 Permit Authority

This permit (a) is issued according to the “Rules for the Control of Air Pollution in Idaho” (Rules), IDAPA 58.01.01.200–228; (b) pertains only to emissions of air contaminants regulated by the State of Idaho and to the sources specifically allowed to be constructed or modified by this permit; (c) has been granted on the basis of design information presented with the application; (d) does not affect the title of the premises upon which the equipment is to be located; (e) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (f) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; and (g) in no manner implies or suggests that the Idaho Department of Environmental Quality (DEQ) or its officers, agents, or employees assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment. Changes in design, equipment, or operations may be considered a modification subject to DEQ review in accordance with IDAPA 58.01.01.200–228.

Date Issued

July 26, 2022

__________________________
Shawnee Chen PE., Permit Writer

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Mike Simon, Stationary Source Bureau Chief
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1 Permit Scope

Purpose

1.1 This is a modified permit to construct (PTC) to update lumber drying kiln emission factors (EF) for hazardous air pollutants (HAP) and volatile organic compounds (VOC), to increase drying kiln annual VOC emissions limit, and to add HAP emissions monitoring as a result of HAP and VOC EFs change.

1.2 Those permit conditions that have been modified or revised by this permitting action are identified by the permit issue date citation located directly under the permit condition and on the right-hand margin.

1.3 This PTC replaces Permit to Construct No. P-2007.0107, issued on January 17, 2011.

[07/26/2022]

Regulated Sources

Table 1.1 lists all sources of regulated emissions in this permit.

Table 1.1 Regulated Sources

<table>
<thead>
<tr>
<th>Permit Section</th>
<th>Source</th>
<th>Control Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Wood handling, conveying, screening, and storage</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Hog-Fuel Boiler</td>
<td>Multiclone and Wet Scrubber with cyclone separator</td>
</tr>
<tr>
<td>4</td>
<td>Lumber Dry Kilns</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>Sawmill and planers</td>
<td>Baghouses and cyclones</td>
</tr>
<tr>
<td>6</td>
<td>Emergency Generator Engine</td>
<td>None</td>
</tr>
</tbody>
</table>

[07/26/2022] [1/17/2011]
2 Facility-Wide Conditions

Note: refer to the facility’s Tier I operating permit.

Facility-Wide Limits on Hazardous Air Pollutant Emissions

2.1 Facility-wide emissions in any consecutive 12-calendar months shall not exceed 9.49 tons of any hazardous air pollutant (HAP), and 24.49 tons for all HAPs combined.

[10/7/2009]

2.2 Kiln, Boiler, and Emergency Generator Engine Emissions Limits Compliance Monitoring

Each month, the permittee shall calculate the tons of methanol and tons of total HAP emissions from all emission sources in tons per calendar month (T/mo) and in tons per consecutive 12-month period (T/yr), determined by summing the monthly emissions from these sources over the previous consecutive 12-month period.

- Emissions from the kilns shall be assessed using kiln production monitoring data, maximum entering-air temperature data, and approved HAP kiln emission factors for each relevant species dried as specified in kiln Monitoring and Recordkeeping Requirements.

- Emissions from the boiler shall be assessed using Boiler Steam Monitoring data and emission factors established from Boiler Performance Testing data, or emissions factors from AP-42 if the performance test does not have data for HAPs.

If AP-42 HAP EFs are used in the emissions calculation, the permittee shall develop a fuel heat input to steam output ratio (FHISOR) following EPA Region 10’s Fuel-Heat-Input-to-Steam-Output-Ratio (see Appendix of the permit) memo before or at the next upcoming boiler source test.

- Emissions from the emergency generator engine.

[07/26/2022]
3 Hog-Fuel Boiler

3.1 Process Description

Bark from the log debarking process is sent to a bark hog where it is reduced to a size appropriate for use as boiler fuel and conveyed to the main fuel conveyor (TR10). Sawdust from the sawmill and shavings from the planing mills are also conveyed to the main fuel conveyor to be used as boiler fuel. The Zurn Industries hog-fuel boiler is an Erie City Type C, three-drum water tube boiler using a spreader-stoker firing method, with ash reinjection and four (4) manually-operated soot blowers. The boiler is designed to continuously provide 60,000 pounds per hour of saturated steam at 250°F to the lumber drying kilns.

3.2 Control Device Descriptions

Table 3.1 Hog-Fuel Boiler Description

<table>
<thead>
<tr>
<th>Emissions Units / Processes</th>
<th>Control Devices</th>
<th>Emission Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hog-Fuel Boiler</td>
<td>Multiclone in series with a Wet Scrubber with cyclone separator</td>
<td>Boiler Stack</td>
</tr>
</tbody>
</table>

Emission Limits

3.3 Emission Limits

3.3.1 The emissions from the hog-fuel boiler stack shall not exceed any corresponding emissions rate limits listed in Table 3.2.

Table 3.2 Hog-Fuel Boiler Emission Limits\(^{(a)}\)

<table>
<thead>
<tr>
<th>Source Description</th>
<th>PM(_{10})(^{(b)})</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zurn hog-fuel boiler</td>
<td>27</td>
<td>99.48</td>
</tr>
</tbody>
</table>

\(^{a)}\) In absence of any other credible evidence, compliance is ensured by complying with permit operating, monitoring, and record keeping requirements.

\(^{b)}\) Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.

\(^{c)}\) Pounds per hour, as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference test method, continuous emission monitoring system (CEMS) data, or DEQ-approved alternative.

\(^{d)}\) Tons per any consecutive 12-calendar month period.

3.3.2 PM Emission Limit (IDAPA Grain Loading Standard)

The permittee shall not discharge into the atmosphere from any fuel burning equipment in operation prior to October 1, 1979, or with a maximum rated input of less than 10 million Btu per hour, particulate matter in excess of 0.200 gr/dscf corrected to 8% oxygen while combusting wood fuel.

