Statement of Basis

Tier I Operating Permit No. T1-2016.0034
Project ID 61736

Plummer Forest Products, Inc. – Post Falls
Post Falls, Idaho

Facility ID 055-00018

Draft for Facility Review

January 23, 2017
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Permit Writer

The purpose of this Statement of Basis is to set forth the legal and factual basis for the Tier I operating permit terms and conditions, including references to the applicable statutory or regulatory provisions for the terms and conditions, as required by IDAPA 58.01.01.362

1. ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf	million standard cubic feet
MRRR	Monitoring, Recordkeeping and Reporting Requirements
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O_2	oxygen
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge

PTC	permit to construct
PTE	potential to emit
PW	process weight rate
RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T1	Tier I operating permit
T2	Tier II operating permit
TAP	toxic air pollutants
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compound

2. INTRODUCTION AND APPLICABILITY

Plummer Forest Products, Inc. – Post Falls is a particleboard manufacturing facility located at 401 North Potlatch Road in Post Falls, Idaho. The facility is classified as a major facility as defined by IDAPA 58.01.01.008.10.c, because it emits or has the potential to emit NO_x and VOC above the major source thresholds of 100 tons per year, respectively. At the time of this permitting action, the facility is not a major source of HAP emissions. As a major facility, Plummer Forest Products, Inc. – Post Falls is required to apply for a Tier I operating permit pursuant to IDAPA 58.01.01.301. The application for a Tier I operating permit must contain a certification from Plummer Forest Products, Inc. – Post Falls as to its compliance status with all applicable requirements (IDAPA 58.01.01.314.09.)

IDAPA 58.01.01.362 requires that as part of its review of the Tier I application, DEQ shall prepare a technical memorandum (i.e. statement of basis) that sets forth the legal and factual basis for the draft Tier I operating permit terms and conditions including reference to the applicable statutory provisions or the draft denial. This document provides the basis for the draft Tier I operating permit for Plummer Forest Products, Inc. – Post Falls.

The format of this Statement of Basis follows that of the permit with the exception of the facility's information discussed first followed by the scope, the applicable requirements and permit shield, and finally the general provisions.

Tier I operating permit for Plummer Forest Products, Inc. – Post Falls is organized into sections. They are as follows:

Section 1 – Acronyms, Units, and Chemical Nomenclature

The acronyms, units, and chemical nomenclature used in the permit are defined in this section.

Section 2 – Tier I Operating Permit Scope

The scope describes this permitting action.

Section 3 – Facility-Wide Conditions

The Facility-wide Conditions section contains the applicable requirements (permit conditions) that apply facility-wide. Where required, monitoring, recordkeeping and reporting requirements sufficient to assure compliance with each permit condition follows the permit condition.

Sections 4 through 7 – Emissions Unit/Source Name

The emissions unit-specific sections of the permit contain the applicable requirements that specially apply to each regulated emissions unit. Some requirements that apply to an emissions unit (e.g. opacity limits) may be contained in the facility-wide conditions. As with the facility-wide conditions, monitoring, recordkeeping and reporting requirements sufficient to assure compliance with each applicable requirement immediately follows the applicable requirement.

Section 8 – Compliance Assurance Monitoring (CAM)

This section lists the requirements of the CAM plan established in accordance with 40 CFR 64 and modified as outlined in Section 6.

Section 9 – Insignificant Activities

This section lists those requirements that the applicant has requested as non-applicable, and DEQ proposes to grant a permit shield in accordance with IDAPA 58.01.01.325.

If requested by the applicant, this section also lists emissions units and activities determined to be insignificant activities based on size or production as allowed by IDAPA 58.01.01.317.01.b.

Section 9 – General Provisions

The final section of the permit contains standard terms and conditions that apply to all major facilities subject to IDAPA 58.01.01.300. This section is the same for all Tier I sources. These conditions have been reviewed by EPA and contain all terms required by IDAPA 58.01.01 et al as well as requirements from other air quality laws and regulations. Each general provision has been paraphrased so it is more easily understood by the general public; however, there is no intent to alter the effect of the requirement. Should there be a discrepancy between a paraphrased general provision in this statement of basis and the rule or permit, the rule or permit shall govern.

3. FACILITY INFORMATION

3.1 Facility Description

This facility is a particleboard manufacturing facility.

3.2 Facility Permitting History

Table 3.1 is a summary table of the comprehensive permitting history of all underlying applicable permits issued to this Tier I facility, including the prior 5-year permit term from January 17, 2012 to January 17, 2017. This information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

Table 3.1 PERMITTING HISTORY

Issue Date	Permit Number	Project	Status	History Explanation
January 10, 1974	055-00018	Initial PTC a particleboard plant.	S	Initial permit.
November 25, 1980	055-00018	Initial PTC a wood dryer; equipment was never installed.	S	Initial permit.
February 1, 1985	0860-0018 (055-00018)	Initial PTC a wood chip pre-dryer controlled with high-efficiency cyclones; equipment was never installed.	S	Initial permit. Revised by P-000115 (055-00018).
May 22, 2001	P-000115 (055-00018)	Revised PTC a cure monitor and increase annual particleboard production.	S	Revised 0860-0018 (055-00018). Revised by P-010101 (055-00018).
August 17, 2001	P-010101 (055-00018)	Revised PTC a replacement rotary dryer, cure monitor and increase annual particleboard production.	S	Revised P-000115 (055-00018). Revised by P-050104.
August 28, 2002	T1-055-00018	Initial T1.	S	Initial Title V operating permit.
December 10, 2002	T1-020125 (055-00018)	Administrative amendment T1 to change RO and contact.	S	Revised T1-055-00018. Revised by T1-050105.
September 23, 2005	P-050104	Revised PTC Sanderdust project and establish federally enforceable HAP limits.	S	Revised P-010101 (055-00018). Revised by P-2010.0042.
January 5, 2006	T1-050105	Incorporate P-050104 and HAP limits.	S	Revised T1-020125 (055-00018). Revised by T1-060126.
August 18, 2006	T1-060126	Administrative amendment T1 to change the facility name.	S	Revised T1-050105. Revised by T1-060110.
January 17, 2007	T1-060110	Renewal T1.	S	Revised T1-060126. Revised by T1-2007.0011.
March 8, 2007	T1-2007.0011	Administrative amendment T1 to correct typographical errors.	S	Revised T1-060110. Revised by T1-2008.0095.
August 12, 2008	T1-2008.0095	Administrative Amendment T1 to change RO and contact.	S	Revised T1-2007.0011. Revised by T1-2008.0187.
December 23, 2008	T1-2008.0187	Administrative Amendment T1 to change facility name.	S	Revised T1-2008.0095. Revised by T1-2010.0040.
April 22, 2010	P-2010.0042	Revised PTC to change facility name.	S	Revised P-050104. Revised by P-2010.0042 PROJ 60912.
January 22, 2010	T1-2010.0040	Administrative Amendment T1 to change facility name.	S	Revised T1-2008.0187. Revised by T1-2011.0115.
December 12, 2011	P-2010.0042 PROJ 60912	Revised PTC to remove pressure drop monitoring requirements and update equipment descriptions and performance testing schedule.	A	Revised P-2010.0042.
January 4, 2012	T1-2011.0115 PROJ 60894	T1 renewal and incorporation of CAM, NESHAP ZZZZ, and NESHAP JJJJJJ requirements.	S	Revised T1-2010.0040. Revised by T1-2016.0034 PROJ 61736.
January 23, 2017	T1-2016.0034 PROJ 61736	T1 renewal and revised CAM.	A	Revised T1-2011.0115 PROJ 60894.

4. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

4.1 Application Scope

This permit is the renewal of the facility's Tier I operating permit. A modified CAM plan for the Sanderdust Boiler has also been included.

4.2 Application Chronology

June 27, 2016	DEQ received an application.
August 26, 2016	DEQ determined that the application was incomplete.
August 30, 2016	DEQ received supplemental information from the applicant.
September 28, 2016	DEQ determined that the application was complete.
November 22, 2016	DEQ made available the draft permit and statement of basis for peer and regional office review.
November 25, 2016	DEQ made available the draft permit and statement of basis for applicant review.
December 5, 2016 – January 4, 2017	DEQ provided a public comment period on the proposed action.
January 6, 2017	DEQ provided the proposed permit and statement of basis for EPA review.
January 23, 2017	DEQ issued the final permit and statement of basis.

5. EMISSIONS UNITS, PROCESS DESCRIPTION(S), AND EMISSIONS INVENTORY

This section lists the emissions units, describes the production or manufacturing processes, and provides the emissions inventory for this facility. The information presented was provided by the applicant in its permit application. Also listed in this section are the insignificant activities based on size or production rate.

5.1 Group No. 1 – Sanderdust Boiler

Table 5.1 lists the emissions units and control devices associated with the Sanderdust Boiler.

Table 5.1 EMISSION UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION

Emission Unit Description	Control Device Description (if applicable)
44.4 MMBtu/hr Kipper and Sons Sander-Dust Boiler (30,000 lb steam/hr produced)	Multiclone and Electrostatic Precipitator

The boiler is fueled by biomass which comes from Sanderdust from the particleboard sander. The boiler is used to generate steam which then is used to power other processes throughout the facility. The boiler also has the ability to be fueled by natural gas.

5.2 Group No. 2 – Temporary Boiler

Table 5.2 lists the emissions units and control devices associated with the temporary boiler.

Table 5.2 EMISSION UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION

Emission Unit Description	Control Device Description (if applicable)
100 MMBtu/hr propane or natural gas-fired boiler	None

The Temporary Boiler is subject to 40 CFR 60, Subpart Dc.

5.3 Group No. 3 – Wood Handling, Drying and Pressing

Table 5.3 lists the emissions units and control devices associated with wood handling, drying and pressing processes.

Table 5.3 EMISSION UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION

Emission Unit Description	Control Device Description (if applicable)
Drag Chain and Drag Chain Baghouse BH-1	None
Rotex Screens #1, #2; Hammermills, Hammermill Cyclone and Baghouse BH-2	None
Outside Dry Silo	Outside Silo High Pressure Air System Baghouse BH-4
Blender, Former and Scalper Air System Baghouse BH-5	None
Board Cooler; Process Fugitives, Rip and Trim Saws	East Sawline Baghouse BH-9 West Sawline Baghouse BH-10
Board Trim and Reclaim Baghouse BH-3	None
Sanderdust Storage Silo	Sanderdust Storage Silo Baghouse BH-6
Sander Air System Baghouse BH-7	None
Sanderdust Overs Baghouse BH-8	None
Boiler	Electrostatic Precipitator
Particle Dryer	Multiclone
Press	None

The particleboard manufacturing process relies on pneumatic transportation of fine wood particles from one part of the process to another. Baghouses are used throughout the pneumatic transport systems to separate fine wood particles from the transporting air streams. The baghouses are generally transfer points that move material from one point to another. When used as part of the transportation system, baghouses are considered process equipment rather than control equipment.

5.4 Group No. 4 – Emergency Fire Pump Engine

Table 5.4 lists the emissions units and control devices associated with the emergency fire pump engine.

Table 5.4 EMISSION UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION

Emission Unit Description	Control Device Description (if applicable)
Fire pump engine Compression Ignition, 208 bhp	None

The emergency engine is used to provide backup electrical power in the event that power from the local utility company is interrupted. The engine uses natural gas as fuel.

5.5 Insignificant Emissions Units Based on Size or Production Rate

No emissions unit or activity subject to an applicable requirement may qualify as an insignificant emissions unit or activity. As required by IDAPA 58.01.01.317.01.b, insignificant emissions units (IEU's) based on size or production rate must be listed in the permit application. Table 5.5 lists the IEU's identified in the permit application. Also summarized is the regulatory authority or justification for each IEU.

Table 5.5 INSIGNIFICANT EMISSION UNITS AND REGULATORY AUTHORITY/JUSTIFICATION

Emission Unit / Activity	Regulatory Authority / Justification
3,000 gallon diesel fuel tank	58.01.01.317.01.b.i(3)
One 250-gallon motor oil tank	58.01.01.317.01.b.i(1)
One 200-gallon tank ammonium sulfate solution	58.01.01.317.01.b.i(19)
Diesel fuel pump	58.01.01.317.01.b.i(2)
Maintenance shop welding	58.01.01.317.01.b.i(9)
275-gallon diesel fuel tank for emergency fire pump diesel engine	58.01.01.317.01.b.i(3)
15,000-gallon urea resin tank	58.01.01.317.01.b.i(20)
15,000-gallon urea resin tank	58.01.01.317.01.b.i(20)
15,000-gallon urea resin tank	58.01.01.317.01.b.i(20)
Welding vents in the maintenance shop	58.01.01.317.01.b.i(9)
6,000-gallon urea resin tank	58.01.01.317.01.b.i(20)
10,000-gallon ISO resin tank	58.01.01.317.01.b.i(20)
10,000-gallon ISO resin tank	58.01.01.317.01.b.i(20)

5.6 Non-applicable Requirements for Which a Permit Shield is Requested

This section of the permit lists the regulations for which the facility has requested, and DEQ proposes to grant, a permit shield pursuant to IDAPA 58.01.01.325. The facility has not requested a permit shield.

5.7 Emission Inventory

Table 5.6 summarizes the emissions inventory for this major facility. All values are expressed in units of tons-per-year and represent the facility's potential to emit. Potential to emit is defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hour of operation or on the type or amount of material combusted, stored or processed shall be treated as part of its design if the limitation or the effect it would have on emission is state or federally enforceable.

Listed below Table 5.6 are the references for the emission factors used to estimate the emissions. The documentation provided by the applicant for the emissions inventory and emission factors is provided as Appendix B of this statement of basis.

Table 5.6 EMISSION INVENTORY - POTENTIAL TO EMIT (T/yr)

Emissions	PM_{10}	$PM_{2.5}$	NO_X	SO_2	CO	VOC	HAP	CO_2e
Facility-Wide Emissions	111	67	241	4.9	223	100	18	22,837
TOTAL EMISSIONS	**111**	**67**	**241**	**4.9**	**223**	**100**	**18**	**22,837**

All emissions illustrated in Table 5.6 were confirmed via an updated PTE spreadsheet submitted by Plummer Forest Products, Inc. – Post Falls on August 30, 2016; refer to Appendix A for detailed calculations. It should be noted that the emergency fire pump emissions assume that the unit operates 50 hr/yr, although 40 CFR 63, Subpart ZZZZ allows up to 100 hr/yr operation for testing and maintenance.

6. EMISSIONS LIMITS AND MRRR

This section contains the applicable requirements for this major facility. Where applicable, monitoring, recordkeeping and reporting requirements (MRRR) follow the applicable requirement and state how compliance with the applicable requirement is to be demonstrated.

This section is divided into several subsections. The first subsection lists the requirements that apply facility wide. The next subsection lists the emissions units- and emissions activities-specific applicable requirements. The final subsection contains the general provisions that apply to all major facilities subject to Idaho DEQ's Tier I operating permit requirements.

This section contains the following subsections:

- Facility-Wide Conditions;
- Sanderdust Boiler Emission Limits;
- Process Handling Emission Limits;
- Emergency Compression Ignition Engine Emission Limits; and
- Tier I Operating Permit General Provisions.

