Clean Air Act Compliance Inspection Report

United States Environmental Protection Agency
Region 10 – Seattle, WA

Partial Compliance Evaluation
Emission Test Observation

Stimson Lumber Company
Plummer, Idaho

Inspection Dates: March 16-17, 2022

ZACHARY HEDGPETH Digitally signed by ZACHARY HEDGPETH
Date: 2022.05.23 08:10:50 -07'00'

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Zach Hedgpeth, PE
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Manager Signature Date

Derrick Terada
Supervisor, Air & Toxics Enforcement Section
EPA Region 10

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Attachments

1. Basic Facility and Inspection Information

Facility:	Stimson Lumber Company Coeur d'Alene Reservation 733 10th Street Plummer, ID 83851
Mailing Address:	Same
FRS Number:	110022811876
AFS Number:	100000001600900018
Permit Number:	Non-Title V Operating Permit #R10NT501001
Facility Contacts:	Kevin Crider – Plant Manager 208-686-9080 ext. 2222, kcrider@stimsonlumber.com Steven Petrin – Environmental Manager 503-306-4655, spetrin@stimsonlumber.com
Agency Inspectors:	Zach Hedgpeth, PE – EPA Region 10 206-553-1217, hedgpeth.zach@epa.gov
Inspection:	March 16-17, 2022
Inspection Report:	May 23, 2022
Inspection Notice:	Announced

Disclaimer

This report is a summary of observations and information gathered from the facility at the time of the inspection. The information provided does not constitute a final decision regarding compliance with the Clean Air Act (CAA) and applicable regulations or permits, nor is it meant to be a comprehensive report of all activities and processes conducted at the facility.

2. Introduction

a) The primary purpose of this inspection was to observe emission testing conducted pursuant to EPA Region 10 Non-Title V Air Quality Operating Permit #R10NT501001, specifically Section 6. Testing Requirements. Revision 1 of this permit, effective 8/1/21 is included as Attachment 4 to this report.
b) I provided advance notice of the inspection on February 22, 2022 during a conference call that included Steven Petrin, Stimson Lumber Environmental Manager. EPA presence during the testing had also been discussed during prior project planning.

3. Inspection Elements and Field Observations – March 16, 2022

a) I arrived at the facility at 08:07 and met Mr. Petrin and Mr. Crider at the facility office.
b) Opening Conference
    1. The opening conference was held informally in the facility entrance foyer with Mr. Petrin and Mr. Crider.
    2. I presented my inspector credentials and explained that the scope of this inspection is focused on the emission test.
c) Following the opening discussion, Mr. Crider and I walked to the fuel yard.
d) Field Observations
    1. Weather – Overcast, with cool temperatures.
    2. Inspection Structure – The structure/format of this inspection differed somewhat from a traditional linear approach because the field observations related to emission testing. I generally moved between the boiler control room, stack, and testing trailer throughout the two days onsite. Field observations are recorded approximately in chronological order, organized by physical location.
    3. Fuel Storage Yard – Mr. Crider and I observed the hogged fuel storage piles located out in the open as well as the pile under the "tent". The "tent" is a covered storage area, and is shown in photo 416 in Attachment 1. Mr. Crider provided the following information:
        i. The majority of the hogged fuel stored under the "tent" was produced onsite. It is stored under cover in order to help keep it dry.
        ii. The facility generally stockpiles shavings produced onsite over the summer and uses up those stockpiles by burning more shavings during the winter. All shavings produced onsite are burned onsite; none are sold. All shavings stockpiles are usually depleted by the following spring.
        iii. Fuel mix fed into the reclaimers (and thus to the boiler) is determined by front loader operators based on their judgement. The mix is 1 bucket of shavings to 2 buckets of hogged fuel at most, but is sometimes 1 bucket of shavings to 3-4 buckets of hogged fuel if the facility is running low on shavings.
        iv. The facility receives hogged fuel from offsite sources, and tests received loads for moisture content. Some periodic moisture content testing of hogged fuel onsite is also conducted.