Operating Requirements

3.4 Fuel Type

The hog-fuel boiler shall be fueled exclusively by wood products.
3.5  **Steam Production and Steaming Rate Limits**

3.5.1  The permittee shall install, operate, calibrate, and maintain a device to continuously monitor the steam production rate of the Zurn Industries hog fuel boiler. If the continuous steaming rate measurement system becomes inoperable, a backup monitoring method consisting of manual hourly readings or calculations shall be implemented within 96 hours of the continuous steaming rate measurement system becoming inoperable, and shall be used until the original system is operational.

   [10/7/2009]

3.5.2  On a 24-hour average, the operational steaming rate shall be maintained at or below the lesser of:

- 60,000 pounds of steam per hour,
- A maximum steaming rate in pounds per hour based on the average one-hour steaming rate attained during the most recent performance test conducted pursuant to this permit which demonstrated compliance with the PM$_{10}$ lb/hr emissions limit, calculated as follows:

\[
\text{Max. steaming rate} = \text{Avg. steaming rate during test} \times \frac{27 \text{ lb/hr PM}_{10}}{\text{Tested lb/hr PM}_{10}}
\]

- A maximum rate in pounds per hour based on the average one-hour steaming rate attained during the most recent performance test conducted pursuant to this permit which demonstrated compliance with the grain loading emissions limit, calculated as follows:

\[
\text{Max. steaming rate} = \text{Avg. steaming rate during test} \times \frac{0.20 \text{ gr/dscf @ 8\% Oxygen}}{\text{Tested grain loading @ 8\% Oxygen}}
\]

The permittee may conduct additional performance tests during the permit term to revise the allowable steaming rate so long as the performance tests conform to all requirements of this permit. Whenever the steaming rate exceeds the allowable steaming rate, the permittee shall take corrective action within a reasonable time, but no longer than 24 hours from the discovery of the exceedance, to bring the steaming rate to the allowable rate or below. Deviations from this allowable operating rate shall not constitute a violation of this permit, unless the permittee fails to take corrective action or an emission standard prescribed in this permit is exceeded. DEQ may consider the frequency, duration, or magnitude of the deviations to determine if additional action is required.

   [10/7/2009]

3.6  **Multiclone and Wet Scrubber Operations**

3.6.1  The permittee shall install and operate a multiclone in series with a wet scrubber and cyclone separator to control the emissions from the hog fuel boiler.

   [10/7/2009]

3.6.2  The multiclone and wet scrubber shall be in operation at all times during operation of the hog fuel boiler.

   [10/7/2009]
3.6.3 The permittee shall install, operate, calibrate, and maintain a device to continuously monitor the ID fan outlet (scrubber inlet) pressure and the pressure drop across the hog fuel boiler multiclone during operation of the hog fuel boiler.

[1/17/2011]

3.6.4 The permittee shall install, operate, calibrate, and maintain a device to continuously measure the scrubbing media flow rate in gallons per minute.

[Tier II/PTC No. T2-010208, 1/13/05]

3.7 Performance Testing Operations

The permittee may conduct additional performance tests during the permit term to revise the allowable ID fan outlet (scrubber inlet) pressure or the minimum scrubbing media flow rate so long as the performance tests conform to all the requirements of this permit and the performance tests demonstrate compliance with the PM$_{10}$ pound per hour limit and the grain loading standard for the Zurn hog-fuel boiler while operating at the alternative operating parameters.

- The performance test shall be conducted in accordance with the Test Methods and Procedures specified in the Rules (IDAPA 58.01.01.157) and in accordance with a DEQ-approved source test protocol.
- The permittee may request to operate outside of the operating parameters specified by the manufacturer during the performance test by submitting a written source test protocol to DEQ for approval and requesting to operate under alternative operating parameters for the duration of the test.
- The protocol shall describe how the operating parameters will be monitored during the performance test.
- Once the source test is completed the permittee may request in writing to operate in accordance with alternative operating parameters. The request shall include a source test report and justification for the alternative operating parameters.

[1/17/2011]

Monitoring and Recordkeeping Requirements

3.8 Performance Testing

3.8.1 The permittee shall conduct a performance test on the Zurn hog-fuel boiler to demonstrate compliance with the opacity limit, the PM$_{10}$ lb/hr emissions limit, and the grain loading standard, and to determine the CO one-hour average emission rate.

The permittee shall test in accordance with IDAPA 58.01.01.157 and the conditions of this permit including the operating requirements for the Zurn hog-fuel boiler and General Provision 6. General Provision 6 includes notification requirements, testing procedures, and reporting requirements.

The source test shall be conducted under “worst case normal” conditions as required by IDAPA 58.01.01.157 and General Provision 6 and the source test report shall contain documentation that the test was conducted under these conditions.

The following information, at a minimum, shall be recorded during each performance test run and included in the performance test report:
The steam production rate of the boiler shall be recorded in pounds per hour;

The pressure drop across the multiclone and the ID fan outlet (scrubber inlet) pressure shall be recorded in inches of water at least once each 15 minutes during each test run;

The scrubbing media flow rate shall be recorded in gallons per minute once each 15 minutes during each test run;

Visible emissions from the boiler stack shall be observed and recorded during each test run, using the methods specified in IDAPA 58.01.01.625.

3.8.2 After the initial performance test, future testing shall be performed according to the following schedule. If the PM or PM$_{10}$ emission rate measured in the most recent test is less than or equal to 75% of the applicable emission limit, the next test shall be conducted within five years of the test date. If the PM or PM$_{10}$ emission rate measured during the most recent performance test is greater than 75%, but less than or equal to 90%, of the applicable emission limit, the next test shall be conducted within two years of the test date. If the PM or PM$_{10}$ emission rate measured during the most recent performance test is greater than 90% of the applicable emission limit, the next test shall be conducted within one year of the test date.

3.8.3 After the initial performance test, future testing shall be performed according to the following schedule. If the CO emission rate measured in the most recent test is less than 43 lb/hr, no further testing shall be required. If the CO emission rate measured during the most recent performance test is equal to or greater than 43 lb/hr, the next test shall be conducted within five years of the test date.