MRRR

Immediately following each applicable requirement (permit condition) is the periodic monitoring regime upon which compliance with the underlying applicable requirement is demonstrated. A periodic monitoring regime consists of monitoring, recordkeeping and reporting requirements for each applicable requirement. If an applicable requirement does not include sufficient monitoring, recordkeeping and reporting to satisfy IDAPA 58.01.01.322.06, 07, and 08, then the permit must establish adequate monitoring, recordkeeping and reporting sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit. This is known as gap filling. In addition to the specific MRRR described under each permit condition, generally applicable facility-wide conditions and general provisions may also be required, such as monitoring, recordkeeping, performance testing, reporting, and certification requirements.

The discussion of each permit condition includes the legal and factual basis for the permit condition. If a permit condition was changed due to facility draft or public comments, a description of why and how the condition was changed is provided.

State Enforceability

An applicable requirement that is not required by the federal CAA and has not been approved by EPA as a SIP-approved requirement is identified as a "State-only" requirement and is enforceable only under state law. State-only requirements are not enforceable by the EPA or citizens under the CAA. State-only requirements are identified in the permit within the citation of the legal authority for the permit condition.

Federal Enforceability

Unless identified as "State-only," all applicable requirements, including MRRR, are state and federally enforceable. It should be noted that while a violation of a MRRR is a violation of the permit, it is not necessarily a violation of the underlying applicable requirement (e.g. emissions limit).

To minimize the length of this document, the following permit conditions and MRRR have been paraphrased. Refer to the permit for the complete requirements.

6.1 Section 1 – Facility-Wide Conditions

Permit Condition 3.1 – Fugitive Dust

All reasonable precautions shall be taken to prevent PM from becoming airborne in accordance with IDAPA 58.01.01.650-651.

[IDAPA 58.01.01.650-651, 3/30/07]

MRRR (Permit Conditions 3.2 through 3.4)

- Monitor and maintain records of the frequency and the methods used to control fugitive dust emissions;
- Maintain records of all fugitive dust complaints received and the corrective action taken in response to the complaint;
- Conduct facility-wide inspections of all sources of fugitive emissions. If any of the sources of fugitive dust are not being reasonably controlled, corrective action is required.

[IDAPA 58.01.01.322.06, 07, 08, 4/5/2000]

Permit Condition 3.5 – Odors

The permittee shall not allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution.

[IDAPA 58.01.01.775-776 (State-only), 5/1/94]

MRRR (Permit Condition 3.6)

- Maintain records of all odor complaints received and the corrective action taken in response to the complaint;
- Take appropriate corrective action if the complaint has merit, and log the date and corrective action taken.

[IDAPA 58.01.01.322.06, 07 (State only), 5/1/94]

Permit Condition 3.7 – Visible Emissions

The permittee shall not discharge any air pollutant to the atmosphere from any point of emission for a period or periods aggregating more than three minutes in any 60-minute period which is greater than 20% opacity as determined by procedures contained in IDAPA 58.01.01.625. These provisions shall not apply when the presence of uncombined water, nitrogen oxides, and/or chlorine gas is the only reason for the failure of the emission to comply with the requirements of this section.

[IDAPA 58.01.01.625, 4/5/00]

MRRR (Permit Condition 3.8 through 3.9)

- Conduct facility-wide inspections of all emissions units subject to the visible emissions standards (or rely on continuous opacity monitoring);
- If visible emissions are observed, take appropriate corrective action and/or perform a Method 9 opacity test;
- Maintain records of the results of each visible emissions inspection.

[IDAPA 58.01.01.322.06, 07, 5/1/94]

Permit Conditions 3.10 through 3.14 – Excess Emissions

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 facility wide conditions and the regulations of IDAPA 58.01.01.130-136.

MRRR (Permit Conditions 3.11 through 3.14)

Monitoring, recordkeeping and reporting requirements for excess emissions are provided in Sections 131 through 136.

- Take appropriate action to correct, reduce, and minimize emissions from excess emissions events;
- Prohibit excess emissions during any DEQ Atmospheric Stagnation Advisory or Wood Stove Curtailment Advisory;

- Notify DEQ of each excess emissions event as soon as possible, including information regarding upset, breakdown, or safety events.
- Submit a report for each excess emissions event to DEQ;
- Maintain records of each excess emissions event.

Permit Condition 3.15 - Open Burning

The permittee shall comply with the *Rules for Control of Open Burning*, IDAPA 58.01.01.600-623.

[IDAPA 58.01.01.600-623, 5/08/09]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Condition 3.16 - Asbestos

The permittee shall comply with all applicable portions of 40 CFR 61, Subpart M when conducting any renovation or demolition activities at the facility.

[40 CFR 61, Subpart M]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Condition 3.17 - Accidental Release Prevention

An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under 40 CFR 68.115, shall comply with the requirements of the Chemical Accident Prevention Provisions at 40 CFR 68 no later than the latest of the following dates:

- Three years after the date on which a regulated substance present above a threshold quantity is first listed under 40 CFR 68.130.
- The date on which a regulated substance is first present above a threshold quantity in a process.

[40 CFR 68.10 (a)]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Condition 3.18 - Recycling and Emissions Reductions

The permittee shall comply with applicable standards for recycling and emissions reduction of refrigerants and their substitutes pursuant to 40 CFR 82, Subpart F, Recycling and Emissions Reduction.

[40 CFR 82, Subpart F]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Condition 3.19 through 3.20- NSPS/NESHAP General Provisions

This facility is subject to NSPS Subpart Dc, and NESHAP Subparts ZZZZ and JJJJJJ, and is therefore required to comply with applicable General Provisions.

[40 CFR 60, Subpart A]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Condition 3.21 - Monitoring and Recordkeeping

The permittee shall maintain sufficient records to assure compliance with all of the terms and conditions of this operating permit. Records of monitoring information 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 58.01.01.322.06, 07, 5/1/94]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Conditions 3.22 through 3.26 - Performance Testing

If performance testing is required, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test or shorter time period as provided in a permit, order, consent decree, or by DEQ approval. DEQ may, at its option, have an observer present at any emissions tests conducted on a source. DEQ requests such testing not be performed on weekends or state holidays.

All 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, prior to conducting any performance test, the permittee is encouraged to submit in writing to DEQ, at least 30 days in advance, the following for approval:

- The type of method to be used
- Any extenuating or unusual circumstances regarding the proposed test
- The proposed schedule for conducting and reporting the test

[IDAPA 58.01.01.157, 4/5/00; IDAPA 58.01.01.322.06, 08.a, 09, 5/1/94]

MRRR (Permit Conditions 3.23 and 3.26)

The permittee shall submit compliance test report(s) to DEQ following testing.

[IDAPA 58.01.01.157, 4/5/00; IDAPA 58.01.01.322.06, 08.a, 09, 5/1/94]

Permit Condition 3.27 - Reports and Certifications

This permit condition establishes generally applicable MRRR for submittal of reports, certifications, and notifications to DEQ and/or EPA as specified.

[IDAPA 58.01.01.322.08, 11, 5/1/94]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

Permit Condition 3.28 - Incorporation of Federal Requirements by Reference

Unless expressly provided otherwise, any reference in this permit to any document identified in IDAPA 58.01.01.107.03 shall constitute the full incorporation into this permit of that document for the purposes of the reference, including any notes and appendices therein.

[IDAPA 58.01.01.107, 4/7/11]

MRRR

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

6.2 Section 4 – Emissions Unit Group No. 1 – Sander-Dust Boiler Emissions Limits and MRR

The Sander-Dust Boiler is subject to NESHAP 40 CFR 63, Subpart JJJJJJ.

3.4 Compliance Dates

In accordance with 40 CFR 63.11196(a), the permittee must comply with the work practice or management practice standard of a tune-up of the National Emissions Standards for Hazardous Air Pollutants for Industrial Boilers Area Sources, 40 CFR 63, Subpart JJJJJJ by March 21, 2012 and achieve compliance with the energy assessment requirement by March 21, 2014.

[40 CFR 63.11196(a)]

3.7 Initial Compliance Demonstration

In accordance with 40 CFR 63.11214(b), the permittee must conduct a performance tune-up according to §63.11223(b) and must submit a signed statement in the Notification of Compliance Status report that indicates that you conducted a tune-up of the boiler.

In accordance with 40 CFR 63.11214(c), you must submit a signed certification in the Notification of Compliance Status report that an energy assessment of the boiler and its energy use systems was completed and submit, upon request, the energy assessment report.

[40 CFR 63.11214(b)-(c)]

3.18 Notification and Reporting Requirements

In accordance with 40 CFR 63.11225(a)(4), the permittee must submit the Notification of Compliance Status in accordance with §63.9(h) no later than 120 days after the applicable compliance date specified in §63.11196. In addition to the information required in §63.9(h)(2), your notification must include the following certification(s) of compliance, as applicable, and signed by a responsible official:

- *This facility complies with the requirements in §63.11214 to conduct an initial tune-up of the boiler.*
- *This facility has had an energy assessment performed according to §63.11214(c).*

In accordance with 40 CFR 63.11225(b), you must prepare, by March 1 of each year, and submit to the delegated authority upon request, an annual compliance certification report for the previous calendar year containing the following information: For boilers that are subject only to a requirement to conduct a biennial tune-up according to §63.11223(a) and not subject to emission limits or operating limits, you may prepare only a biennial compliance report instead of a semi-annual compliance report. The report must be submitted by March 15 if you had any instance described by the third bullet below.

- *Company name and address.*
- *Statement by a responsible official, with the official's name, title, phone number, e-mail address, and signature, certifying the truth, accuracy and completeness of the notification and a statement of whether the source has complied with all the relevant standards and other requirements of this subpart.*

- *If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken.*
- *The total fuel use by each affected boiler subject to an emission limit, for each calendar month within the reporting period, including, but not limited to, a description of the fuel, whether the fuel has received a non-waste determination by you or EPA through a petition process to be a non-waste under §241.3(c), whether the fuel(s) were processed from discarded non-hazardous secondary materials within the meaning of §241.3, and the total fuel usage amount with units of measure.*

[40 CFR 63.11225(a-b)]

Permit Conditions 3.4, 3.7, and 3.18 of T1 Operating Permit No. T1-2011.0115 PROJ 60894 were revised or removed. Initial compliance requirements were removed from the permit which were satisfied and for which compliance deadlines have passed in Permit Conditions 3.4 and 3.7 No permit conditions have been added or changed for the Sander-Dust Boiler.

6.3 Section 5 – Emissions Unit No. 2 – Temporary Boiler Emissions Limits and MRR

The Temporary Boiler is subject to NSPS 40 CFR 60 Subpart Dc. No permit conditions have been added or changed for the Temporary Boiler.

6.4 Section 6– Emissions Unit No. 3 – Wood Handling, Drying, and Pressing Emissions Limits and MRR

No permit conditions have been added or changed for Wood Handling, Drying, and Pressing operations.

6.5 Section 7– Emissions Unit No. 4 – Emergency Fire Pump Engine Emissions Limits and MRR

The emergency fire pump engine is subject to NESHAP 40 CFR 63 Subpart ZZZZ. No permit conditions have been added or changed for the emergency fire pump engine.

6.6 Section 8 – Compliance Assurance Monitoring and MRR

This section lists the requirements of the CAM plan established in accordance with 40 CFR 64.

The indicator range for pressure drop across the multiclone has been revised based on data provided by the permittee supporting that emissions limits will not be exceeded when operating within this range; the lower indicator value was changed from 0.5 inches water column (IWC) to 0.0 IWC. The frequency for calibration of the voltage meter was also modified to be in accordance with manufacturer specifications.

Table 7.1 Compliance Assurance Monitoring Requirements for the Sander-Dust Boiler

Requirement	Indicator No. 1	Indicator No. 2
Indicator	**Pressure Drop Across Multiclone**	**Secondary Voltage of ESP**
Measurement Approach	The pressure differential gauge with operator readout will be used to measure the pressure drop.	The voltage applied by each T/R set to the discharge electrodes describes the indicator. A continuous voltage monitor with operator readout will be used to measure the voltage from each T/R set.
Indicator Range	An excursion is defined as a pressure outside 0.5 to 6.0 inches of water column.	An excursion is defined as a secondary voltage outside 15 to 65 kilovolts.
Performance Criteria Data Representativeness	The pressure differential ports are located up and downstream of the cyclone array in the multiclone.	The voltage is measured using manufacturer instrumentation provided with the ESP unit.
QA/QC Practices	Instrumentation is calibrated annually. It is observed daily; troubleshooting and maintenance will be initiated at any sign of questionably effective operation. Also, confirm that gauge reads zero when no flow through the unit.	Instrumentation is calibrated annually. It is observed daily; troubleshooting and maintenance will be initiated at any sign of questionable effective operation. Also, confirm that the meter reads zero when the ESP in not operating.
Monitoring Frequency	The pressure differential is monitored continuously and recorded a minimum of once per day.	The voltage is monitored and recorded hourly.
Data Collection Procedure	The pressure shall be recorded in the boiler operating log and maintained for a minimum of 5 years.	The voltage shall be recorded on ESP checklist hourly and maintained for a minimum of 5 years.
Averaging Period [(a)]	Instantaneous (indicator range never to be exceeded)	Instantaneous (indicator range never to be exceeded)

6.7 Section 9 – Insignificant Activities

This section contains a list of units or activities that are insignificant on the basis of size or production rate. Units and activities listed in this section must be listed in the permit application. The regulatory citation for units and activities that are insignificant on the basis of size or production rate is IDAPA 58.01.01.317.01.b.

6.8 Section 10 – General Provisions

Unless expressly stated, there are no MRRR for the general provisions.

General Compliance, Duty to Comply

The permittee must comply with the terms and conditions of the permit.

[IDAPA 58.01.01.322.15.a, 5/1/94; 40 CFR 70.6(a)(6)(i)]

General Compliance, Need to Halt or Reduce Activity Not a Defense

The permittee cannot use the fact that it would have been necessary to halt or reduce an activity as a defense in an enforcement action.

[IDAPA 58.01.01.322.15.b, 5/1/94; 40 CFR 70.6(a)(6)(ii)]

General Compliance, Duty to Supplement or Correct Application

The permittee must promptly submit such supplementary facts or corrected information upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application. The permittee must also provide information as necessary to address any new requirements that become applicable after the date a complete application has been filed but prior to the release of a draft permit.

[IDAPA 58.01.01.315.01, 5/1/94; 40 CFR 70.5(b)]

Reopening, Additional Requirements, Material Mistakes, Etc.

This term lists the instances when the permit must be reopened and revised, including times when additional requirements become applicable, when the permit contains mistakes, or when revision or revocation is necessary to assure compliance with applicable requirements.

[IDAPA 58.01.01.322.15.c, 5/1/94; IDAPA 58.01.01.386, 3/19/99; 40 CFR 70.7(f)(1), (2); 40 CFR 70.6(a)(6)(iii)]

Reopening, Permitting Actions

This term discusses modification, revocation, reopening, and/or reissuance of the permit for cause. If the permittee files a request to modify, revoke, reissue, or terminate the permit, the request does not stay any permit condition, nor does notification of planned changes or anticipated noncompliance.