4. Fuel Feed Equipment – With Mr. Crider, I followed the fuel feed process. Fuel is piled at the inlet of the reclaimers by front loader. The reclaimers are chain driven collection devices that collect fuel from the pile using metal blades which scrape the fuel onto the collection conveyor. The collection conveyor feeds the fuel into two bucket elevators, which raise the fuel to the elevation of the top of the boiler building. From the top of the bucket elevators, fuel drops through the "Y", which combines fuel carried by the two bucket elevators and drops the fuel onto the boiler feed conveyor. The boiler feed conveyor receives the fuel from the "Y" and conveys the fuel across an access roadway to the top of the boiler/cogen building. The fuel drops from the boiler feed conveyor into three metering bins. Each metering bin feeds downward into a fuel chute which delivers the fuel into the boiler combustion chamber. Low pressure air is introduced with the fuel to carry the fuel across the combustion chamber to the far side, where it lands on the grate. The moving grate carries the fuel back across the boiler combustion chamber as it burns.
5. Control Room – In the boiler control room, a discussion of steaming rate occurred. Steaming data from March 2021 and March 2022 were viewed on the operator computer screens. See photos 430 and 431 in Attachment 1. During March 2021 the daily average steaming rate was calculated at 1,685,291 pounds, which averages at about 70,220 lb/hr. Ninety percent of this value is about 63,198 lb/hr. March 2022 daily average steaming rate was calculated at 1,476,897 pounds, which averages at about 61,537 lb/hr. Ninety percent of this value is about 55,383 lb/hr. While in the control room, I learned that the start of testing was delayed due to stuck port bolts on the stack. Later I was informed that Run #1 of the Method 29 testing began at 10:15.
6. Testing Trailer – At around 10:25, I moved to the testing trailer and met with Conor Fox, the Bison Engineering testing team lead. Also working on the Bison Engineering testing team were Jacob (running the meter box in the trailer) and Jack (on the stack). I remained in the testing trailer during Run 1 and into the start of Run 2 of the Method 29 testing, which began at 12:10. Photos were taken of the formaldehyde calibration gas cylinder, see Attachment 1, photos 432-433. Bison Engineering staff (Jacob) were entering data directly into the laptop computer using an Excel spreadsheet. No paper field data sheets were completed.
7. Stack – From about 12:20-13:00, I climbed to the stack to observe emission testing during Run 2 of the Method 29 testing being conducted by Jack of Bison Engineering. Jack explained how he was using a digital manometer and digital angle finder attached to the probe to adjust the probe/nozzle angle for each sampling point. Specifically, he would rotate the probe until the digital manometer read approximately zero, and then call down to the testing truck with the angle shown on the angle finder. See photos 434-436.
8. Fuel Sampling – At around 13:50, I observed Chris (Stimson boiler operator) collect fuel samples. Samples were collected by hand from the fuel supply conveyor belt and placed into a plastic zip-lock bag. Instead of collecting a full bag three times during each testing run (as done during 2021 testing), smaller samples are collected at three times through each test run in order to produce one full bag of fuel for each test run. See photos 439-440.

9. Testing Trailer – Returning to the testing trailer, the following photos were collected documenting various aspects of the Method 29 testing:
    i. Method 29 analyte and blank bottles at 14:29. Photo 441.
    ii. Parametric data sheets and fuel data sheets for Runs 1-3 of the Method 29 testing recorded by Betsy Cochran of Spring Environmental (photos 442-446).
    iii. Method 29 field data as displayed on the Bison Engineering laptop for Runs 1-3 (photos 447-456).
    iv. Acetaldehyde calibration gas cylinder, which had an expiration date of June 17, 2022 indicating that the gas was not expired at the time of testing. See photos 457-458.
    v. Method 29 filters. See photos 459-461.
    vi. Moisture data recorded on whiteboard in the testing trailer. Photo 462.
10. I departed the facility around 15:45.

4. Inspection Elements and Field Observations – March 17, 2022

a) I arrived at the facility around 08:15 and met Mr. Crider at the facility office.
b) Field Observations
    1. Weather – Overcast, with cool temperatures and fog.
    2. Testing Trailer – FTIR testing discussion with Conor Fox:
        i. At my arrival, Mr. Fox was conducting the calibration checks on the FTIR sampling system and instrument. These checks are done by running the calibration gas at 100% of the flow up to a "T" in the sampling probe. The calibration gas is flushed through the probe and filter, flooding the sampling line and probe. This was conducted using the methanol, acetaldehyde, and ethylene calibration gasses. The FTIR instrument read the concentrations correctly, within a few percent of the certified cylinder values.
        ii. Before the calibration checks described above, Mr. Fox explained that the sampling line had been flushed using nitrogen gas. The FTIR analyzer readings for hazardous air pollutant analytes of interest were observed to ensure they stabilized at/near zero. About 20 readings were recorded with the FTIR instrument before beginning to flood the sampling line with the calibration gasses.
        iii. When the formaldehyde calibration gas was routed into the sampling system, the FTIR concentration reading did not agree with the calibration gas cylinder certified value. The cylinder concentration is listed as 34.6 ppm, but the FTIR was reading around 15 ppm. After a few readings, Mr. Fox decided to recalibrate the FTIR to the cylinder value, so that while the cylinder concentration had not changed, the FTIR was now reading around 30-35 ppm. Mr. Petrin and Mr. Crider arrived in the testing trailer and the four of us discussed the issue. Mr. Fox suggested that the formaldehyde gas in the calibration gas cylinder may have settled, so the cylinder was

taken outside and rolled back and forth on the ground. The concentration reading on the FTIR did not change after rolling the cylinder.

iv. I offered to call Dave Nash with the EPA Emission Measurement Center to see if he had any suggestions, and Mr. Crider and Mr. Petrin agreed with that suggestion. The facility decided to proceed with the testing in the meantime.

v. While in the testing trailer, around 08:30, Bison staff requested that all Method 9 opacity readings be delayed until the fog lifted, as the stack release point was not visible from the ground. I agreed.