3.9 Maintain Copy of Source Tests

A copy of the most recent DEQ-approved source test for each pollutant tested and a copy of the corresponding DEQ review/approval letter which contains the permit number shall remain onsite at all times and shall be made available to Department representatives upon request.

3.10 HAPs Monitoring

The permittee shall calculate and record the emissions of methanol and total HAPs from the hog-fuel boiler on a monthly basis, in units of tons per month and tons for the most recent consecutive 12-calendar month period.

3.11 Steam Production Monitoring for Boiler

3.11.1 The permittee shall monitor and record the daily steam production of the boiler to demonstrate compliance with the steam production limit. Each month, the permittee shall sum the daily steam production for that month and for the previous 12 consecutive calendar-month period. Records shall be maintained on site and shall be made available to DEQ representatives upon request.

3.11.2 The permittee shall calculate the annual PM$_{10}$ emissions as follows:

- Multiply the total monthly steam produced by the emission factor derived from the most recent Department-approved source test. The emission factor shall be in pounds of PM$_{10}$ per pound of steam produced during the test.
• Sum the monthly PM$_{10}$ emissions derived above for each 12-consecutive calendar month period.

40 CFR 63 Subpart JJJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

3.12 The permittee shall comply with requirements in 40 CFR 63 Subpart JJJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources as specified in the current Tier I Operating Permit.
4 Drying Kilns

4.1 Process Description

Green lumber of various wood species processed that has been sorted and debarked, then squared in the sawmill, is stacked in the drying kilns. Indirect heat (i.e., steam from the Zurn hog-fuel boiler) is supplied to these single- and double-track drying kilns to reduce the moisture content in the green lumber from approximately 43% to 47% to a pre-determined moisture level, usually about 19%.

4.2 Control Device Descriptions

Table 4.1 Drying Kilns Description

<table>
<thead>
<tr>
<th>Emissions Units / Processes</th>
<th>Control Devices</th>
<th>Emission Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber drying kilns No. 1 through No. 7</td>
<td>None</td>
<td>Drying Kilns Vents</td>
</tr>
</tbody>
</table>

Emission Limits

4.3 Emission Limits

4.3.1 The PM$_{10}$ and VOC emissions from the Kilns 1 through 7 vents (combined) shall not exceed any corresponding emissions rate limits listed in Table 4.2.

Table 4.2 Drying Kilns Emission Limits(a)

<table>
<thead>
<tr>
<th>Source Description</th>
<th>PM$_{10}$(^{0.6})</th>
<th>VOC(^{0.6})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumber Drying Kilns 1 through 7 combined emissions</td>
<td>3.94</td>
<td>205.1</td>
</tr>
</tbody>
</table>

a) In absence of any other credible evidence, compliance is ensured by complying with permit operating, monitoring, and record keeping requirements.

b) Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.

c) Tons per any consecutive 12-calendar month period.

4.3.2 In accordance with IDAPA 58.01.01.702, the permittee shall not discharge into the atmosphere from any source operating prior to October 1, 1979, particulate matter in excess of the amount shown by the following equations, where $E$ is the allowable emission from the entire source in pounds per hour, and $PW$ is the process weight in pounds per hour:

a. If $PW$ is less than 17,000 pounds per hour,

\[
E = 0.045(PW)^{0.6}
\]

b. If $PW$ is equal to or greater than 17,000 pounds per hour,

\[
E = 1.12(PW)^{0.27}
\]
4.3.2 In accordance with IDAPA 58.01.01.701, the permittee shall not discharge to the atmosphere from any source operating on or after October 1, 1979, particulate matter in excess of the amount shown by the following equations, where E is the allowable emission from the entire source in pounds per hour, and PW is the process weight in pounds per hour:

   a. If PW is less than 9,250 pounds per hour,
   \[ E = 0.045(PW)^{0.6} \]

   b. If PW is equal to or greater than 9,250 pounds per hour,
   \[ E = 1.10(PW)^{0.25} \]

[10/7/2009]

Operating Requirements

4.4 Throughput (i.e., Production) Limits – Kilns 1 through 7, Combined

The throughput through Kilns 1 through 7 combined shall not exceed 157,585 thousand board feet (lumber scale) in any consecutive 12-calendar months.

[10/7/2009]

4.5 Temperature Monitoring – Kilns 1 through 7

The permittee shall install, calibrate, maintain, and operate a device on each kiln to measure and record the kiln temperature.

[10/7/2009]

Monitoring and Recordkeeping Requirements

4.6 Kiln Monitoring Manual

Within 120 days after permit issuance, the permittee shall develop and submit to DEQ a Kiln Monitoring Manual for review and approval at Lewiston Regional Office, 1118 F. Street, Lewiston, Idaho 83501. The procedures specified in the Kiln Monitoring Manual are incorporated by reference into this permit and are enforceable permit conditions.

The Kiln Monitoring Manual shall describe procedures that will be followed to ensure compliance with the Kiln Emission Limits and the Kiln Production Limit; accurate measurement of kiln entering-air, wet bulb, and dry bulb temperatures; and kiln manufacturer’s specifications and recommendations. The Kiln Monitoring Manual shall be a permittee-developed document based upon, but independent from, the manufacturer-supplied operating manuals. The Kiln Monitoring Manual shall at a minimum contain the following:

- Procedures for installation, calibration, and maintenance of kiln temperature controllers and sensors in accordance with manufacturer’s instructions.
- Procedures and frequency of calibration checks for kiln temperature sensors. Calibration checks for entering-air temperature sensors shall be completed at least once every six months.
• Procedures and frequency for auditing and updating maximum entering-air temperature determinations for each kiln drying schedule as specified in the Kiln Drying Schedules and Maximum Entering-Air Temperature Determinations permit condition. At least once every six months or more frequently when appropriate (e.g., such as when drying schedule parameters are changed), each drying schedule maximum entering-air temperature determination shall be audited by comparing the control chart from the most recent charge processed using that schedule to the control chart used in determining the maximum entering-air temperature for that schedule. The maximum entering-air temperature for the most recent charge processed shall be determined using one of the specified methods, and if this maximum temperature exceeds the previously-determined maximum temperature for that drying schedule, then the most recent maximum temperature shall be used in assessing emissions from the kilns beginning from the starting time that the charge was processed. If schedule parameters are changed, or a new schedule is created, the maximum entering-air temperature shall be established initially using one of the specified methods for the first charge processed using the new parameters, and subsequently audited every six months as described above.