[IDAPA 58.01.01.322.15.d, 5/1/94; 40 CFR 70.6(a)(6)(iii)]

Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

[IDAPA 58.01.01.322.15.e, 5/1/94; 40 CFR 70.6(a)(6)(iv)]

Information Requests

The permittee must furnish, within a reasonable time to DEQ, any information, including records required by the permit, that is requested in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit.

[Idaho Code §39-108; IDAPA 58.01.01.122, 4/5/00; IDAPA 58.01.01.322.15.f, 4/5/00; 40 CFR 70.6(a)(6)(v)]

Information Requests, Confidential Business Information

Upon request, the permittee must furnish to DEQ copies of records required to be kept by this permit. For information claimed to be confidential, the permittee may furnish such records along with a claim of confidentiality in accordance with Idaho Code §9-342A and applicable implementing regulations including IDAPA 58.01.01.128.

[IDAPA 58.01.01.322.15.g, 5/1/94; IDAPA 58.01.01.128, 4/5/00; 40 CFR 70.6(a)(6)(v)]

Severability

If any provision of the permit is held to be invalid, all unaffected provisions of the permit will remain in effect and enforceable.

[IDAPA 58.01.01.322.15.h, 5/1/94; 40 CFR 70.6(a)(5)]

Changes Requiring Permit Revision or Notice

The permittee may not commence construction or modification of any stationary source, facility, major facility, or major modification without first obtaining all necessary permits to construct or an approval under IDAPA 58.01.01.213, or complying with IDAPA 58.01.01.220 through 223. The permittee must comply with IDAPA 58.01.01.380 through 386 as applicable.

[IDAPA 58.01.01.200-223, 4/2/08; IDAPA 58.01.01.322.15.i, 3/19/99; IDAPA 58.01.01.380-386, 7/1/02; 40 CFR 70.4(b)(12), (14), (15), and 70.7(d), (e)]

Changes that are not addressed or prohibited by the Tier I operating permit require a Tier I operating permit revision if such changes are subject to any requirement under Title IV of the CAA, 42 U.S.C. Section 7651 through 7651c, or are modifications under Title I of the CAA, 42 U.S.C. Section 7401 through 7515. Administrative amendments (IDAPA 58.01.01.381), minor permit modifications (IDAPA 58.01.01. 383), and significant permit modifications (IDAPA 58.01.01.382) require a revision to the Tier I operating permit. IDAPA 58.01.01.502(b)(10) changes are authorized in accordance with IDAPA 58.01.01.384. Off permit changes and required notice are authorized in accordance with IDAPA 58.01.01.385.

[IDAPA 58.01.01.381-385, 7/1/02; IDAPA 58.01.01.209.05, 4/11/06; 40 CFR 70.4(b)(14) and (15)]

Federal and State Enforceability

All permit conditions are federally enforceable unless specified in the permit as a state or local only requirement. State and local only requirements are not required under the CAA and are not enforceable by EPA or by citizens.

[IDAPA 58.01.01.322.15.j, 5/1/94; IDAPA 58.01.01.322.15.k, 3/23/98; Idaho Code §39-108; 40 CFR 70.6(b)(1), (2)]

Inspection and Entry

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

- Enter upon the permittee's premises where a Tier I source is located or 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; IDAPA 58.01.01.322.15.l, 5/1/94; 40 CFR 70.6(c)(2)]

New Applicable Requirements

The permittee must continue to comply with all applicable requirements and must comply with new requirements on a timely basis.

[IDAPA 58.01.01.322.10, 4/5/00; IDAPA 58.01.01.314.10.a.ii, 5/1/94; 40 CFR 70.6(c)(3) citing 70.5(c)(8)]

Fees

The owner or operator of a Tier I source shall pay annual registration fees to DEQ in accordance with IDAPA 58.01.01.387 through IDAPA 58.01.01.397.

[IDAPA 58.01.01.387, 4/2/03; 40 CFR 70.6(a)(7)]

Certification

All documents submitted to DEQ shall be certified in accordance with IDAPA 58.01.01.123 and comply with IDAPA 58.01.01.124.

[IDAPA 58.01.01.322.15.o, 5/1/94; 40 CFR 70.6(a)(3)(iii)(A); 40 CFR 70.5(d)]

Renewal

The permittee shall submit an application to DEQ for a renewal of this permit at least six months before, but no earlier than 18 months before, the expiration date of this operating permit. To ensure that the term of the operating permit does not expire before the permit is renewed, the owner or operator is encouraged to submit a renewal application nine months prior to the date of expiration.

[IDAPA 58.01.01.313.03, 4/5/00; 40 CFR 70.5(a)(1)(iii)]

If a timely and complete application for a Tier I operating permit renewal is submitted, but DEQ fails to issue or deny the renewal permit before the end of the term of this permit, then all the terms and conditions of this permit including any permit shield that may have been granted pursuant to IDAPA 58.01.01.325 shall remain in effect until the renewal permit has been issued or denied.

[IDAPA 58.01.01.322.15.p, 5/1/94; 40 CFR 70.7(b)]

Permit Shield

Compliance with the terms and conditions of the Tier I operating permit, including those applicable to all alternative operating scenarios and trading scenarios, shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that:

- Such applicable requirements are included and are specifically identified in the Tier I operating permit; or
    - DEQ has determined that other requirements specifically identified are not applicable and all of the criteria set forth in IDAPA 58.01.01.325.01(b) have been met.
- The permit shield shall apply to permit revisions made in accordance with IDAPA 58.01.01.381.04 (administrative amendments incorporating the terms of a permit to construct), IDAPA 58.01.01.382.04 (significant modifications), and IDAPA 58.01.01.384.03 (trading under an emissions cap).
- Nothing in this permit shall alter or affect the following:
    - Any administrative authority or judicial remedy available to prevent or terminate emergencies or imminent and substantial dangers;
    - The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;
    - The applicable requirements of the acid rain program, consistent with 42 U.S.C. Section 7651(g)(a); and

- The ability of EPA to obtain information from a source pursuant to Section 114 of the CAA; or the ability of DEQ to obtain information from a source pursuant to Idaho Code §39-108 and IDAPA 58.01.01.122.

[Idaho Code §39-108 and 112; IDAPA 58.01.01.122, 4/5/00; IDAPA 58.01.01.322.15.m, 325.01, 5/1/94; IDAPA 58.01.01.325.02, 3/19/99; IDAPA 58.01.01.381.04, 382.04, 383.05, 384.03, 385.03, 3/19/99; 40 CFR 70.6(f)]

Compliance Schedule and Progress Reports

- For each applicable requirement for which the source is not in compliance, the permittee shall comply with the compliance schedule incorporated in this permit.
- For each applicable requirement that will become effective during the term of this permit and that provides a detailed compliance schedule, the permittee shall comply with such requirements in accordance with the detailed schedule.
- For each applicable requirement that will become effective during the term of this permit that does not contain a more detailed schedule, the permittee shall meet such requirements on a timely basis.
- For each applicable requirement with which the permittee is in compliance, the permittee shall continue to comply with such requirements.

[IDAPA 58.01.01.322.10, 4/5/00; IDAPA 58.01.01.314.9, 5/1/94; IDAPA 58.01.01.314.10, 4/5/00; 40 CFR 70.6(c)(3) and (4)]

Periodic Compliance Certification

The permittee shall submit compliance certifications during the term of the permit for each emissions unit to DEQ and the EPA as specified.

- Compliance certifications for all emissions units shall be submitted annually unless otherwise specified;
- All original compliance certifications shall be submitted to DEQ and a copy of all compliance certifications shall be submitted to the EPA.

[IDAPA 58.01.01.322.11, 4/6/05; 40 CFR 70.6(c)(5)(iii) as amended, 62 Fed. Reg. 54900, 54946 (10/22/97); 40 CFR 70.6(c)(5)(iv)]

False Statements

The permittee may not 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.

[IDAPA 58.01.01.125, 3/23/98]

No Tampering

The permittee may not render inaccurate any monitoring device or method required under this permit or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.126, 3/23/98]

Semiannual Monitoring Reports.

In addition to all applicable reporting requirements identified in this permit, the permittee shall submit reports of any required monitoring at least every six months as specified.

[IDAPA 58.01.01.322.15.q, 3/23/98; IDAPA 58.01.01.322.08.c, 4/5/00; 40 CFR 70.6(a)(3)(iii)]

Reporting Deviations and Excess Emissions

Each and every applicable requirement, including MRRR, is subject to prompt deviation reporting. Deviations due to excess emissions must be reported in accordance Sections 130-136. All instances of deviation from Tier I operating permit requirements must be included in the deviation reports. The reports must describe the probable cause of the deviation and any corrective action or preventative measures taken. Deviation reports must be submitted at least every six months unless the permit specifies a

different time period as required by IDAPA 58.01.01.322.08.c. Examples of deviations include, but are not limited to, the following:

- Any situation in which an emissions unit fails to meet a permit term or condition
- Emission control device does not meet a required operating condition
- Observations or collected data that demonstrate noncompliance with an emissions standard
- Failure to comply with a permit term that requires a report

[IDAPA 58.01.01.322.15.q, 3/23/98; IDAPA 58.01.01.135, 4/11/06; 40 CFR 70.6(a)(3)(iii)]

Permit Revision Not Required, Emissions Trading

No permit revision will be required, under any approved, economic incentives, marketable permits, emissions trading, and other similar programs or processes, for changes that are provided for in the permit.

[IDAPA 58.01.01.322.05.b, 4/5/00; 40 CFR 70.6(a)(8)]

Emergency

In accordance with IDAPA 58.01.01.332, an "emergency" as defined in IDAPA 58.01.01.008, constitutes an affirmative defense to an action brought for noncompliance with such technology-based emissions limitation if the conditions of IDAPA 58.01.01.332.02 are met.

[IDAPA 58.01.01.332.01, 4/5/00; 40 CFR 70.6(g)]

7. REGULATORY REVIEW

7.1 Attainment Designation (40 CFR 81.313)

The facility is located in Kootenai County which is designated as attainment or unclassifiable for PM_{10}, $PM_{2.5}$, CO, NO_2, SO_x, and Ozone. Reference 40 CFR 81.313.

7.2 Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

The facility is major for PM_{10}, NO_x, CO and VOC emissions. Therefore, a Title V operating permit is required.

7.3 PSD Classification (40 CFR 52.21)

The facility does not exceed 250 T/yr of any criteria pollutants nor does the facility exceed 100,000 T/yr of CO_2e. Therefore, **Plummer Forest Products, Inc. – Post Falls** is not classified as a PSD facility.

7.4 NSPS Applicability (40 CFR 60)

The temporary boiler was constructed after June 9, 1989, and the maximum heat input capacity is between 10 and 100 million Btu/hr, and is therefore subject to 40 CFR 60, Subpart Dc. No permit conditions have been added or changed for the temporary boiler.

7.5 NESHAP Applicability (40 CFR 61)

The facility and emission sources are not subject to NESHAP requirements in 40 CFR 61.

7.6 MACT Applicability (40 CFR 63)

The Sander-Dust Boiler is subject to 40 CFR 63 Subpart JJJJJJ – NESHAPS for Industrial, Commercial, and Institutional Boilers Area Sources. No permit conditions have been added or changed for the Sander-Dust Boiler.

The emergency fire pump engine is a new stationary reciprocating internal combustion engine (RICE) subject to 40 CFR 63 Subpart ZZZZ – NESHAPS for Stationary Reciprocating Internal Combustion Engines. No permit conditions have been added or changed for the emergency fire pump engine.

7.7 CAM Applicability (40 CFR 64)

The Sander-Dust Boiler is applicable to CAM. Section 8 of the permit outlines these requirements. Indicators and appropriate ranges were defined as well as general monitoring and recordkeeping requirements. The indicator range for pressure drop across the multiclone has been revised based on data provided by the permittee supporting that emissions limits will not be exceeded when operating within this range; the lower indicator value was changed from 0.5 inches water column (IWC) to 0.0 IWC. The frequency for calibration of the voltage meter was also modified to be in accordance with manufacturer specifications.

It was previously determined that many baghouses at the facility are process equipment as defined by the 1995 EPA Guidance letter outlining the criteria needed to be considered process equipment rather than control equipment. For those baghouses that may qualify as control equipment, none exceed the 100 T/yr requirement for CAM to apply.

7.8 Acid Rain Permit (40 CFR 72-75)

Acid rain provisions do not apply to this facility.

8. PUBLIC COMMENT

As required by IDAPA 58.01.01.364, a public comment period was made available to the public. During this time, comments were not submitted in response to DEQ's proposed action. Refer to the Application Chronology section for a listing of relevant dates.

9. EPA REVIEW OF PROPOSED PERMIT

As required by IDAPA 58.01.01.366, DEQ provided the proposed permit to EPA Region 10 for its review and comment via e-mail. EPA Region 10 responded to DEQ via e-mail indicating that EPA will not be reviewing the proposed permit action, will not object to its issuance, and that the permit is now eligible for issuance. Refer to the Application Chronology section for a listing of relevant dates.

