are installed on the dryer systems. Pre-control potential emissions of PM10 are estimated to be approximately 1275 tons annually. The efficiency rate of the WESP and RTO exceeds 95%.

**II. MONITORING APPROACH**

The key elements of the monitoring approach for PM10 are presented in Table 1. The WESP is the primary control for PM10 emissions. Since the particulate matter is organic in nature, the RTO serves as a secondary PM10 control device. RTO bed temperature and continuous opacity monitor will be used as the primary performance indicators for demonstrating compliance with the PM10 emission limit.

**Table 1. Monitoring Approach**

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|  | **Thermocouples** |
| 1. Indicators | RTO bed temperature is continuously monitored by thermocouples and maintained above the minimum temperature, measured as 3-hour blocks, established during HAP destruction efficiency testing to ensure destruction capabilities of the control unit.  Continuous opacity monitor (COMs) to obtain readings at least every 10 seconds, averaged and recorded to 6-minute averages, and calculated in one-hour blocks. Should the COMs become inoperable the WESP voltage will be monitored. Minimum voltage for each field will be recorded in 15-minute averages and calculated in 3-hour blocks. The minimum voltage for a 3-hour block will be 30 kV for each individual field that is in operation. |
| 1. Indicator Range | An excursion is defined as a 3-hour block RTO temperature which is below the temperature recorded during the compliance test for MACT and opacity readings of 10% or more on a 1-hour block average during normal operation. |

**III. PERFORMANCE CRITERIA**

**Table 2 Performance Criteria**

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|  | **PM 10** |
| 1. Data Representativeness | RTO firebox temperature and COMs output is utilized as indicators of the proper operation of the control system during normal operation and during 1-unit bypass. |
| 1. Verification of Operational Status | WonderWare process control system provides real-time and average block temperatures. Alarming alerts operator when temperatures are not in range. CEMDAS system continuously records and averages opacity data into appropriate averaging times. |
| 1. QA/QC Practices and Criteria | Routine preventative maintenance semi-annually and annual verification audits as defined in 40 CFR § 63.2269. QA/QC procedures for COMs includes daily calibrations, filter audits, and performance audits as required by the ROP (40 CFR 60 Appendix F) |
| 1. Monitoring Frequency | RTO temperature : Continuous (Fifteen-minute averages based on at least 75% of each four fifteen-minute averages in an hour) and averaged to 3-hour block.  Opacity: Continuous (6-minute average based on at least 36 readings) |
| 1. Data Collection Procedure | Continuously recorded by data acquisition system and maintained for five years. |
| 1. Averaging Period | Three-hour RTO block temperature average and 1-hour average for opacity. |

**IV. JUSTIFICATION**

Rationale for Selection of Performance Indicator

The minimum RTO temperature was chosen as the performance indicator because the properly operating RTO will control any excess PM that escapes the cyclone separators and WESP due to the organic nature of the material. The minimum RTO temperature to achieve HAP destruction efficiency is already monitored in compliance with the Plywood and Composite Wood Products NESHAP found in 40 CFR 63 Subpart DDDD. The MACT standard allows RTO bypass for limited times for approved routine maintenance situations. COMs has been established by numerous EPA regulations to be an indicator for PM emissions. COMs are already required in the ROP. Historical opacity data confirms that under normal operating conditions, opacity remains below the 20% permit limit during bypass of one section of RTO.

Additionally, the permit requires a malfunction abatement plan (MAP) for the WESP and RTO which has been submitted and approved by EGLE -AQD. The MAP ensures that the equipment is operating properly by monitoring important operating parameters daily for the process equipment as well as the control equipment. These checks are documented, and abnormal conditions are reported to the operator who ensures that proper corrective action is taken. Specified routine maintenance activities are conducted on a quarterly basis and major preventative maintenance is performed on an annual basis during the scheduled annual maintenance outage.

The MAP also specifies operator actions to minimize emissions during various operating scenarios such as startup/shutdown and malfunction modes, normal operation, and specific operating scenarios. Operator actions to minimize emission during normal operation include basic actions such as responding to opacity alarms and taking corrective action to minimize emissions. During startup and shutdown and malfunctions, the operator is required to follow a predetermined sequential list of actions aimed at emission minimization.

Rationale for Selection of Indicator Range

The minimum temperature is established during compliance testing for HAP destruction efficiency which assures that the RTO is operating properly. COMs readings during normal operation and during 1-unit bypass also serves as an indicator of proper operation and low particulate emissions.

Performance Test Data

Emission testing is available in both normal operation and 1-unit RTO operation (‘partial bypass’) operations.

PM Testing from November 2016 while in normal operation indicated PM10 emissions of 4.0 pph, which is well under the permit limit of 29.8 lb./hr.

Testing from November 2016 while in operating with one RTO combustion chamber in bypass indicated PM10 emissions of 5.3 pph, which is well under the permit limit of 56.6 lb./hr. Six-minute opacity readings averaged 5% during the same PM10 testing with a range between 4% and 14%.

Both test results indicate mass emissions running well below the limitations in the permit.

**Revision History**

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| **Date** | **Description** | **Name** |
| 10/2/2024 | Removed Method 9 and added WESP voltage to Table 1. | Tim Tadlock |
| 8/13/2021 | Added clarification | Moss/LeBlanc |
| 7/22/2021 | Updated per request of AQD during ROP renewal. Added COMs and avg. times | Moss/Vantil |
| 2/26/2019 | Updated permit #, testing data, emissions, added revision history & page #’s. | Kathi Moss |