• The permittee shall monitor the kilns in accordance with the Kiln Monitoring Manual. The Kiln Monitoring Manual and copies of any manufacturer’s manual(s) and recommendations shall remain onsite at all times and shall be made available to DEQ representatives upon request.

Any changes to the Kiln Monitoring Manual shall be submitted to DEQ for review and approval 30 days prior to the proposed changes.

4.7 Kiln Production and Temperature Monitoring

For each dry kiln charge, the permittee shall monitor and record the following:

• Starting and ending date/time of drying;
• All species of wood contained in the kiln charge;
• The total quantity of lumber present in the kiln charge, in units of million board-feet (MMbf); and
• The maximum entering-air temperature for the schedule used to dry the kiln charge, in units of degrees Fahrenheit (°F).

Each month, the permittee shall monitor and record the following kiln production information in units of million board-feet per month (MMbf/mo) and in million board-feet per consecutive 12-month period (MMbf/yr), determined by summing each monthly production over the previous consecutive 12-month period.

• The quantity of each species of wood processed in all of the kilns; and
• The total sum of all wood species processed in all of the kilns.

Monthly production totals for each species shall be used for assessing VOC and HAP emissions from the kiln as specified in Kiln VOC and HAP Emissions Tracking permit condition. Monthly production totals for all species combined shall be used to determine compliance with the Kiln Production Limit.
4.8 Kiln Drying Schedules and Maximum Entering Air Temperature Determinations

The permittee shall maintain records onsite of at least two example control charts (“pen charts”) for each drying schedule used over the most recent five-year period, and copies of all control charts used in Kiln Monitoring Manual audits completed over the most recent five-year period. For the purposes of assessing actual kiln emissions for Kilns, the maximum entering-air temperature (“Enter Air”) determined from at least two example control charts shall be used.

The maximum entering-air temperature for each schedule shall be determined as either the highest instantaneous temperature, or the highest 60-minute average temperature, exhibited in the two or more example control charts evaluated (i.e., the highest maximum exhibited).

At a minimum, the applicable information required in the Kiln Production and Temperature Monitoring permit condition shall be identified or recorded on each example control chart evaluated.

[07/26/2022]

4.9 Kiln VOC and HAP Emissions Tracking

Each month, the permittee shall calculate the tons of VOC and HAP emissions from the kilns during the previous consecutive 12-month period to demonstrate compliance with the Kiln VOC Emissions Limit and the Facility-Wide HAP Emission Limits.

- VOC and HAP emissions from all of the kilns shall be calculated using Kiln Production and Temperature Monitoring data and the emission factors in Table 4.3. Use of alternate emission factors requires prior DEQ approval.

- The value “X” in the emission factor equation is the “maximum entering-air temperature” in degrees Fahrenheit as determined using the procedures in the Kiln Drying Schedules and Maximum Entering-Air Temperature Determinations permit condition. When tracking a multiple-species charge, the permittee shall use the highest emission factor of all of the wood species in the charge. Emission factors calculated at less than zero shall be set equal to zero (negative emission factor values are possible with low X values).

- VOC and HAP emission factors are developed using the maximum entering-air temperature and Table 4.3 following the example below for drying Douglas fir at 220 °F:
  \[ \text{VOC emission factor} = 0.01460 \times (220) - 1.77130 = 1.4407 \text{ lb/mbf} \]

- Monthly kiln VOC and HAP emissions shall be calculated using the quantity and species for each kiln charge and the VOC and HAP emission factors calculated based on the maximum entering-air temperature for that kiln charge.

- Annual kiln VOC and HAP emissions are calculated by summing each monthly VOC emissions over the previous consecutive 12-month period.