Appendix A - Emission Inventories

POST FALLS PARTICLEBOARD PTE CALCULATION WORKSHEET

Enter values in yellow cells only

	Begin	End						
ROLLING 12 MONTH PERIOD	PTE	PTE				PTE	STEAM PRODUCTION FOR YEAR (MMLB)=	262.8
TOTAL PRESS PRODUCTION (MSF 3/4")/HR =	74,792	HOURS OF OPERATION =		8760		PTE	MAX ANNUAL FURNISH PROCESSED (ODT/yr) =	150,000
TOTAL PRESS PRODUCTION (MSF 3/4")/HR =	12.1						MAX HOURLY FURNISH PROCESSED (ODT/hr) =	22
TOTAL NATURAL GAS USE (MMCF) =	324	3,316,536	Therms/yr				ESTIMATED SANDERDUST CONSUMED (BDT/YR) =	36,850

Est. Tons of Sander dust Burned, From Sheet PF-SB--1 (boiler--wood fuel)

Source/Pollutant	Throughput: Hourly Maximum		Throughput: Annual Maximum		Emission Factor		Emissions: Hourly PTE (lb/hr)	Emissions: Annual PTE (ton/yr)	Emission Factor Source & Remarks
SB-1: KIPPER AND SONS BOILER/WOOD FUEL									Boiler heat input conversion:
CO	37.86	MMBtu/hr	388,524	MMBtu/yr	1.15	lb/MMBtu	43.5	223	Stack test 2/27/01
SO2	37.86	MMBtu/hr	388,524	MMBtu/yr	0.025	lb/MMBtu	0.95	4.86	AP-42, Table 1.6-2 (9/03): wood combustion in boilers
Particulate	37.86	MMBtu/hr	388,524	MMBtu/yr	0.054	lb/MMBtu	2.04	10.5	AP-42, Table 1.6-1 (9/03): wood combustion in boilers, source test 0.0994 lb/hr
PM10	37.86	MMBtu/hr	388,524	MMBtu/yr	0.0408	lb/MMBtu	1.54	7.93	AP-42, Table 1.6-1 (9/03): wood combustion in boilers, source test 0.0994 lb/hr
PM2.5	37.86	MMBtu/hr	388,524	MMBtu/yr	0.035	lb/MMBtu	1.33	6.80	AP-42, Table 1.6-1 (9/03): wood combustion in boilers, source test 0.0994 lb/hr
NOx	37.86	MMBtu/hr	388,524	MMBtu/yr	1.24	lb/MMBtu	46.9	241	Stack test 2/27/01
VOC	37.86	MMBtu/hr	388,524	MMBtu/yr	0.017	lb/MMBtu	0.64	3.30	AP-42, Table 1.6-3 (9/03): wood combustion in boilers
HAPS	37.86	MMBtu/hr	388,524	MMBtu/yr	0.0200	lb/MMBtu	0.76	3.89	AP-42 Section 1.6, Wood combustion, and NCASII Sources, HAPs factors totalled
GHG: CH4 (methane), short tons	37.86	MMBtu/hr	388,524	MMBtu/yr	0.0158	lb/MMBtu	0.60	3.08	Greenhouse Gas Emissions (CH4, N2O, CO2, CO2e [Carbon Dioxide equivalent]) uses emission factors from the Mandatory Greenhouse Gas Reporting Rule. 40 CFR Part 98 - Table C-1, Table C-2 and Table A-1 (Global Warming Potential GWP).
GHG: N2O (nitrous oxide), short tons	37.86	MMBtu/hr	388,524	MMBtu/yr	0.00792	lb/MMBtu	0.30	1.54	
CO2 (carbon dioxide, biogenic), short tons	37.86	MMBtu/hr	388,524	MMBtu/yr	206.36	lb/MMBtu	7,813	40,088	
SB-1: KIPPER AND SONS BOILER/NATURAL GAS FUEL									
CO	43,531	scf/hr	381	mmscf/yr	84	lb/mmscf	3.66	16.0	AP-42 Table 1.4-2 (7/98): Natural Gas Combustion
SO2	43,531	scf/hr	381	mmscf/yr	0.6	lb/mmscf	0.03	0.114	AP-42 Table 1.4-2 (7/98): Natural Gas Combustion
Particulate	43,531	scf/hr	381	mmscf/yr	0.52	lb/mmscf	0.02	0.10	EPA NEI Emission Factors Revised, March 30 2002
PM10	43,531	scf/hr	381	mmscf/yr	0.52	lb/mmscf	0.02	0.10	EPA NEI Emission Factors Revised, March 30 2002
PM2.5	43,531	scf/hr	381	mmscf/yr	0.43	lb/mmscf	0.02	0.08	EPA NEI Emission Factors Revised, March 30 2002
NOx	43,531	scf/hr	381	mmscf/yr	100	lb/mmscf	4.35	19.1	AP-42 Table 1.4-2 (7/98): Natural Gas Combustion
VOC	43,531	scf/hr	381	mmscf/yr	5.50	lb/mmscf	0.24	1.05	AP-42 Table 1.4-2 (7/98): Natural Gas Combustion
HAPs	43,531	scf/hr	381	mmscf/yr	1.89	lb/mmscf	0.08	0.360	AP-42 Table 1.4-2 (7/98): Natural Gas Combustion, HAP factors totalled
GHG: CH4 (methane), short tons	43,531	scf/hr	381	mmscf/yr	2.483	lb/mmscf	0.11	0.473	Greenhouse Gas Emissions (CH4, N2O, CO2, CO2e [Carbon Dioxide equivalent]) uses emission factors from the Mandatory Greenhouse Gas Reporting Rule. 40 CFR Part 98 - Table C-1, Table C-2 and Table A-1 (Global Warming Potential GWP).
GHG: N2O (nitrous oxide), short tons	43,531	scf/hr	381	mmscf/yr	0.226	lb/mmscf	0.01	0.0430	
GHG: CO2 (carbon dioxide), short tons	43,531	scf/hr	381	mmscf/yr	119,767	lb/mmscf	5,214	22,835	
IC-1: FIRE PUMP 1									
CO	208	hp	50	hr/yr	6.68E-03	lb/hp-hr	1.39	0.035	AP-42 Table 3.3-1 (10/96): Diesel Fuel
SO2	208	hp	50	hr/yr	2.05E-03	lb/hp-hr	0.43	0.011	AP-42 Table 3.3-1 (10/96): Diesel Fuel
Particulate	208	hp	50	hr/yr	2.20E-03	lb/hp-hr	0.46	0.011	AP-42 Table 3.3-1 (10/96): Diesel Fuel
PM10	208	hp	50	hr/yr	2.20E-03	lb/hp-hr	0.46	0.011	AP-42 Table 3.3-1 (10/96): Diesel Fuel
PM2.5	208	hp	50	hr/yr	2.20E-03	lb/hp-hr	0.46	0.011	AP-42 Table 3.3-1 (10/96): Diesel Fuel
NOx	208	hp	50	hr/yr	0.031	lb/hp-hr	6.45	0.161	AP-42 Table 3.3-1 (10/96): Diesel Fuel
VOC	208	hp	50	hr/yr	2.47E-03	lb/hp-hr	0.51	0.013	AP-42 Table 3.3-1 (10/96): Diesel Fuel (exhaust TOC)
HAPs	0.530	mmBtu/hr	50	hr/yr	3.87E-03	lb/mmBtu	2.05E-03	5.13E-05	AP-42 Table 3.3-1 (10/96): Diesel Fuel
GHG: CH4 (methane), short tons	0.530	mmBtu/hr	50	hr/yr	6.60E-03	lb/mmBtu	3.50E-03	8.74E-05	Greenhouse Gas Emissions (CH4, N2O, CO2, CO2e [Carbon Dioxide equivalent]) uses emission factors from the Mandatory Greenhouse Gas Reporting Rule. 40 CFR Part 98 - Table C-1, Table C-2 and Table A-1 (Global Warming Potential GWP).
GHG: N2O (nitrous oxide), short tons	0.530	mmBtu/hr	50	hr/yr	1.32E-03	lb/mmBtu	6.99E-04	1.75E-05	
GHG: CO2 (carbon dioxide), short tons	0.530	mmBtu/hr	50	hr/yr	162.7	lb/mmBtu	86.21	2.16	
DRYER: PARTICLE DRYER, BAGHOUSE									
Particulate	22.1	ODT/hr	150,000	ODT/yr	0.04	lb/ODT	0.88	3.00	Oregon AQ-EF02
PM10	22.1	ODT/hr	150,000	ODT/yr	0.04	lb/ODT	0.88	3.00	Assume PM10 is 100% of particulate.
PM2.5	22.1	ODT/hr	150,000	ODT/yr	0.04	lb/ODT	0.88	3.00	Assume PM2.5 is 100% of particulate.
VOC	12.1	MSF(3/4") /hr	74792	MSF(3/4") /yr	1.00	lb/MSF 3/4"	12.10	37.4	NCASI TB 771, Table 6.2.1.
HAPs	12.1	MSF(3/4") /hr	74792	MSF(3/4") /yr	6.75E-02	lb/MSF 3/4"	0.82	2.52	NCASI TB 771, Table 6.2.1. , source tests

Source/Pollutant	Throughput		Emission Factor		Emissions		Emission Factor Source & Remarks
	Hourly Maximum	Annual Maximum	Factor Units		Hourly PTE (lb/hr)	Annual PTE (ton/yr)	
PV-1: PRESS VENT 1							
Particulate	12.1 MSF(3/4") /hr	74792 MSF (3/4") /yr	0.402	lb/ODT	4.86	15.0	Source Tests 2/24/1995
PM10	12.1 MSF(3/4") /hr	74792 MSF (3/4") /yr	0.402	lb/ODT	4.86	15.0	Assume 100% of PM
PM2.5	12.1 MSF(3/4") /hr	74792 MSF (3/4") /yr	0.0402	lb/ODT	0.49	1.50	Assume 10% of PM10
VOC	12.1 MSF(3/4") /hr	74792 MSF (3/4") /yr	1.39	lb/MSF 3/4"	16.82	52.0	Source Tests 2/24/95
HAPS	22.1 ODT/hr	150,000 ODT/yr	0.11	lb/ton furnish	2.39	8.10	Source Tests, 2007
BV-2: BUILDING VENT 2 (North Raw Material Storage Building)							
Particulate	22.1 ODT/hr	75,000 ODT/yr	2.20E-02	lb/ODT	0.485	0.824	AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles, 1/95.
PM10	22.1 ODT/hr	75,000 ODT/yr	1.04E-02	lb/ODT	0.230	0.390	Assume 100% of PM
PM2.5	22.1 ODT/hr	75,000 ODT/yr	1.57E-03	lb/ODT	0.035	0.059	Assume 10% of PM10
BV-3: BUILDING VENT 3 (South Raw Material Storage Building)							
Particulate	22.1 ODT/hr	75,000 ODT/yr	2.20E-02	lb/ODT	0.485	0.824	AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles, 1/95. (See calculations)
PM10	22.1 ODT/hr	75,000 ODT/yr	1.04E-02	lb/ODT	0.230	0.390	Assume 100% of PM
PM2.5	22.1 ODT/hr	75,000 ODT/yr	1.57E-03	lb/ODT	0.035	0.059	Assume 10% of PM10
BH-1, Drag Chain Baghouse							
Particulate	41,960 dscfm	8,760 hr operation/yr	0.010	gr/dscf	3.60	15.8	Conservative estimate used in ISO PTC modelling work
PM10	41,960 dscfm	8,760 hr operation/yr	0.010	gr/dscf	3.60	15.8	Assume 100% of PM
PM2.5	41,960 dscfm	8,760 hr operation/yr	0.007	gr/dscf	2.41	10.6	Assume 67% of PM10 based on DEQ input
BH-3A: Hammer Mill Cyclone Bag Collector							Name changed from BH-2 in 2004 to reflect venting through BH-3
Particulate	25,510 dscfm	8,760 hr operation/yr	0.010	gr/dscf	2.19	9.58	Conservative estimate used in ISO PTC modelling work
PM10	25,510 dscfm	8,760 hr operation/yr	0.010	gr/dscf	2.19	9.58	Assume 100% of PM
PM2.5	25,510 dscfm	8,760 hr operation/yr	0.007	gr/dscf	1.47	6.42	Assume 67% of PM10 based on DEQ input
BH-3: Reclaim Air System Baghouse							
Particulate	19,060 dscfm	8,760 hr operation/yr	0.010	gr/dscf	1.63	7.16	Conservative estimate used in ISO PTC modelling work
PM10	19,060 dscfm	8,760 hr operation/yr	0.010	gr/dscf	1.63	7.16	Assume 100% of PM
PM2.5	19,060 dscfm	8,760 hr operation/yr	0.007	gr/dscf	1.09	4.79	Assume 67% of PM10 based on DEQ input
BH-5A: Outside Silo High Pressure Air System Baghouse							Name changed from BH-4 in 2004 to reflect venting through BH-5
Particulate	5,000 dscfm	8,760 hr operation/yr	0.010	gr/dscf	0.43	1.88	Conservative estimate used in ISO PTC modelling work
PM10	5,000 dscfm	8,760 hr operation/yr	0.010	gr/dscf	0.43	1.88	Assume 100% of PM
PM2.5	5,000 dscfm	8,760 hr operation/yr	0.007	gr/dscf	0.29	1.26	Assume 67% of PM10 based on DEQ input
BH-5: Scalper Air System Baghouse							
Particulate	12,000 dscfm	8,760 hr operation/yr	0.010	gr/dscf	1.03	4.51	Conservative estimate used in ISO PTC modelling work
PM10	12,000 dscfm	8,760 hr operation/yr	0.010	gr/dscf	1.03	4.51	Assume 100% of PM
PM2.5	12,000 dscfm	8,760 hr operation/yr	0.007	gr/dscf	0.69	3.02	Assume 67% of PM10 based on DEQ input
BH-6: Sanderdust Silo Negative Air System Baghouse							
Particulate	5,000 dscfm	8,760 hr operation/yr	0.010	gr/dscf	0.43	1.88	Conservative estimate used in ISO PTC modelling work
PM10	5,000 dscfm	8,760 hr operation/yr	0.010	gr/dscf	0.43	1.88	Assume 100% of PM
PM2.5	5,000 dscfm	8,760 hr operation/yr	0.007	gr/dscf	0.29	1.26	Assume 67% of PM10 based on DEQ input
BH-7: Sander Air System Baghouse							
Particulate	47,660 dscfm	8,760 hr operation/yr	0.010	gr/dscf	4.09	17.9	Conservative estimate used in ISO PTC modelling work
PM10	47,660 dscfm	8,760 hr operation/yr	0.010	gr/dscf	4.09	17.9	Assume 100% of PM
PM2.5	47,660 dscfm	8,760 hr operation/yr	0.007	gr/dscf	2.74	12.0	Assume 67% of PM10 based on DEQ input
VOC	12.1 MSF(3/4") /hr	74,792 #REF!	1.35E-01	lb/MSF 3/4"	1.63	5.05	NCASI TB 771 Table 6.4.1 (sum of THC + HAPs)

Source/Pollutant		Throughput: Hourly Maximum		Throughput: Annual Maximum		Emission Factor: Factor	Emission Factor: Units	Emissions: Hourly PTE (lb/hr)	Emissions: Annual PTE (ton/yr)	Emission Factor Source & Remarks
HAPS		12.1	MSF(3/4") /hr	74,792	#REF!	2.60E-02	lb/MSF 3/4"	0.31	0.97	NCASI TB 768 Table 6.3.1
BH-8: Sanderdust Overs Baghouse										
Particulate		2,500	dscfm	8,760	hr operation/yr	0.010	gr/dscf	0.21	0.939	Conservative estimate used in ISO PTC modelling work
PM10		2,500	dscfm	8,760	hr operation/yr	0.010	gr/dscf	0.21	0.939	Assume 100% of PM
PM2.5		2,500	dscfm	8,760	hr operation/yr	0.007	gr/dscf	0.14	0.629	Assume 67% of PM10 based on DEQ input
BH-10A, East Sawline Baghouse										Name changed from BH-8 in 2004 to reflect venting through BH-10
Particulate		30,000	dscfm	8,760	hr operation/yr	0.010	gr/dscf	2.57	11.3	Conservative estimate used in ISO PTC modelling work
PM10		30,000	dscfm	8,760	hr operation/yr	0.010	gr/dscf	2.57	11.3	Assume 100% of PM
PM2.5		30,000	dscfm	8,760	hr operation/yr	0.007	gr/dscf	1.72	7.55	Assume 67% of PM10 based on DEQ input
VOC		12.10	MSF(3/4") /hr	74,792	MSF (3/4") /yr	3.20E-02	lb/MSF 3/4"	0.39	1.20	NCASI TB 771 Table 6.4.1
HAPS		12.10	MSF(3/4") /hr	74,792	MSF (3/4") /yr	2.05E-02	lb/MSF 3/4"	0.35	1.20	Stack Test Results Jan 16, 2007
BH-10, West Sawline Baghouse										
Particulate		30,000	dscfm	8,760	hr operation/yr	0.010	gr/dscf	2.57	11.3	Conservative estimate used in ISO PTC modelling work
PM10		30,000	dscfm	8,760	hr operation/yr	0.010	gr/dscf	2.57	11.3	Assume 100% of PM
PM2.5		30,000	dscfm	8,760	hr operation/yr	0.007	gr/dscf	1.72	7.55	Assume 67% of PM10 based on DEQ input
VOC		12.10	MSF(3/4") /hr	74,792	ODT/yr	3.20E-02	lb/MSF 3/4"	0.39	1.20	NCASI TB 771 Table 6.4.1
HAPS		12.10	MSF(3/4") /hr	74,792	ODT/yr	1.60E-02	lb/MSF 3/4"	0.35	1.20	Stack Test Results Jan 16, 2007
FUGITIVE EMISSION CALCULATION DUE TO VEHICLE TRANSPORT										
Particulate									9.297	See Spreadsheet
PM10									1.814	See Spreadsheet
PM2.5									0.454	See Spreadsheet
FUGITIVE EMISSIONS DUE TO PILE DROPS										
Particulate									4.15E-03	See Spreadsheet
PM10									1.45E-03	See Spreadsheet
PM2.5									2.20E-04	See Spreadsheet