3. Office – I returned to the facility office area and called Dave Nash, leaving a voicemail. I also sent an email to various EPA/EMC staff describing the situation. Mr. Nash called me back shortly with the following suggestions:
    i. Connecting the formaldehyde cylinder directly to the FTIR instrument would help indicate whether the sampling system/line was causing loss of formaldehyde.
    ii. Changing out gas regulators used in the sampling system might indicate if any of them are causing loss of formaldehyde.
    iii. Basically, it can be helpful to use process of elimination to identify the source of the issue.
    iv. I asked Mr. Nash whether it is possible that the formaldehyde cylinder concentration is not actually the certified concentration. Mr. Nash said that this was also a possibility.
    v. Immediately following my call with Mr. Nash, I discussed the above ideas with Mr. Petrin in the facility offices.
4. Test Trailer – I returned to the testing trailer at around 10:30 and recorded the following notes:
    i. I passed on the ideas from Mr. Nash to Mr. Fox, who said he would try them after completion of Run #1, which occurred from 09:00-10:06.
    ii. Methanol, acetaldehyde, and ethylene calibration gas cylinder labels were photographed.
    iii. I noted that the fog had lifted by 11:00 and the weather was sunny.
    iv. I observed Mr. Fox conduct validation spiking using formaldehyde, acetaldehyde, and methanol calibration gasses (see photos 472-475).
        1. The FTIR display showed formaldehyde response approaching a reading of approximately 6 ppm with twelve readings recorded. After the formaldehyde calibration gas was disconnected, the display concentration dropped down to around 2.4 ppm, but then showed two subsequent increases in concentration to 6-8 ppm.
        2. During acetaldehyde spiking, the display screen did not show the expected response to the acetaldehyde calibration gas spike, with concentrations remaining around 3 ppm. During this time, the display for sulfur hexafluoride (SF6), which is the tracer gas in the acetaldehyde calibration gas, did show the expected response. See photo 474.
        3. During methanol spiking, the display screen showed the expected response for both methanol and SF6, see photo 475.

v. After stepping outside to catch up on notetaking, I returned to the testing trailer. Mr. Fox let me know he had tried connecting the formaldehyde cylinder directly to the FTIR analyzer, with the result that the display still showed around 34-35 ppm. He stated that he also tried replacing one of the regulators, with no resulting change to the concentration. Photo 476 shows the formaldehyde concentration displayed on the screen during the time the calibration gas was connected directly to the instrument.
vi. After noting that the FTIR software is set to record data at 1-minute intervals, I departed the testing trailer for lunch around 12:20.

5. Fuel Feed Equipment – Following lunch, I climbed to the top of the cogen/boiler building and observed the fuel yard and feed equipment. The fuel conveyed on the feed conveyor and staged at the reclaimers appeared similar to my observations the day before. See photos and videos 480-487.
6. Stack – At around 13:10 I observed the FTIR probe in the stack along with the Method 18 bag sampling equipment which was located on the lower stack platform. See photos 490-495.
7. Control Room – I briefly checked in at the boiler control room, and the operators indicated operations were proceeding smoothly with no issues.
8. Testing Trailer – Returning to the testing trailer at around 13:40 and recorded the following notes:
    i. Regarding the acetaldehyde spiking results discussed above, Mr. Fox stated that he did the calculations, and the spiking passed the Method 320 requirements. The results were ugly, but by selecting certain points in the data, he was able to show 117% spike recover. The twelve points he selected were not consecutive, but he said that is not required by the method.
    ii. Mr. Fox also stated that he ran the acetaldehyde cylinder gas directly to the FTIR analyzer and read a concentration of 21.6 ppm. Note that the concentration on the acetaldehyde cylinder label is 21.7 ppm.
    iii. After running the acetaldehyde cylinder gas directly to the FTIR analyzer, Mr. Fox tried another acetaldehyde spike check. Results were similar to the first attempt.
    iv. Around 14:22 an increase in formaldehyde concentration was observed on the display screen, see photo 497. Some discussion occurred regarding this increase, and Mr. Fox suggested the FTIR analyzer may need more liquid nitrogen. I observed Mr. Fox add liquid nitrogen to the FTIR analyzer. It was not possible to visually see whether the FTIR analyzer level of liquid nitrogen was low prior to Mr. Fox adding more, but after the addition of liquid nitrogen, the formaldehyde concentration did decrease.
    v. Method 5/26A field data for Runs 1-3 as displayed on the Bison Engineering laptop were recorded using photographs, see photos 498-508).
9. Control Room – After leaving the testing trailer at 15:04, I briefly checked in at the boiler control room. The parametric data sheets and fuel data sheets for Runs 1-3 of the Method 5/26A/320 testing recorded by Betsy Cochran of Spring Environmental were photographed at this time (photos 509-512).

5. Closing Conference

Separate informal closeouts occurred between 15:12 and 15:20 with Mr. Petrin and Mr. Crider. No specific potential compliance concerns were identified or discussed.

I departed the facility around 15:30.