[07/26/2022]
<table>
<thead>
<tr>
<th>Species: Non-Resinous Softwood</th>
<th>VOC lb/mbf (b)</th>
<th>Methanol HAP lb/mbf (b)</th>
<th>Formaldehyde HAP lb/mbf (b)</th>
<th>Acetaldehyde HAP lb/mbf (b)</th>
<th>Propionaldehyde HAP lb/mbf (b)</th>
<th>Acrolein HAP lb/mbf (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western True Fir (c)</td>
<td>0.00817(X)–1.02133</td>
<td>0.00465(X)–0.73360</td>
<td>0.00016(X)–0.02764</td>
<td>0.0550</td>
<td>0.0003</td>
<td>0.0009</td>
</tr>
<tr>
<td>Western Hemlock</td>
<td>0.00369(X)–0.39197</td>
<td>0.00249(X)–0.39750</td>
<td>0.000046(X)–0.007622</td>
<td>0.0677</td>
<td>0.0004</td>
<td>0.0012</td>
</tr>
<tr>
<td>Western Red Cedar (d)</td>
<td>0.00817(X)–1.02133</td>
<td>0.00465(X)–0.73360</td>
<td>0.00016(X)–0.02764</td>
<td>0.0677</td>
<td>0.0004</td>
<td>0.0012</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species: Resinous Softwood (Non-Pine Family)</th>
<th>VOC lb/mbf (b)</th>
<th>Methanol HAP lb/mbf (b)</th>
<th>Formaldehyde HAP lb/mbf (b)</th>
<th>Acetaldehyde HAP lb/mbf (b)</th>
<th>Propionaldehyde HAP lb/mbf (b)</th>
<th>Acrolein HAP lb/mbf (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas Fir</td>
<td>0.01460(X)–1.77130</td>
<td>0.00114(X)–0.16090</td>
<td>0.000028(X)–0.00380</td>
<td>0.0275</td>
<td>0.0003</td>
<td>0.0005</td>
</tr>
<tr>
<td>Engelmann Spruce</td>
<td>0.1769</td>
<td>0.00088(X)–0.13526</td>
<td>0.000042(X)–0.006529</td>
<td>0.0201</td>
<td>0.0002</td>
<td>0.0005</td>
</tr>
<tr>
<td>Larch</td>
<td>0.01460(X)–1.77130</td>
<td>0.00114(X)–0.16090</td>
<td>0.000028(X)–0.00380</td>
<td>0.0275</td>
<td>0.0003</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species: Resinous Softwood (Pine Family)</th>
<th>VOC lb/mbf (b)</th>
<th>Methanol HAP lb/mbf (b)</th>
<th>Formaldehyde HAP lb/mbf (b)</th>
<th>Acetaldehyde HAP lb/mbf (b)</th>
<th>Propionaldehyde HAP lb/mbf (b)</th>
<th>Acrolein HAP lb/mbf (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lodgepole Pine</td>
<td>1.1352</td>
<td>0.0550</td>
<td>0.0030</td>
<td>0.0104</td>
<td>0.0003</td>
<td>0.0008</td>
</tr>
<tr>
<td>Ponderosa Pine</td>
<td>0.02083(X)–1.30029</td>
<td>0.00137(X)–0.18979</td>
<td>0.000074(X)–0.010457</td>
<td>0.034</td>
<td>0.0010</td>
<td>0.0026</td>
</tr>
<tr>
<td>Western White Pine</td>
<td>0.02083(X)–1.30029</td>
<td>0.00137(X)–0.18979</td>
<td>0.000074(X)–0.010457</td>
<td>0.034</td>
<td>0.0010</td>
<td>0.0026</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species: Other Species Not Listed (e)</th>
<th>VOC lb/mbf (b)</th>
<th>Methanol HAP lb/mbf (b)</th>
<th>Formaldehyde HAP lb/mbf (b)</th>
<th>Acetaldehyde HAP lb/mbf (b)</th>
<th>Propionaldehyde HAP lb/mbf (b)</th>
<th>Acrolein HAP lb/mbf (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Species Not Listed</td>
<td>0.02083(X)–1.30029</td>
<td>0.00465(X)–0.73360</td>
<td>0.00016(X)–0.02764</td>
<td>0.0677</td>
<td>0.0010</td>
<td>0.0026</td>
</tr>
</tbody>
</table>

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a) Emission factors for Non-Resinous Softwood and Resinous Softwoods are from “EPA Region 10 HAP and VOC Emission Factors for Lumber Drying, January 2021”
b) Pounds per thousand board feet (lb/mbf).
c) Western true firs consist of the following seven species classified in the same Abies genus: bristlecone fir, California red fir, grand fir, noble fir, pacific silver fir, subalpine fir and white fir.
d) Includes western red cedar and any other cedar species.
e) If a species dried is not listed in this table, or the lumber processed includes an indeterminate mixture or variety of species, the emission factors for “Other Species Not Listed” species shall be used when assessing emissions.

[07/26/2022]
5 Woodworking Equipment

5.1 Process Description

Woodworking equipment includes the sawmill and the two planing mills.

Heavy sawdust from the sawmill is transferred by conveyor (TR8) to a sawdust cyclone (P7) or sawdust cyclone target box (P21). Material collected from the P7 sawdust cyclone is conveyed to the hog-fuel boiler. Material collected from the P21 target box is loaded into the sawdust truck bin (ST2) with a bottom drop to trucks (TR14).

Light sawdust from the sawmill is routed first through a baghouse (P24) and then to a baghouse cyclone (P6). Material collected in the baghouse cyclone is conveyed to the hog-fuel boiler.

Shavings from the old and new planing mills are collected in shavings cyclones (P11) and (P12), respectively. The collected material from these two cyclones is conveyed to shavings cyclone (P14) or to shavings cyclone (P13). Material collected from P14 is conveyed to the hog-fuel boiler. Material collected from P13 is loaded into the truck shavings bin (ST6) with a bottom drop to trucks (TR16).

5.2 Control Device Descriptions

<table>
<thead>
<tr>
<th>Emissions Units / Processes</th>
<th>Control Devices</th>
<th>Emission Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sawmill</td>
<td>Cyclones, baghouses, target box</td>
<td>Cyclone stacks and baghouse stack.</td>
</tr>
</tbody>
</table>

Emission Limits

5.3 In accordance with IDAPA 58.01.01.702, the permittee shall not discharge into the atmosphere from any source operating prior to October 1, 1979, particulate matter in excess of the amount shown by the following equations, where E is the allowable emission from the entire source in pounds per hour, and PW is the process weight in pounds per hour:

a. If PW is less than 17,000 pounds per hour,

\[ E = 0.045(PW)^{0.6} \]

b. If PW is equal to or greater than 17,000 pounds per hour,

\[ E = 1.12(PW)^{0.27} \]

[10/7/2009]

5.4 In accordance with IDAPA 58.01.01.701, the permittee shall not discharge into the atmosphere from any source operating on or after October 1, 1979, particulate matter in excess of the amount shown by the following equations, where E is the allowable emission from the entire source in pounds per hour, and PW is the process weight in pounds per hour:
If PW is less than 9,250 pounds per hour,

\[ E = 0.045(PW)^{0.6} \]

If PW is equal to or greater than 9,250 pounds per hour,

\[ E = 1.10(PW)^{0.25} \]

Operating Requirements

5.5 The permittee shall install and operate cyclones and baghouse/filter system(s) to control emissions from woodworking equipment at this facility.

5.6 Cyclone and Baghouse/Filter System Procedures

The permittee shall have developed a Cyclone and Baghouse/Filter System Procedures document for the inspection and operation of the cyclones and baghouses/filter system(s) which controls the PM and PM\(_{10}\) emissions from woodworking equipment at this facility. The document shall describe the procedures that will be followed to comply with General Provision 2 and shall contain, at a minimum, requirements for monthly inspections of the cyclones and baghouse(s). The inspection procedures shall include, but not be limited to:

- A visible emissions observation while operating;
- If visible emissions are present the opacity of the visible emissions shall be determined in accordance with procedures contained in IDAPA 58.01.01.625;
- Checking the bags or cartridges for structural integrity; and
- Checking to assure that bags or cartridges are appropriately secured in place.