Facilty Wide Emissions with Baghouse

TOTAL SOx	4.87	tons/yr PTE
TOTAL NOx	241	tons/yr PTE
TOTAL CO	223	tons/yr PTE
TOTAL PM	122	tons/yr PTE
TOTAL PM10	111	tons/yr PTE
TOTAL PM2.5	67.0	tons/yr PTE
TOTAL VOC	100	tons/yr PTE
TOTAL HAPS	17.9	tons/yr PTE
TOTAL CH4	3.08	tons/yr PTE
TOTAL N2O	1.54	tons/yr PTE
TOTAL CO2	22,837	tons/yr PTE (excluding biogenic)

PLUMMER FOREST PRODUCTS
POST FALLS PARTICLEBOARD
HAZARDOUS AIR POLLUTANT (HAP) EMISSIONS SUMMARY

	Wood Boiler	Natural Gas Blr	Fire Pump	Particle Dryer	Sander BH	Sawline Baghouses	Press Vents	HAP Total
	PF-SB-1,Wood	PF-SB-1,Gas	PF-IC-1	Dryer	PF-BH-7	PF-BH-9,10	PF-PV-1	(tpy)
1,1,1-Trichloroethane	5.14E-03							5.14E-03
1,2-Dichloroethane	4.81E-03							4.81E-03
1,3 Butadiene			5.18E-07					5.18E-07
2,3,7,8-Tetrachlorodibenzo-p-dioxins	1.43E-09							1.43E-09
2,4,6-Trichlorophenol	3.65E-06							3.65E-06
2,4-Dinitrophenol	2.98E-05							2.98E-05
Methyl Ethyl Ketone (MEK)	8.95E-04							8.95E-04
4-Nitrophenol	1.82E-05	3.40E-04						3.58E-04
Acetaldehyde	1.38E-01		1.02E-05	2.10E+00			5.98E-01	2.84E+00
Acetophenone	5.31E-07							5.31E-07
Acrolein	6.63E-01		1.23E-06	4.91E-01				1.15E+00
Benzene	6.96E-01		1.24E-05	2.06E-01				9.03E-01
Benzo(a)anthracene	1.08E-05		2.23E-08					1.08E-05
Benzo(a)pyrene	4.31E-04		2.49E-09					4.31E-04
Benzo(b)fluoranthene	1.66E-05		1.31E-09					1.66E-05
Benzo(e)pyrene	4.31E-07							4.31E-07
Benzo(g,h,i)perylene	1.54E-05		6.48E-09					1.54E-05
Benzo(j,k)fluoranthene	2.65E-05							2.65E-05
Benzo(k)fluoranthene	5.97E-06		2.05E-09					5.97E-06
bis(2-Ethylhexyl)phthalate	7.79E-06							7.79E-06
Bromomethane	2.49E-03							2.49E-03
Carbon tetrachloride	7.46E-03							7.46E-03
Chlorine	1.31E-01							1.31E-01
Chlorobenzene	5.47E-03							5.47E-03
Chloroform	4.64E-03							4.64E-03
Chloromethane	3.81E-03							3.81E-03
Dibenzo(a,h)anthracene	1.51E-06							1.51E-06
Dichlorobenzene		1.94E-04						1.94E-04
Dichloromethane	4.81E-02							4.81E-02
Ethylbenzene	5.14E-03							5.14E-03

	Wood Boiler	Natural Gas Blr	Fire Pump	Particle Dryer	Sander BH	Sawline Baghouses	Press Vents	HAP Total
	PF-SB-1,Wood	PF-SB-1,Gas	PF-IC-1	Dryer	PF-BH-7	PF-BH-9,10	PF-PV-1	(tpy)
Formaldehyde	7.30E-01	1.21E-02		7.48E-02		9.00E-01	8.23E-01	2.54E+00
Hexane		2.91E-01						2.91E-01
Hydrogen chloride	3.15E+00							3.15E+00
Indeno(1,2,3,c,d)pyrene	1.44E-05		4.97E-09					1.44E-05
Methanol				2.99E-01	4.86E-01	1.50E+00	2.17E+00	4.45E+00
Methyl isobutyl ketone (MIBK)				4.88E-02				4.88E-02
Naphthalene	1.61E-02	9.88E-05	1.12E-06					1.62E-02
Pentachlorophenol	8.46E-06							8.46E-06
Phenanthrene	1.16E-03	2.75E-06	3.90E-07					1.16E-03
Phenol	8.46E-03			7.54E-01	4.86E-01			1.25E+00
Propanal	5.31E-04							5.31E-04
Propionaldehyde	1.01E-02			1.37E-01				1.47E-01
Styrene	3.15E-01							3.15E-01
Tetrachloroethene	6.30E-03							6.30E-03
Toluene	1.53E-01		5.42E-06	4.50E-01				6.03E-01
Vinyl chloride	2.98E-03							2.98E-03
Xylenes	4.15E-03		3.78E-06	5.78E-02				6.19E-02
Antimony	1.31E-03							1.31E-03
Arsenic	3.65E-03	3.24E-05						3.68E-03
Beryllium	1.82E-04	1.94E-06						1.84E-04
Cadmium	6.80E-04	1.78E-04						8.58E-04
Chromium, total	3.48E-03	2.27E-04						3.71E-03
Chromium, hexavalent	5.80E-04							5.80E-04
Cobalt	1.08E-03	1.36E-05						1.09E-03
Lead	7.96E-03	8.10E-05						8.04E-03
Manganese	2.65E-01	6.15E-05						2.65E-01
Mercury	5.80E-04	4.21E-05						6.22E-04
Nickel	5.47E-03	3.40E-04						5.81E-03
Selenium	4.64E-04	3.89E-06						4.68E-04
							Total	18.29
							Max	4.45

Appendix B – Operation and Maintenance Manuals

PLUMMER
FOREST PRODUCTS

CONTROL SYSTEMS PROCEDURES: BAGHOUSES

Plummer Forest Products, Post Falls
3-1-12, Revised 4/9/13

1.0 Introduction

This document, in accordance with Condition 5.7 of Permit No. T1-2011.0115, Plummer Forest Products, Inc serves as the Control System Procedures document for the inspection and operation of the baghouse/filter systems which controls emissions from the baghouses, transfer point boots/enclosures, and potential transfer point water sprays. It also serves as procedures document for corrective action that will be taken if visible emissions are present from material transfer points at any time, and the methodology used to handle fugitive dust emissions.

1.1 Baghouses

Plummer Forest Products operates and maintains ten baghouses for removing suspended particulate matter from various material handling systems. These baghouses include:

- Two Air Cure series RF,
- Four Day Donaldson series RF, and
- Four Carter Day series RJ units

Operating and maintenance procedures are considered to be the same for each series type.

Specific equipment identifications, series type of cloth bags used and ACFM of air to 1 sq. ft. of cloth (air/cloth ratio) are:

BH ID Location	Series	Air/Cloth Ratio
• BH 1 - Drag Chain Baghouse .	RF	8.97
• BH 2 – Rotex/Hammermills Baghouse	RF	4.06
• PF-BH 3 – Board Trim/Reclaim Baghouse	RF	4.06
• PF-BH 4 – Outside Dry Silo HP Air Baghouse	RJ	36.69
• PF-BH 5 – Blender/Former/Scalper Baghouse.	RJ	14.68
• PF-BH 6 – Sanderdust Storage Silo Baghouse	RJ	30.6
• PF-BH 7 – Sanderdust Air System.Baghouse	RJ	9.89
• PF-BH 8 – Sanderdust Overs Baghouse	RF	15.34
• PF-BH 9 – East Sawline Baghouse	RF	4.68
• PF-BH 10 – West Sawline Baghouse	RF	4.68

1.2 Operating Procedures

Each baghouse works as either the primary or secondary particulate matter separator for air exhausted from a wood residual handling system, and under normal operating conditions do not emit visible emissions.

Visible emissions and differential pressure across the baghouse are monitored to determine if the baghouse is functioning correctly and as a check for potential upset conditions. Any visible emission from a baghouse stack is an indication that the baghouse is not functioning correctly. If visible emissions are observed, the baghouse must be shut down to correct the problem. Each baghouse is equipped with a magnehelic gauge to record the pressure differential across the bag. Excessive positive pressure readings may indicate a plugging situation in a bag or the baghouse.

1.3 Daily Observations

A "see-no see" visible emission observation is conducted daily on all baghouses by the day shift supervisor. It is conducted during daylight hours and under normal operating conditions. (See attachment)

1.4 Visible Emissions

If visible emissions are noted, the supervisor will summon maintenance to check the baghouse and identify the cause of the emissions.

- Maintenance will open the door to the plenum drive area of the baghouse and observe its operation.
- If a bag is torn or has fallen off the cartridge, a constant plume of dust will be visible as it is pulled by the blower fan through the top of the cartridge opening at the location of the bad bag.
- If a bag is not properly secured in place, a plume of dust will billow out when the plenum drive purges that particular section of cartridges/bags.

1.4.1 Corrective Action

To correct one of the problems noted above:

- Maintenance will shutdown and lockout the baghouse. They will enter the cone of the baghouse, secure loose cartridge or remove the defective bag and/or cartridge and replace it with a new one.

- They will then unlock and restart the baghouse and observe the discharge point to ensure there are no further visible emissions.
- If emissions are noted, the above procedures will be repeated until no visible emissions are seen.

1.5 Magnehelic Readings

Magnehelic gauges are located on each baghouse and are read and recorded daily. Minimum and maximum pressure ranges have been established based on manufacture recommendations and historical data. When pressure readings are outside of the maximum range, it indicates that a baghouse is possibly plugging. While an operational plugged baghouse will not emit visible emissions, it does have the potential to cause fugitive dust emissions while unplugging the inoperable baghouse.

The larger baghouses located on site have plug-up detectors installed in the baghouse cone, which alerts operations that the baghouse has malfunctioned and material is building up inside the baghouse. These detectors alleviate having to open up the baghouse and spilling the contents onto the ground.

When magnehelic ranges are excessively outside the established ranges, maintenance will be summoned to check the magnehelic to ensure it is functioning correctly. Generally, blowing out the magnehelic line with compressed air will correct the problem.

- If the magnehelic continues to show excessive pressure, maintenance will open the door to the plenum drive area of the baghouse and observe its operation.
- Common causes of a plugging baghouse are mechanical malfunctions of the plenum drive, purge blower, airlock or feeder.
- If no problems are found, then likely the cloth bags are starting to accumulate build up and restrict airflow through them.

1.5.1 Corrective Action

To correct one of the problems noted above:

- Maintenance will shutdown and lockout the baghouse. They will repair or replace the malfunctioning equipment.
- If bags are starting to plug, a future date will be chosen to change out the bags.

1.6 Baghouse Material Transfer Points

All of the baghouse transfer points are hardpiped closed systems with no anticipated environmental exposure for fugitive dust. The transfer points consist

of enclosed airlocks/feeders that feed material into an enclosed metal chute, which drops material into an enclosed screw conveyor, high-pressure blowpipe or silo.

1.6.1 Leaks At Transfer Points

If the hardpiped transfer connection points leak dust, it is generally due to a poor sealing surface between the metal connection points. Maintenance will stop the dust leak by one or more of corrections below:

- Re-torque bolts at the connecting points or apply silicone adhesive to gaps between connecting points or install insulated weather stripping between connecting points.

1.7 Records of Control System Inspections

The Daily Environmental Performance Report will serve as the primary record for the inspections of baghouses/filter systems, magnehelics and transfer point enclosures. This daily record documents whether any visible emissions were present, and if emissions were present, a description of the corrective action that was taken.

CONTROL SYSTEMS PROCEDURES: RAW MATERIAL STORAGE BARNS

2.0 Introduction

The new barn is where fiber delivery drivers unload their shavings trailers through the use of a hydraulic platform that lifts the trailer into a vertical position. The trailers unload from the back and as the trailer rises to the vertical position, the fiber in the trailer drops through an opening in the metal sided wall into a metal sided pit with screws at the bottom which then transports the material into another set of screws. At that point the system can be set to transport the material into the new barn or over to the old barn.
Fiber deposited in the new barn is conveyed by a screw through the wall and drops from 0-7 ft. to a concrete floor inside the building. Fiber is conveyed to the old barn via a conveyor belt inside a semi-enclosed conveyance system.
Either point where the fiber is transported to requires the use of a bull dozer to move the fiber in the building and mix it with the existing fiber to provide a homogenous blend.

2.1 New Barn

2.1.1

The area where the trailer lift ramp is located is loosely enclosed on two sides by building wall extensions. When the trailer is vertical, the sidewalls help block the wind from carrying fugitive dust that billows up from the fiber dropping into the unloading pit during the unloading process. A small amount of fugitive dust escapes during this process and there are no additional control procedures in place.

2.1.2
The building has roof venting located at the roof peak and proceeding down the length of the roof, is to allow air venting into the building to allow dusts to settle inside the building. Minimal dust escapes and no additional control procedures are in place or planned.

2.1.3
An emergency exit tunnel located at the southwest corner of the building is a secondary escape route to exit the building in the event of a fire on the bulldozer. Control procedures are clear plastic curtains at the end of the tunnel to prevent fugitive dust from escaping. Minimal emissions escape through this tunnel.

2.1.4
The bulldozer entry door alcove is located at the southeast end of the building and is the primary access point into the building to move the fiber into the main building. This opening has a roll up door and the control procedure is keep door closed when the bulldozer is not operating in the building. No fugitive dust escapes. When the dozer is operating in the building, this door must be open to allow for safe operation of the dozer. Depending on wind conditions and the amount of dust in the fiber delivered, some fugitive dust will escape through this opening.

2.1.5
The front end loader entry door is located at the north east corner of the building and is used to transport fiber from inside the building to old barn. This opening has a roll up door and the control procedure is keep door closed when fiber is not being transported to the other barn. No fugitive dust escapes. When the door is open to transport fiber minimal fugitive dust escapes, primarily from bucket of the loader.

2.2 Old Barn

2.2.1
The building has 2 ft. wide openings (venting) running the length of the building on the north and south sides located just below the roof eves. The openings are to allow venting into the building to allow combustible dusts to settle inside the building. Control procedure is wood downdraft structures installed over the roofline openings on the south side of the building to control fugitive dust from

escaping and becoming airborne. Any fugitive dusts exiting the building on the south side are directed by natural airflow into the downdraft structures which extend down the outside of the building approximately 4 ft., directing the fugitive dust downward where it should then fall to the ground, rather than migrating upward into wind currents and past the property line.
The north side vents do not have downdraft structures and fugitive dust is allowed to exist the building. These openings provide pressure relieve inside the building as the building is considered a highly explosive atmosphere for combustible dust. Fugitive dust that escapes on the north side of the building generally do not pose a problem to neighbors as the dust will drop out before reaching the property line. No further controls are planned at this time.

2.2.2
An emergency exit tunnel located at the southwest corner of the building is a secondary escape route to exit the building in the event of a fire on the bulldozer. Control procedure are clear plastic curtains in place at the end of the tunnel to prevent fugitive dust from escaping. Minimal emissions escape through this tunnel.

2.2.3
The conveyance system transporting fiber between the barns is semi-enclosed and a minimal amount of fugitive dust will escape out the side of the system when the wind is strong or when the conveyor belt is not tracking correctly. Control procedure is to ensure belt is monitored by maintenance employees and the dozer operator and tracking correctly.

2.2.4
The end of the conveyance system extends approximately 15 ft. through the wall into the old barn. At that point the belt drops the fiber to the pile below. The distance dropped is dependent on the amount of fiber inside the barn. Generally the distance dropped is 0-17 ft. A control system is a water spray bar mounted at the end of the conveyor belt and is used during summer months when the incoming fiber has low moisture content, to help control combustible dust inside the barn. Currently not used during freezing weather

2.2.5
A front end loader entry door is located at the northeast corner of the building and is used by the loader to enter and exit the building. Control procedure is a plywood wall constructed and configured on the outside of the building entry to slow winds blowing from the north directly into the building, which then creates a positive pressure inside the building forcing fugitive dusts out through the south openings. Second control procedure is a roll up door at the entry and is kept closed when winds circumvent the plywood wall. When the door is open, fugitive dust will escape through it depending on atmospheric and wind conditions. This dust will travel north and stay within the property lines.

2.2.6

A dozer and loader entry door is located at the southeast corner of the building and is used primarily by the dozer to travel between barns. The door is also used by the loader and dozer to access the diesel fueling tank.

Control procedure is a two piece swinging door constructed of clear plastic curtains located on the inside of building above the door. If this door is not maintained in the correct position, considerable fugitive dust will escape the building. The curtain door is kept closed whenever fugitive dust emissions are seen exiting through the door. The door can be kept open when wind and building conditions allow. This door provides an emergency exit for the dozer in the event of a fire on the dozer which is common. It also supplies air to the building to help control the airborne combustible wood dust that is created when the dozer is pushing and mixing fiber.

PLUMMER
FOREST PRODUCTS

Operation and Maintenance (O&M) Manual
Sander Dust Fired Boiler

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TABLE OF CONTENTS

1.0 Introduction

Plummer Forest Products operates the following equipment at their Particleboard facility in Post Falls, Idaho:

Kipper & Sons Boiler

The Idaho Department of Environmental Quality (IDEQ) regulates air contaminant emission and emission control at the facility through Tier I Operating Permit No. T1-2011.0115

In accordance with Condition 3.12 T1-2011.0115 Plummer Forest Products is required to develop an Operation and Maintenance (O&M) Manual containing the following information:

1. General Equipment Descriptions
2. Operating Procedures
3. Start Up, Shutdown and Maintenance practices
4. Upset Conditions guidelines and Corrective Action procedures

Equipment required by the permit conditions to have an O&M Manual include the sander dust fired boiler. The O&M procedures will be addressed in the following sections.

1.1 Record Keeping

As part of our standard operating procedures, a variety of tools are used to check site conditions, monitor for potential air, dust, or water emissions, and to assure continued efficient operation of the plant and emissions control equipment. The following summarizes the environmental record keeping process at Post Falls Particleboard:

Form	Responsibility
1. Daily Environmental Performance Inspection	Shift Supervisors
2. Daily Boiler Operation Report	Boiler Operators
3. ESP Hourly Checklist	Boiler Operators
4. Dryer Report	Boiler Operators
5. Monthly Emissions Observation Form	Safety/Environmental Coordinator.

Original copies of each form are kept on file by plant management.

2.0 Disclaimer

The information contained in this O&M Manual addresses operations affecting air pollutant emissions only. It is **not** a safety manual and must not be used in place of other equipment or facility safety procedures or manuals.

3.0 Sander Dust Fueled Boiler

3.1 General Equipment Description

The Post Falls Particleboard plant uses process steam primarily for a press and drying wood. The fireside of the steam generating system includes the boiler firebox and the components designed to handle the products of combustion i.e. flue gases. The boiler, manufactured by Kipper and Sons, is a multi-fuel unit that is initially fired and pre-warmed using natural gas. When the boiler setting and the electrostatic precipitator electrode chambers reach operating temperature sander dust is injected into the boiler firebox. The sander dust then becomes the sole firing fuel source as the natural gas flow is terminated.

All products of combustion i.e. flue gases, are routed first through a multiclone and then through an electrostatic precipitator (ESP). These components eject collected particulates via an airlock. The only free air exhaust from the boiler is from a stack on the outlet of the ESP. The equipment required by the permit to have an O & M Manual is the boiler, the multiclone, and the electrostatic precipitator (ESP). Each piece of equipment is addressed separately in a following section.

3.2 Operating Procedures

Under normal operations boiler operators monitor the following parameters and maintain them within the guidelines set by plant management:

1. Steam Flow
2. Steam Pressure
3. Exit Gas Oxygen Content
4. Electrostatic Precipitator (ESP) inlet temperature

3.2.1 Steam Flow

The steaming rate must not exceed the allowable rate as determined by the most recent stack test data and the calculation contained in Permit Conditions 3.1 and 3.9

Most Recent Stack Test Date: November 27, 2012
120% of Steaming Rate During Stack Test: 28,975 lbs/hour

The instantaneous rate as measured at least once during any 24-hour period must not exceed the 28,975-lbs/hour limit. If the instantaneous rate exceeds the limit than a 3-hour average will be calculated. If the 3-hour average exceeds the 30,780-lbs/hour limit than the boiler operators will take corrective action to reduce the steaming rate below 30,780 lbs/hour. Plant management will communicate any changes in the allowable steaming rate to the boiler operators.

3.2.1.1`Steam Flow Measurement and Calibration.

Steam flow is measured by a Verabar Differential Pressure Flow Sensor mounted horizontally inside a steam pipe wall. The sensor sends pressure flow information to a SMAR Differential Pressure (DP) Transmitter mounted below. The DP transmitter then sends a 4-20 milliamp signal to a SMAR digital readout located on the boiler control panel.

The Verabar DP Flow Sensor requires pressure and temperature limits calibration and DP verification at initial installation. No further calibration is required during the life of the unit. A calibration CD is included with the purchase of a new Verabar Flow Sensor.

The SMAR DP transmitter and digital readout requires no initial or periodic calibration according to the manufacturer installation instructions.

Quarterly, a work order is issued to blowout the lines with steam that connect the Flow Sensor to the DP transmitter, to ensure steam flow is unrestricted.

3.2.2 Steam Pressure and Temperature

Steam quality is indicated by steam pressure, temperature, and water level. None of these parameters affects air contaminant emissions from the boiler.

The boiler shall not be operated in excess of 300 psi absolute, nor will it exceed the maximum allowable pressure limited under our loss-prevention guidelines

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3.2.4 Boiler Exit Gas Oxygen Content

Boiler exit gas oxygen content is monitored for process reasons; to protect the ESP from fire; and to maintain operational compliance with Tier I permit condition 3.1. Exit gas oxygen requirements are:

Fuel Type	Requirement (PM & O2)
Sander Dust	0.200 gr/dscf at 8% O2
Gas	0.015 gr/dscf at 3% O2

3.2.5 Boiler Exit Gas Temperature

The boiler exit gas temperature is monitored for process reasons and to protect the ESP from damage, with regard to the following parameters:

1. The entrance gas temperature must be maintained below 700°F to avoid damaging internal components of the ESP.
2. Upon startup and prior to applying power to the ESP, the operator should allow flue gases to preheat the ESP well above the dew point.
3. The ESP must be pre-warmed at a rate not to exceed 200°F/hour, and maintained at 300°F for at least two hours before activating.

3.2.6 Boiler Startup

The Particleboard Plant's normal boiler startup procedures are included in **Appendix A**. Selected parts of those procedures that affect air quality are repeated in this section:

1. Adjust fuel ratio as needed to slowly preheat the firebox and flue gas pathway. SLOWLY INCREASE THE TEMPERATURE (MAXIMUM RATE OF TEMPERATURE INCREASE SHOULD NOT EXCEED APPROXIMATELY 200°F/HOUR).
2. Maintain the fuel ratio as necessary to allow for uniform expansion throughout the firebox and flue gas pathway. It is common for moisture to run out of the ESP during this preheat period. The ESP needs to be at 300°F for at least 2 hours before energizing the T/R controllers.
3. Depending on anticipated steam demand, fuel ratio can be raised as necessary. The sander dust pilot mode is typically activated when the fuel ratio is 70% or greater. Confirm that the S.D. Pilot Screw indicator comes on.
4. It is recommended that the boiler not be fired below 30% when in the S.D. Pilot Mode or 20% when in the S.D. Main Burner Mode.

Throughout the startup and pre-warm procedures, all boiler products of combustion i.e. flue gases pass through the multi-cyclone and the ESP

3.2.7 Boiler Shutdown

The Particleboard Plant's normal shutdown procedures are included in **Appendix B**. Boiler exhaust continues to pass through the multiclone and ESP regardless of the firing mode used.

3.3 Upset Conditions (loss of power) Corrective Actions

The Particleboard boiler automatically shuts down during a loss of power. The boiler is usually restarted using the Warm Start procedure found in **Appendix A**. Boiler exhaust continues to pass through the multiclone and ESP during a loss of power event. In the event the boiler will not restart, maintenance is called to troubleshoot and correct the problem.

3.4 Maintenance and Repair

Boiler maintenance and repair procedures are implemented continuously, as needed, to keep the boiler operating efficiently. The boiler is shutdown every weekend during non-freezing weather and cleaned/inspected/repaired as needed. During freezing weather, the boiler is shutdown approximately every 2-3 weeks for cleaning/inspection/repair. Maintenance personnel and operators generate work orders on a routine basis during normal operation. Routine and preventative maintenance is performed during these shutdowns.

Appendix C contains the cleaning procedure followed to ensure the boiler operates efficiently.

4.0 Boiler Multiclone

4.1 Equipment Description

The multiclone removes particulate matter from the boiler exhaust upstream of the ESP and serves as the primary pollution control device. The unit is a ZURN Industries Inc., 70 collector tube, Model #MTSA-70 (67)CYT-A-NRV-STD.

4.2 Operating Procedures

The multi-cyclone has no moving parts and is a low maintenance device. Exhaust from the boiler is routed through the multiclone at all times. A low frequency sonic horn is mounted at the inlet of the multiclone. It is used to keep ash buildup to a minimum. It is cycled automatically once an hour and can be manually activated as desired. It has proved effective in maintaining the desired differential pressures within the multiclone.

4.2.1 Pressure Differential

As part of the standard operating procedures, the Particleboard Plant monitors and records the pressure differential across the multiclone. The pressure differential is continuously monitored and recorded hourly.

The differential range is typically 1.8 to 4.0 inches water column at 70 to 85 % firing ratio. When the differential approaches 4.0"WC, the multiclone is scheduled for cleaning and inspection.

Tier 1 permit allowable range: .5 to 6.0 inches water column

Ash is removed via an airlock and disposed of per the plant ash disposal plan.

4.3 Maintenance and Repair

The multiclone is shutdown and cleaned/inspected/repaired approximately every weekend during non-freezing weather. During freezing weather the multiclone is shut down every 2-3 weeks. Maintenance personnel and operators generate work orders on a routine basis during normal operation. Routine and preventative maintenance is performed when the multiclone is shutdown. A work order is issued annually to open and inspect the multiclone airlock. Repairs are made as necessary.

4.4 Upset Condition

When the pressure differential rises above 4.0 inches water column, the efficiency of the boiler drops dramatically and the operation of the boiler becomes problematic. This is caused from ash building up in and around the multiclone vanes.

4.5 Corrective Action

Plummer Forest Products Particleboard Plant's Boiler Mini-Blowdown procedures are included in **Appendix D**. Selected parts of those procedures that affect air quality are repeated in this section:

1. To temporarily correct the problem a Mini-Blowdown must be performed. This requires shutting down the boiler, dryer steam coils, turbine and waster. The ESP remains in operation.
2. The natural gas valve is locked out, the 2 boiler firebox doors are opened as well as the multiclone transition door, ID fan is set to 85%.
3. A 10 ft. air wand is then inserted though the transition door and air is used to dislodge built up ash around the tubes. All dislodged ash is collected in the ESP.
4. Boiler is restarted using normal warm start procedures.

5.0 Electrostatic Precipitator (ESP)

5.1 Equipment Description

The electrostatic precipitator (ESP) collects particulate matter that has passed through the multiclone. Ash laden gases flow through the ESP with the assistance of a fan. The air is channeled into lanes formed by collection plates. Discharge electrodes are centered between the collection plates to provide a negative charge to the surrounding ash particles. The collection plates are grounded and act as a magnet for the negatively charged ash particles. The area where this process occurs is commonly called transformer/rectifier chambers or T/R units. The collected ash is removed from the collection plates and electrodes with the assistance of a sonic horn cleaning system routing the ash into a collection hopper.

The Particleboard Plant utilizes an ESP manufactured by PPC Industries. The ESP has two T/R units. Boiler exhaust enters through T/R #1 (South unit) and proceeds through T/R #2 (North unit) and then exhausts via a stack.

5.2.0 Operating Procedures

Operation and maintenance procedures keep the ESP from becoming damaged during use. Adequate pre-warming allows for uniform thermal expansion, eliminates free moisture and lessens the danger of possible explosive gas and air mixtures.

The ESP is an ignition source for material, which has not been fully combusted. If sufficient oxygen is present in the flue gas, the ESP can ignite partially burned fuel. The following precautions are vital to preventing fires:

- Maintain the flue gas oxygen below 10%
- Empty the ash hoppers regularly

If any of the above conditions are exceeded, high voltage power to the precipitator is shutoff and the problem is corrected.