The Baghouse/Filter System Procedures document shall also include a schedule and procedures for corrective action that will be taken if:

- Visible emissions are determined to be 10% opacity or greater;
- Bags or cartridges are ruptured; or
- Bags or cartridges are not appropriately secured in place.

The Permittee shall maintain records of the results of the baghouse/filter system inspection in accordance with General Provision 7. The records shall include a description of any corrective action that was taken, whether visible emissions were present, and if visible emissions were present the results of visible emission observation as determined by procedures contained in IDAPA 58.01.01.625.

The Cyclone and Baghouse/Filter System Procedures document shall be submitted to DEQ by December 7, 2009 for review and comment and shall contain a certification by a responsible official. Any changes to the Cyclone and Baghouse/Filter System Procedures document shall be submitted within 15 days of the change. The Cyclone and Baghouse/Filter System Procedures
document shall also remain on site at all times and shall be made available to DEQ representatives upon request.

5.7 The operating and monitoring requirements specified in the Cyclone and Baghouse/Filter System Document are incorporated by reference to this permit and are enforceable permit conditions.
6 Emergency Generator Engine (NESHAP ZZZZ Requirements)

6.1 Process Description
The permittee shall comply with all applicable requirements of 40 CFR 63, Subpart ZZZZ and all applicable general provisions of 40 CFR 63 Subpart A.

Subpart ZZZZ applies to the existing stationary Reciprocating Internal Combustion Engine (RICE) located at area source of HAP emissions. Subpart ZZZZ applies to the existing emergency compression ignition with a rated capacity of 270 bhp. Bennett Lumber Products maintains a John Deere, 6081AF001, 270 bhp compression ignition engine onsite for emergency purposes.

6.2 Compliance Date
In accordance with 40 CFR 63.6595(a)(1), the affected source must comply with the applicable emission and operating limitations of the National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63, Subpart ZZZZ by May 3, 2013.

Operating Requirements

6.3 Emissions and Operating Limitations
In accordance with 40 CFR 63.6603(a), on and after May 3, 2013, the following emission limits or operating restrictions are required for the engine. The permittee must meet the following requirements, except during periods of startup.

• Change oil and filter every 500 hours of operation or annually, whichever comes first.
• Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first.
• Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary.

6.4 On and after May 3, 2013, the permittee shall operate and maintain the diesel engine(s) and associated pollution control equipment (where applicable) in a manner that minimizes emissions. Nothing further is required to reduce emissions other than what is necessary to meet the appropriate limitation in the Emissions Limitations permit condition in accordance with 40 CFR 63.6605.

Monitoring and Maintenance Requirements

6.5 In accordance with 63.6625(e)(3) and Table 6 of the subpart, on and after May 3, 2013, the permittee must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation
of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

6.6 In accordance with 63.6625(f), on and after May 3, 2013, an existing emergency stationary RICE located at an area source of HAP emissions must install a non-resettable hour meter if one is not already installed.

6.7 On and after May 3, 2013, the engine's time spent at idle during startup shall be minimized to a period needed for appropriate and safe loading of the engine, but not to exceed 30 minutes, after which time the emission standards associated with this permit apply in accordance with 40 CFR 63.6625(h).

6.8 In accordance with 40 CFR 63.6625(i), on and after May 3, 2013, the permittee has the option of implementing an oil analysis program to extend the specified oil change frequency in the Emissions and Operating Limitations permit condition. The oil analysis must be performed at the same frequency specified for changing the oil. The analysis program must at a minimum analyze the following three parameters: Total Base Number, viscosity, and percent water content. The limits for these parameters are as follows: Total Base Number is less than 30% of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20% from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil before continuing to use the engine. The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.

6.9 In accordance with 40 CFR 63.6640(f), the permittee must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii). The paragraphs are as follows:

(i) There is no time limit on the use of emergency stationary RICE in emergency situations.

(ii) The permittee may operate the emergency RICE for the purposes of maintenance checks and readiness testing, provided the tests are recommended by Federal, State or local government, the manufacturer, the vendor or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year.

(iii) The permittee may operate the emergency stationary RICE up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hour per year provided for maintenance and testing.

Recordkeeping Requirements

6.10 In accordance with 40 CFR 63.6655(e), the permittee must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treatment control device (if any) according to your own maintenance...
plan if you own or operate any of the following Rice; (1) an existing stationary emergency RICE, (2) an existing stationary RICE located at an area source of HAP emissions subject to management practices as shown in Table 2d to this subpart.

In accordance with 40 CFR 63.6655(f), an existing emergency stationary RICE located at an area source of HAP emissions that does not meet the standards applicable to non-emergency engines, you must keep records of the hours of operation of the engine that is recorded through the non-resettable hour meter. The permittee must document how many hours are spent for emergency operation; including what classified the operation as emergency and how many hours are spent for non-emergency operation. If engines are used for demand response, the permittee must keep records of the notification of the emergency situation, and the time the engine was operated as part of demand response.

All records shall be readily accessible in hard copy or electronic form for a minimum of five (5) years after the date of each occurrence, measurement, maintenance procedure, corrective action or report in accordance with 40 CFR 63.6660.

[01/17/2011]
7 General Provisions

General Compliance

7.1 The permittee has a continuing duty to comply with all terms and conditions of this permit. All emissions authorized herein shall be consistent with the terms and conditions of this permit and the “Rules for the Control of Air Pollution in Idaho.” The emissions of any pollutant in excess of the limitations specified herein, or noncompliance with any other condition or limitation contained in this permit, shall constitute a violation of this permit, the “Rules for the Control of Air Pollution in Idaho,” and the Environmental Protection and Health Act (Idaho Code §39-101, et seq).

[Idaho Code §39-101, et seq.]

7.2 The permittee shall at all times (except as provided in the “Rules for the Control of Air Pollution in Idaho”) maintain in good working order and operate as efficiently as practicable all treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this permit and other applicable Idaho laws for the control of air pollution.