5.2.1 Transformer/Rectifier (T/R) Unit Monitoring

As part of the standard operating procedures, the Particleboard Plant monitors and records T/R values. Secondary voltage, secondary current, spark rate, arc rate, and conduction angle are recorded hourly for each T/R unit. Each feedback is monitored for the reasons discussed below:

> ***Secondary Voltage***- KVDC – The secondary voltage is monitored for several reasons. It is used to detect sparks. It is monitored to insure that it does not exceed

the secondary voltage rating of the T/R. It is used to detect over and under voltage alarms and detect back corona.
Secondary Current- mADC- The secondary current is monitored to detect the occurrence of a spark or arc.
Spark Rate/Arc Rate- The spark rate indicates the number of sparks per minute the controller has experienced. The spark rate is monitored to determine if the ESP efficiency has been reduced due to arcing. A spark causes less than a half cycle disruption of performance and can be extinguished by phasing back the SCR's conduction angle slightly. Arc's are kept to a minimum, zero if possible.
Conduction Angle-Cond Angle- Indicates how long each rectifier in a T/R unit is conducting on one half of a line cycle. The unit must be shut down if the cond angle reaches or exceeds 160°.

The Particleboard Plant uses Graphic Voltage Controllers to monitor the ESP's. The display units are adjacent to the boiler control panel.

5.2.2 Operating Ranges

The Particleboard Plant has established the following T/R operating ranges:

#1 T/R Norms
KVDC – 35 to 40
mADC – 60 to 80

#2 T/R Norms
KVDC – 45 to 55
mADC – 160 to 300

Tier 1 permit allowable range:
#1 & #2 T/R
KVDC – 15 to 55

The following general guidelines can assist in interpreting readings.

- ***KVDC*** is relative to the plates. Low, steady KVDC numbers can indicate possible glazing or buildup on plates, ash piled above a plugged hopper, or ash bridged above the discharge screw. Fluctuating KVDC can be the result of a broken or swinging discharge electrode.
- ***mADC*** is relative to the electrodes. Lowered mADC can indicate buildup or glazing of the electrodes.

5.2.3 ESP Operating Guidelines

The following guidelines are contained in the Manufacturers ESP Operating and Maintenance Manual and the Manufacturers Operator Training Program.

- The hoppers are not designed to store ash. The conveying system should be allowed to run continuously.
- The precipitators should not be energized until reaching normal operating temperature and the sonic horns have been turned on.
- Do not operate the precipitator without the insulator compartment blowers in service.
- Operation of the precipitator below the design temperature may cause suspended material in the gas to form a heavy cake build-up. Potential impact includes ESP shutdown, shorting of conductors, and structural damage.
- In the event of a fire within the ESP, turn off the H/V and activate the sonic horns until the fire is extinguished.

5.3 Maintenance Procedures and Corrective Actions

The Particleboard Plant performs regular maintenance and safety training on the ESP as directed by the manufacturer.

Annually, a work order is generated to wash down the plates inside the ESP with water.

The most accurate single indication of precipitator malfunction is a deviation form normal voltage or current drain in the electrode circuit. Because the Automatic Voltage Control System is designed to function effectively only when the precipitator is in proper mechanical order, it can be used to diagnose several categories of mechanical malfunction. Use the ESP Trouble Shooting Guide located in **Appendix E**.

Appendix A: Boiler Normal Start-up Procedure

There are two sections to the boiler startup procedures. The cold start section is when starting the boiler and the boiler firebox setting is completely cold. The warm start section can be used when the firebox and flue gas pathway is still warm. The warm start is usually used after short maintenance periods or after power outages.

Cold Start

1. Confirm that all doors and manholes have been closed and secured.
2. Confirm that the Electrostatic Precipitator (ESP) purge blowers are running. The ESP Transformer-rectifier (T/R) units must be left off until preheated.
3. Reset "Sequence Start" button by pushing.
4. Push reset button on FirEye Flame Monitor.
5. Switch Fuel Selector to Natural Gas Mode
6. Using Loop 1 of the upper SMAR (#1) adjust the fuel ratio until the Low Fire light remains on.
7. Confirm that the Boiler Limits Satisfied light is on.
8. Pull the "Sequence Start" button.
9. The system will automatically go through "Purge" and "Ignition" cycles. When the cycles are completed, the Flame Signal window in the FirEye Flame Monitor will display a number reflecting the brightness intensity of the flame.
10. Remain in the Natural Gas mode.
11. Adjust Loop 1 of #1 SMAR until the fuel ratio is between 15% and 20%.
12. Adjust fuel ratio as needed to slowly preheat the firebox and flue gas pathway. SLOWLY INCREASE THE TEMPERATURE (MAXIMUM RATE OF TEMPERATURE INCREASE SHOULD NOT EXCEED APPROXIMATELY 200°F/HOUR).
13. Maintain the fuel ratio as necessary to allow for uniform thermal expansion throughout the firebox and flue gas pathway. It is common for moisture to run out of the ESP during this preheat period. The ESP needs to be at 300° for at least 2 hours before energizing the T/R controllers.
14. Energize the T/R controllers by depressing the HV button.

15. Adjust the fuel ratio (Loop 1, #1 SMAR) until the Low Fire light comes on. Rotate the Boiler Burner switch to the SD Fuel/Gas Pilot (Sander dust Main Burner/Natural Gas Pilot) position. After the S.D. Fuel Screw indicator lights, slowly begin raising the fuel ratio. Pause periodically to allow firebox pressures to balance.
16. Depending on anticipated steam demand, fuel ratio can be raised as necessary. The sander pilot mode is typically activated when the fuel ratio is 70% or greater. Confirm that the S.D. Pilot Screw indicator comes on.
17. It is recommended that the boiler not be fired below 30% when in the S.D. Pilot mode or 20% when in the S.D. Main Burner Mode.
18. When operational steam pressure is reached, the fuel ratio and waster can be placed in "Auto" on the SMAR controllers.

Warm Start

1. Reset "Sequence Start" button by pushing.
2. Push reset button on Fire Eye Flame Monitor.
3. Switch Fuel Selector to Natural Gas Mode
4. Using Loop 1 of the upper SMAR (#1) adjust the fuel ratio until the Low Fire light remains on.
5. Confirm that the Boiler Limits Satisfied light is on.
6. Pull the "Sequence Start" button.
7. *Using Loop 1 of the upper SMAR (#1) adjust the fuel ratio until the Low Fire light remains on.*
8. *Confirm that the Boiler Limits Satisfied light is on.*
9. *Pull the "Sequence Start" button.*
10. The system will automatically go through "Purge" and "Ignition" cycles. When the cycles are completed, the Flame Signal window in the Fire Eye Flame Monitor will display a number reflecting the brightness intensity of the flame.
11. Assuming no need for preheating and that the ESP T/R controllers are on line, rotate the Boiler Burner switch to the SD Fuel/Gas Pilot (Sander dust Main Burner/Natural Gas Pilot) position. After the S.D. Fuel Screw indicator lights, slowly begin raising the fuel ratio. Pause periodically to allow firebox pressures to balance. Depending on anticipated steam demand, fuel ratio can be raised as necessary. The sander pilot mode is typically activated when the fuel ratio is 70% or greater. Confirm that the S.D. Pilot Screw indicator comes on.
12. It is recommended that the boiler not be fired below 30% when in the S.D. Pilot mode or 20% when in the S.D. Main Burner Mode.
13. When operational steam pressure is reached, the fuel ratio and waster can be placed in "Auto" on the SMAR controllers.

Appendix B: Normal Boiler Shutdown Procedure

1. Rotate the Boiler Burner switch to the SD Fuel/Gas Pilot position. Wait for the S.D. Pilot Screw light to go out.
2. Slowly lower the fuel ratio until the Low Fire light comes on.
3. Rotate the Boiler Burner switch to the Natural Gas position, and wait for the S.D. Burner screw light to go out.
4. Open the water column drain valve. The Low Water Warning Light will come on and then the Low Water Fuel Cutoff Switch will activate and shut down the boiler.

   EXCEPTION: On scheduled maintenance days the boiler will be left in the S.D. Fuel/ S.D Pilot position. The water column drain valve will then be opened to validate that the Low Water Fuel Cutoff Switch works in the S.D. mode to safely shut the boiler down.
5. De-energize the T/R sections of the ESP if the temperature of the ESP is expected to remain below 200°F for any period of time. Depressing the H/V switch on the T/R controllers does this.

Appendix C: Boiler Cleaning Procedures

Shutdown

1. Test boiler pressure relief valves before shutting down
   A. The west valve should open at about 280 p.s.i., and pulling the appropriate handle will test the east valve.
   B. Document test completion on the Daily Boiler Operation Report.

2. Shut boiler down in the SD/SD mode by slowly draining the water column.
   A. Use the mirror to confirm that the low water cutoff switch light functions. Confirm that low water fuel cutoff switch shuts boiler down
   B. Document test on the Daily Boiler Operation Report.

3. When steam pressure drops to 25 lbs, open steam drum vent valve on top of steam drum to bleed off remaining steam pressure and prevent a vacuum on the boiler as it cools.

4. Shut off boiler natural gas valves and insure they are in the off position and lock them out.
   A. Bleed off gas in line by removing cap on outside line

5. Disconnect chemical tank pumps: unplug cord from receptacle

6. Disconnect multi-cone sonic horn: uncouple air hose connector from horn

7. Turn ESP sonic horns to the off position
   Note:
   - **The sonic horns must remain off during the cooling/cleaning process.**
   - Exception: prior to taking breaks, adjust the ID fan to zero, shut off the ID and FD fans, and manually activate the ESP horns. Turn horns off before continuing the cleaning process.
   - **The ESP must be on during the cooling/cleaning process.**

Cooling

8. Switch fans to manual control
   A. Turn ID fan to 30% and slowly open the two firebox doors. The ID fan must be running when opening the doors to reduce the risk of a firebox explosion from unburned fuel or vapors
   B. When opening doors, position body behind doors
9. Follow cool down procedures to stay within State emission standards
   A. Raise ID fan 5% every two minutes until the ID fan is at 85%

   Note:
   - **The ID fan must not exceed 85% at any time during the cooling/cleaning process**.

10. Wait for at least 1-3 hours and then check boiler firebox temperature (this is dependent on outside temperature.
    A. Insert stick with thermometer taped to it, in the southeast firebox inspection door.
    B. When temperature drops to 115 degrees or less, entry is permitted into firebox. This is only a concern during summer months when firebox temp won't drop much below 115.

11. Follow additional lockout procedures
    A. Include tags placed on ID and FD fan MCC's
    B. Lockout both gas valves and firebox entry door.

12. Call Supervisor for a Confined Space Permit
    A. Atmospheric testing **does not** need to be done as part of the entry permit.

Cleaning

13. Turn ID fan down to below 20%

14. Suit up for enter into firebox
    A. Full face or PAPR respirator, tyvek coveralls, wooden shoes, good leather gloves protection, hearing protection.
    B. Note: respiratory protection only needs to be worn in the firebox when blowing down, sweeping, or shoveling, which puts ash into the air.

15. Have 1st helper insert light stand, broom, airhose and 2 wands into firebox
    A. Light is plugged into receptacle on east wall

16. Have 1st helper turn ID fan up, generally between to 50%-85%
    A. Brush down walls with a standard plant floor broom
    B. Blow down ceiling with straight wand
    C. Blow down between all tubes from floor, as high as you can reach
    D. This process should take approximately 20-30 minutes

17. Turn ID fan down to 20% or less
    A. Have 1st helper get into firebox with you
    B. Have 2nd helper insert tube hangers and planks into firebox
    C. Hangers hook on tube braces on east and west end of tubes, approximately 2 tubes in from each end
    D. Place planks on hangers
    E. Turn ID fan up, generally between 50%-85%

18. Use curved air wand to blow down between tubes
    A. Stand on planking and feed curved air wand into the openings between tubes at the top
        i Start at one wall and work your way across to opposite wall

B. The object is to reach down between every tube with curved wand as far as possible to blow out material
C. Have 1st helper move the light as you go from tube to tube so you can see between the tubes
D. 2nd helper is to remain outside to adjust ID fan up or down per your directions

19. Disassemble platform and hangers and hand out of firebox to 2nd helper. Also broom and air hose/wand. Leave light in firebox.
    A. ID fan down to 20% or less to exit firebox
    B. Turn fan back up to 85% when out of firebox

20. Take a break to cool down in Dryer Control Room or outside, which ever is cooler. See below
    A. Outside temperature below 40 degrees: no cool down break required
    B. Outside temperature between 40-80 degrees: 15 minute cool down break
    C. Outside temperature above 80 degrees: 25-30 minute cool down break

21. Have the two helper employees get ready to enter firebox to shovel out material on floor while you are taking a break.
    A. Respirator, tyvek coveralls, wooden shoes, good leather gloves, hearing protection
    B. ID fan down to below 20% to enter firebox

22. When 2 helpers are in firebox and ready to start shoveling.
    A. ID fan up, generally between 35%-55%. Fan needs to be set high enough to keep firebox cool, but not so high that it sucks the ash off the shovel as it is being dumped out the access door. Helpers will tell you if fan is too high or low.
    B. Place wheelbarrow under doorway and when wheelbarrow is full, dump in bucket of front-end loader.
    C. Need 2 wheelbarrows
        i Front end loader needs to be parked at NW corner of boiler building

23. When 2 helpers are finished
    A. Turn fan down to below 20%
    B. Have helpers remove all tools and light from the firebox before exiting

24. Helpers need to take a cool down break in Dryer Control Room or outside, which ever is cooler. **Cool down will become the start of first break or lunch break, not an additional break. Supervisors are responsible for ensuring this is followed.**
    A. Outside temperature below 40 degrees: 15 minute cool down break
    B. Outside temperature between 40–80 degrees: 30 minute cool down break
    C. Outside temperature above 80 degrees: 45 minute cool down break

* ***The boiler operator should also take their lunch break at this time. This will alleviate the problem of one person working and one on break, when 2 people are needed (i.e. cleaning transitions, multiclone, etc)***

25. Clean out back of boiler: If you have 2 helpers all morning, one of them should have already removed most of the bolts.
    A. ID fan off
    B. Check chain fall come-along to top of door making sure it is tight so door won't fall when bolts removed
    C. Use air gun and ¾ socket to remove all bolts and nuts
    D. Use chain hoist to lower door all the way down
    E. Use short shovel to shovel all dust into a wheelbarrow.
        i Empty wheelbarrow in bucket of front end loader
    F. Then use the curved piece of flat iron to reach between tubes and pull material away
    G. Shovel out material into a wheelbarrow
    H. Turn ID fan on ,not to exceed 60%
        i Blowout remaining material and between tubes with air wand
    I. Close door with chain hoist and reinstall bolts and nuts

26. Clean out transition and multicone spinner vane area
    A. Open door and secure with lock, or have helper stand outside the door
    B. ID fan up to between 50%-85%
        i Use straight air wand to blow out inside of transition while standing on the outside, to get rid of any potential unburned fuel on the inside
        ii Blow back to part of transition that is under your feet and hidden from view. This is where unburned fuel will lay
    C. Get inside transition and use curved air wand
        i Have helper turn ID fan down to below 20% to enter transition.
        ii Have helper turn ID fan up 40 % when you are in transition
        iii Blow down spinner vanes around every tube
        iv Can work up one side and down the other to get every tube
    D. Have helper turn ID fan down to below 20%. Exit and close door when done

27. Clean out multicone ash hopper
    A. Open door and secure with lock or have helper stand outside the door
        i Key to lock on door is in Dryer Control room
        ii Lockout airlock
    B. ID fan to 85%
        i Use straight air wand to blow out inside while standing on the outside to get rid of any potential unburnt fuel on the inside
    C. If you have to get inside hopper
    D. ID fan to below 20%
    E. Place plywood floor over airlock inside of cone
        i Get inside and use curved air wand to clean venturies around tubes
        ii ID fan up to between 30%-45%
        iii Also blow between tubes above you
    F. ID fan down to below 20%.
        i Exit and close and lock door when done
        ii Return key to Dryer Control Room

NOTE: Be thoroughly familiar with the risk associated with opening this door. Death and severe injury has occurred when multicones with un-burnt fuel in the hopper area have been opened.