[IDAPA 58.01.01.211]

7.3 Nothing in this permit is intended to relieve or exempt the permittee from the responsibility to comply with all applicable local, state, or federal statutes, rules, and regulations.

[IDAPA 58.01.01.212.01]

Inspection and Entry

7.4 Upon presentation of credentials, the permittee shall allow DEQ or an authorized representative of DEQ to do the following:

- Enter upon the permittee’s premises where an emissions source is located, emissions-related activity is conducted, or where records are kept under conditions of this permit;
- Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;
- Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
- As authorized by the Idaho Environmental Protection and Health Act, sample or monitor, at reasonable times, substances or parameters for the purpose of determining or ensuring compliance with this permit or applicable requirements.

[Idaho Code §39-108]

Construction and Operation Notification

7.5 This permit shall expire if construction has not begun within two years of its issue date, or if construction is suspended for one year.

[IDAPA 58.01.01.211.02]

7.6 The permittee shall furnish DEQ written notifications as follows:

- A notification of the date of initiation of construction, within five working days after occurrence; except in the case where pre-permit construction approval has been granted then notification shall be made within five working days after occurrence or within five working days after permit issuance whichever is later;
- A notification of the date of any suspension of construction, if such suspension lasts for one year or more; and
- A notification of the initial date of achieving the maximum production rate, within five working days after occurrence - production rate and date.  

[IDAPA 58.01.01.211.01]

- A notification of the anticipated date of initial start-up of the stationary source or facility not more than sixty days or less than thirty days prior to such date; and
- A notification of the actual date of initial start-up of the stationary source or facility within fifteen days after such date.  

[IDAPA 58.01.01.211.03]

Performance Testing

7.7 If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ may, at its option, have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.

7.8 All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee’s risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.

7.9 Within 60 days following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol.  

[IDAPA 58.01.01.157]

Monitoring and Recordkeeping

7.10 The permittee shall maintain sufficient records to ensure compliance with all of the terms and conditions of this permit. Monitoring records shall include, but not be limited to, the following: (a) the date, place, and times of sampling or measurements; (b) the date analyses were performed; (c) the company or entity that performed the analyses; (d) the analytical techniques or methods used; (e) the results of such analyses; and (f) the operating conditions existing at the time of sampling or measurement. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes, but is not limited to, all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. All records required to be maintained by this permit shall be made available in either hard copy or electronic format to DEQ representatives upon request.  

[IDAPA 58.01.01.211]
**Excess Emissions**

7.11 The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130-136 for excess emissions. The provisions of IDAPA 58.01.01.130-136 shall govern in the event of conflicts between the excess emissions general provisions and the regulations of IDAPA 58.01.01.130-136.

During an excess emissions event, the permittee shall, with all practicable speed, initiate and complete appropriate and reasonable action to correct the conditions causing the excess emissions event; to reduce the frequency of occurrence of such events; to minimize the amount by which the emission standard is exceeded; and shall, as provided below or upon request of DEQ, submit a full report of such occurrence, including a statement of all known causes, and of the scheduling and nature of the actions to be taken.

[IDAPA 58.01.01.132]

7.12 In all cases where startup, shutdown, or scheduled maintenance of any equipment or emission unit is expected to result or results in an excess emissions event, the permittee shall demonstrate compliance with IDAPA 58.01.01.133.01(a) through (d), including, but not limited to, the following:

- Prohibiting any scheduled startup, shutdown, or maintenance resulting in excess emissions shall occur during any period in which an Atmospheric Stagnation Advisory or a Wood Stove Curtailment Advisory has been declared by DEQ.
- Notifying DEQ of the excess emissions event as soon as reasonably possible, but no later than two hours prior to, the start of the event, unless the permittee demonstrates to DEQ's satisfaction that a shorter advance notice was necessary.
- Reporting and recording the information required pursuant to the excess emissions reporting and recordkeeping requirements and IDAPA 58.01.01.135 and 136 for each excess emissions event due to startup, shutdown, or scheduled maintenance.

[IDAPA 58.01.01.133]

7.13 In all cases where upset or breakdown of equipment or an emissions unit, or the initiation of safety measures, results or may result in an excess emissions event, the permittee shall demonstrate compliance with IDAPA 58.01.01.134.01(a) and (b) and the following:

- Immediately undertake all appropriate measures to reduce and, to the extent possible, eliminate excess emissions resulting from the event and to minimize the impact of such excess emissions on the ambient air quality and public health.
- Notify DEQ of any upset, breakdown, or safety event that results in excess emissions. Such notification shall identify the time, specific location, equipment or emissions unit involved, and (to the extent known) the cause(s) of the occurrence. The notification shall be given as soon as reasonably possible, but no later than 24 hours after the event, unless the permittee demonstrates to DEQ's satisfaction that the longer reporting period was necessary.
- Report and record the information required pursuant to the excess emissions reporting and recordkeeping facility wide conditions and IDAPA 58.01.01.135 and 136 for each excess emissions event caused by an upset, breakdown, or safety measure.
During any period of excess emissions caused by upset, breakdown, or operation under facility safety measures, DEQ may require the permittee to immediately reduce or cease operation of the equipment or emissions unit causing the period until such time as the condition causing the excess has been corrected or brought under control. Such action by DEQ shall be taken upon consideration of the factors listed in IDAPA 58.01.01.134.03 and after consultation with the permittee.

7.14 The permittee shall submit a written report to DEQ for each excess emissions event, no later than 15 days after the beginning of such an event. Each report shall contain the information specified in IDAPA 58.01.01.135.02.

7.15 The permittee shall maintain excess emissions records at the facility for the most recent five calendar-year period. The excess emissions records shall be made available to DEQ upon request and shall include the information requested by IDAPA 58.01.01.136.03(a) and (b) as summarized in the following:

- An excess emissions log book for each emissions unit or piece of equipment containing copies of all reports that have been submitted to DEQ pursuant to IDAPA 58.01.01.135 for the particular emissions unit or equipment; and
- Copies of all startup, shutdown, and scheduled maintenance procedures and upset, breakdown, or safety preventative maintenance plans that have been developed by the permittee in accordance with IDAPA 58.01.01.133 and 134, and facility records as necessary to demonstrate compliance with such procedures and plans.

Certification

7.16 All documents submitted to DEQ—including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certification—shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

False Statements

7.17 No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under this permit or any applicable rule or order in force pursuant thereto.

Tampering

7.18 No person shall knowingly render inaccurate any monitoring device or method required under this permit or any applicable rule or order in force pursuant thereto.

Transferability

7.19 This permit is transferable in accordance with procedures listed in IDAPA 58.01.01.209.06.
Severability

7.20 The provisions of this permit are severable, and if any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[IDAPA 58.01.01.211]
Appendix

Procedure to Determine a Biomass Boiler's Fuel-Heat-Input-To-Steam-Output Ratio

(EPA Region 10 FHISOR Memo, May 8, 2014)
MEMORANDUM

SUBJECT: Procedure to Determine a Biomass Boiler’s Fuel-Heat-Input-To-Steam-Output Ratio

FROM: Dan Meyer, Environmental Engineer
Air Permits & Diesel Unit

THRU: Donald A. Dossett, P.E., Manager
Air Permits & Diesel Unit

TO: Permit File

EPA Region 10 has developed the attached procedure for determining a biomass boiler’s fuel-heat-input-to-steam-output ratio for use in estimating emissions based on steam production. Some permits issued by EPA Region 10 specifically direct sources to use this procedure; other sources responsible for estimating emissions from biomass boilers can also use this procedure.

EPA Region 10 regulates a number of wood products facilities in Indian Country across the Pacific Northwest. Nearly all of these facilities employ at least one biomass boiler. Facilities subject to the Title V operating permit program or FARR registration program are required to estimate emissions for various reasons (e.g., emission-based fees, compliance with limits, annual emission reports). Many of these sources have plant-wide emission limits for hazardous air pollutants and are required to calculate monthly emissions to demonstrate compliance.

Published emission factors for biomass boilers are often in terms of lb/MMBTU. Measurement of the heat input rate (MMBTU/hr) for use with such emission factors is difficult given the need for continuous measurement of the fuel feed rate and heat content. As an alternative, sources typically estimate the heat input rate using steam production, which is easier and more reliable to measure, and an assumed boiler efficiency. The attached procedure is intended to provide a more accurate conversion from measured steam production to boiler heat input for use with emission factors in units of lb/MMBTU.

This procedure underwent public notice and comment when the procedure was required in previously issued Title V permits. On those occasions, EPA Region 10 received no comments related to the procedure. Permitted sources will be directed to an EPA Region 10 web site for the most recent version of the procedure, much like a source test method. By posting it on the web, unpermitted sources will have access to the procedure as well.
Procedure to Determine a Biomass Boiler’s Fuel-Heat-Input-To-Steam-Output Ratio

Last Revised May 2014

Conduct at least three valid stack test runs; each at least 60 minutes in duration. Follow Steps 1 through 8 for each run. Calculate the arithmetic average value for fuel-heat-input-to-steam-output ratio considering the results of all valid runs.

1. Simultaneously Measure Stack Gas Volumetric Flow and Steam Generating Rate.
   - Measure average stack gas volumetric flow (dscfm) using EPA Reference Method 2
   - Measure average steam flow (mlbsteam/hr) using boiler monitoring equipment

2. Sample Fuel
   - Create composite sample (composed of three approximately 2-pound individual samples) using 63.7521(c); all individual samples shall be collected at a location that most accurately represents the fuel being burned; individual belt or screw feeder samples, described in 63.7521(c)(1)(ii), shall be collected such that one sample is representative of fuel combusted at the beginning of the run, one is representative of fuel combusted at the mid-point of the run, and one is representative of fuel combusted at the end of the run.

3. Homogenize Fuel Sample
   - Subdivide and homogenize composite sample using 63.7521(d) until sample passes 2 mm screen

4. Determine Fuel Moisture
   - Determine moisture content (%, wet basis) of composite sample using ASTM E871-82R06; time analysis such that sample used for moisture analysis represents moisture content of sample introduced to oxygen bomb;
   - For converting heat content or ultimate analysis % to dry basis, use the following:
     - \( (\text{value, wet basis}) / (1 - \%\text{moisture}) = (\text{value, dry basis}) \)

5. Determine Fuel Heat Content (aka Gross Calorific Value or High Heat Value)
   - Determine gross calorific value (Btu/lb, wet basis) for composite sample using ASTM E711-87R04; convert GCV results to be on dry basis

6. Perform Ultimate Analysis (for composite sample)
   - Determine ash content (%, dry basis) using ASTM D1102-84R07
   - Determine C (%, wet basis) using ASTM E777-87R04; convert to dry basis
   - Determine H (%, wet basis) using ASTME777-87R04; convert to dry basis
   - Determine N (%, wet basis) using ASTM E778-87R04; convert to dry basis
   - Determine S (%, wet basis) using ASTM E775-87R04; convert to dry basis
   - Calculate O (%, dry basis) using ash, C, H, N and S results (%, dry basis) and ASTM E870-82R06
7. Calculate Hogged Fuel F-Factor (for composite sample)
   • Calculate F-factor (dscf/mmBtu) using results from ultimate analysis (dry basis) and GCV (dry basis) using equation 19-13 in 40 CFR 60 App A, RM19

8. Calculate Conversion Factor
   • Determine fuel heat input rate (mmBtu/hr) using average stack flow rate and percent oxygen (dry) for the run and F-factor for composite sample:
     \[(\text{dscf/min}) \times ((20.9 - \%O_2)/20.9) \times (60 \text{ min/hr}) / \text{(dscf/mmBtu)} = \text{(mmBtu/hr)}\]
   • Determine input/output ratio (mmBtu/mlbsteam) by dividing the fuel heat input rate (mmBtu/hr) for composite by the steam flow rate (mlbsteam/hr) for the run