28. Clean out top of multicone
    - A. Open door
    - B. ID fan to 40%-60%
        - i Use straight air wand to blow out inside while standing on the outside to get rid of any potential unburnt fuel on the inside
    - C. ID fan to below 20%
        - i Get inside and use straight air wand to blow down inside each tube all the way to the bottom
        - ii ID fan up to between 35%-55%
    - D. ID fan to below 20%
        - i Exit and close door when done

29. Clean burner ring inside boiler firebox
    - A. ID fan to desired % dependent on the residual heat in firebox
    - B. Get tools from gray cabinet
        - i T-handle, screwdriver, wire brush
    - C. Get into firebox
        - i Use wire brush to brush away dust around burner ring
        - ii Use T-Handle to clean out holes in burner ring
        - iii Use screw driver to chip away build-up that won't brush off
    - D. Inspect for cracks or plugs on around the ring
    - E. Use a firebrick to clean ash off bricks around cone

<u>Start Up</u>

30. Start Up Procedures
    - A. Shut off ID and FD fans.
        - i Turn off T/R controllers and manually activate horns to ESP. Allow ESP screws to clean. Repeat if necessary. Confirm at ash hopper that ESP screw has cleaned itself.
    - B. Unlock boiler components
    - C. Leave ESP off
    - D. Start boiler following normal start-up procedures
    - E. When steam reaches about 25 p.s.i., do a slow water drain on the water column and confirm that the low water fuel cutoff switch shuts the boiler down. Document test on the Dailey Boiler Operational Report.
    - F. Restart boiler
        - i After steam reaches 25 p.s.i., close steam drum vent valve
        - ii Leaving valve open during start up reduces the amount of water and wet steam to the header and plant.
    - G. Run on natural gas for 2 hours to dry out ESP.
        - i Do not turn on ESP until is has been at least 300°F for at least 2 hours. See Boiler Cold Start Procedures for additional information.

Appendix D: Boiler Mini-Blowdown Procedures

PROCEDURE

Preparation for Blow Down

1. Notify supervisor and line operator of your intention to shut down the boiler and the estimated time boiler and wood system will be down
2. Shut off drag chain
    H. Empty wood system (approximately 10 minutes after chain shut off)
    I. Shut off dryer exhaust blower when system is empty
    J. Shut off dryer steam coils. Use control monitor to run set point down to zero. It also is helpful to switch coils to "Summer Mode" on the monitor.
        i This is very important during the winter in order to conserve steam pressure while boiler is down
3. Shut off the turbine and close waster and use electric pump
    K. This can be done while waiting for wood system to empty. Shutting them off helps conserve steam and allows boiler to come up faster when restarting

Boiler Shutdown

4. Use normal boiler shutdown procedures as outlined in Boiler Operational Manual
    L. Kick boiler out by opening water column drain valve

NOTE: Do not shut off ESP

5. Lockout natural gas valve located on the west side of the stairway in Boiler Room

Blow Down

6. As soon as boiler fire is out:
    a. Open 2 firebox doors and multicone transition door.
        i. Opening firebox doors is optional.
    b. Turn ID fan up to a **maximum of 85%**
    c. During this time you can blow down inside of transition.
        i. Connect the 10 ft. air wand lying on top of the boiler to the airhose and insert the wand into the transition and try to blow down around the tubes. Have a flashlight and helper if needed so you can see.
        ii. Blow down inside wide part of transition (under the catwalk) with a curved air wand sitting on top of boiler
        iii. If time allows, you can stick an air wand through boiler firebox side portal doors and blow off vertical risers (tubes at south end of firebox)

NOTE: How much time to keep doors open and ID fan at 100% is dependent upon boiler steam pressure gauge. When it drops to 150 lbs, you need to start boiler back up.

7. Turn ID fan down to 10-20%
    a. Close transition, fire box doors and side doors
8. Start boiler back up
    a. Unlock natural gas valve and turn gas back on
    b. Use normal warm boiler start up procedures as outlined in Boiler Operational Manual
9. Notify supervisor and line operator that boiler is back in operation
10. Restart wood system when boiler pressure returns to normal operational conditions

Pre-planning is essential: tools gathered up that are needed, lockout lock, etc... It also helps having a second person to run the ID fan and monitor boiler steam pressure. If all goes well and the boiler starts back up at about 150 lbs steam pressure, there will be no downtime at the press.

Appendix E: ESP Trouble Shooting Guide

TROUBLE-SHOOTING PRECIPITATORS (DRY)
(Electro-Mechanical Malfunctions)

The most accurate single indication of precipitator malfunction is a deviation from the normal voltage or current drain in the electrode circuit. Because the Automatic Voltage Control System is designed to function effectively only when the precipitator is in proper mechanical order, it can be used to diagnose several categories of mechanical malfunction.

Use of the following Table, therefore, assumes that the Automatic Voltage Control System has been checked out and is functioning properly. It is important to remember that this Table is to be used only as a general guide and that visual inspection, observing all precautions, must often be used to determine a specific cause of trouble within a general category.

A-C PRIMARY READINGS VOLTAGE -	CURRENT	CONDITION	POSSIBLE CAUSE	SHUT - DOWN	METHOD OF INSPECTION	CORRECTION
None	None	Primary Circuit Open	Circuit breaker open or tripped Open reactor secondary (A-C)	Optional Mandatory	Visual VOM (Power Off)	Reset or close breaker Check primary wiring Replace reactor
High	Minimal	Secondary Circuit Open	Precipitator not connected Faulty or open disconnect Bus open Faulty rectifier (Open)	Mandatory " " "	VISUAL (Power Off) VISUAL & VOM (Power Off) VISUAL (Power Off) MEGGER (Power Off)	Replace missing or corr & strips Check - repair Install missing bus sectic Replace transformer set Check primary circuit wi
High	Minimal	Open Primary	Open transformer primary	Mandatory	VOM (Power Off)	Replace transformer set
Low	Low	Open Reactor	Open in DC reactor circuit	Mandatory	VOM (Power Off)	Check reactor DC circuit
Low	Rated (Steady)	Direct Short *	Casing to H.V. support contact Cracked support on duct insulator Grounding rod or tools Shorted transformer - rectifier	Mandatory " " "	VISUAL (Power Off) VISUAL (Power Off) VISUAL (Power Off) MEGGER (Power Off)	Repair Replace insulator(s) Remove shorting object Replace entire unit
Low	Rated (Irregular)	High Resistance Short *	Electrode-to-curtain clearance High dust level (no hopper evacuation) Excessive dust on curtain Excessive dust on electrode Support insulator arcing Foreign material present	Optional " " " " " "	VISUAL (Power Off) VISUAL (Power Off) VISUAL (Power Off) VISUAL (Power Off) VISUAL (Power Off) VISUAL (Power Off)	Repair or remove & repl electrodes Check & repair hopper c valves and Rod hopper to remove b Check: Horn Operation Presence of moisture Change of operating c Check: Horn Operation Presence of moisture Change of operating c Clean insulators and che cracks Chips or weld splatter Remove paper towels, r boards, etc.

NOTE: DISCONNECT SYSTEM MAY BE UTILIZED TO LOCATE OFFENDING FIELD. CAUTION - DO NOT ATTEMPT SECONDARY CIRCUIT VOLTAGE READINGS. ALL SECONDARY READINGS ARE TO BE MADE WITH <u>POWER OFF</u> AND ARE RESISTANCE READINGS ONLY.	NOTE: WHERE VISUAL INSPECTION FOR LOCATION OF SHORTS HAS B UNPRODUCTIVE, IT MAY BE FEASIBLE TO OPEN THE HOPPER PORTS A OPERATING PRECIPITATOR UNDER AIR LOAD, VISUALLY LOCATE THE / ARCING. THIS PROCEDURE SHOULD BE USED ONLY WHEN THERE IS I UNDERSTANDING OF THE HAZARDS INVOLVED AND WHEN ADEQUATI SAFEGUARDS HAVE BEEN ESTABLISHED TO CONTROL THEM.

Appendix F: ESP Voltage Controls Calibration

PPC Industries
3000 E. MARSHALL AVE. LONGVIEW, TEXAS 75601 903-758-3395 FAX 903-758-6487

CALIBRATION PROCEDURE FOR

GVC OPTIMIZER VOLTAGE CONTROLS

I TOOLS NEEDED:

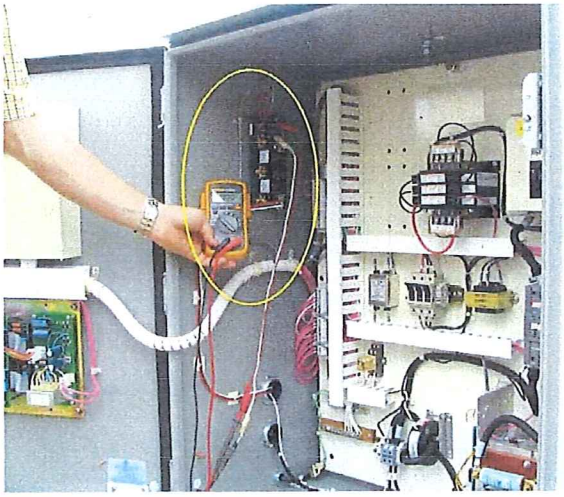
- A true RMS voltmeter
- A true RMS clamp on ammeter (optional)
- 2 each Alligator Clips
- Calculator

II PURPOSE:

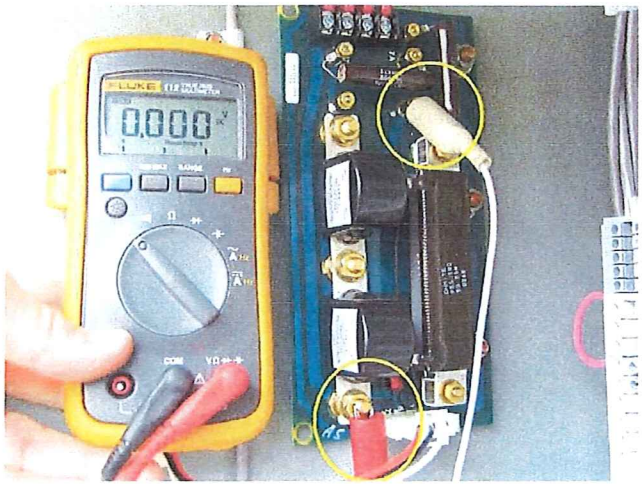
The purpose of this article is to allow ESP Power Optimizer users to calibrate their system for peak efficiency.

III DETERMINE SHUNT RESISTOR VALUE:

- Locate the feedback resistor board



- With the power off measure the resistance (ohms) between points 5 and 9 to determine the value of the milliamp shunt resistor. Common values of this resistor are 6, 10, 20, & 30 ohms.



IV PROCEDURE:

Make sure the T/R ratings. As well as the cal set-up section parameters are correct in the GVC, which are the values of the feedback resistors, the ratios of the PT and CT, and desired operating parameters.

Energize the T/R controller to one of the three limits (voltage, current, or maximum conduction angle). The controller must NOT be sparking during calibration. If the T/R controller is sparking, place the controller in the MANUAL mode and lower the conduction angle until the T/R controller stops sparking.

Then select the Cal screen on the main menu with the enter key. In some models this may be located under the Ratings submenu.

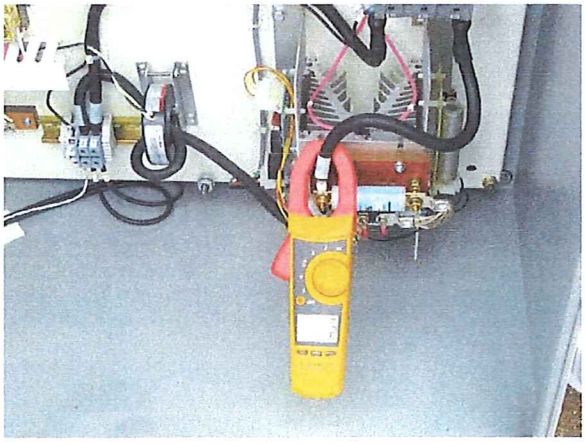
On the Cal screen you will find:
Primary Volt Gain (VAC)
Primary Amp Gain (AAC)
KV1 Gain (KV1DC)
Sec Amp or MA Gain (MADC)

We will use these menu items to calibrate each operating parameter (VAC,AAC,KVDC,MADC) of the unit.

V-A CALIBRATING PRIMARY CURRENT (TWO METHODS):

Method 1 (Using clamp on ammeter - Preferred)

- Place the true RMS clamp on ammeter on a T/R power wire.
- Adjust the Primary Amps Gain with the <+Incr> and <-Decr> keys until the GVC display matches the clamp on ammeter reading.



Method 2 (Using voltmeter)

- Using the true RMS AC voltmeter, read the voltage across R6. (R6 is the large .04 ohm, 10 W resistor on the D20157 board) Using Ohm's Law, the voltage across R6 divided the resistance of R6 is the current flowing through R6. This current is generated from the current transformer (CT) and is a ratio of the primary current.

  A normal CT ratio is 100 to 5 or 20 to 1. If the primary current is 20 amps, the CT will generate 1 amp.

  NOTE: 100 to 5 is a normal value, the value depends on the design of the T/R controller.

  The formulas to calculate primary current are shown below:

  CT current = Voltage R6 / Resistance R6 [.04 ohms]

  Primary Current = CT ratio * CT current

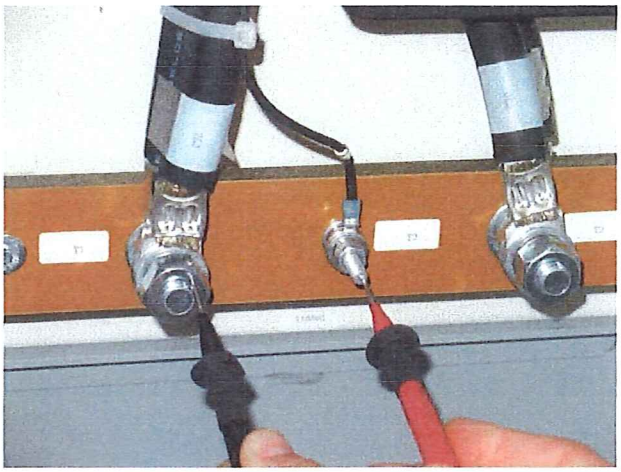
- Using the <+Incr> and <-Decr> adjust Primary Amps Gain until the GVC display matches the primary current calculation.

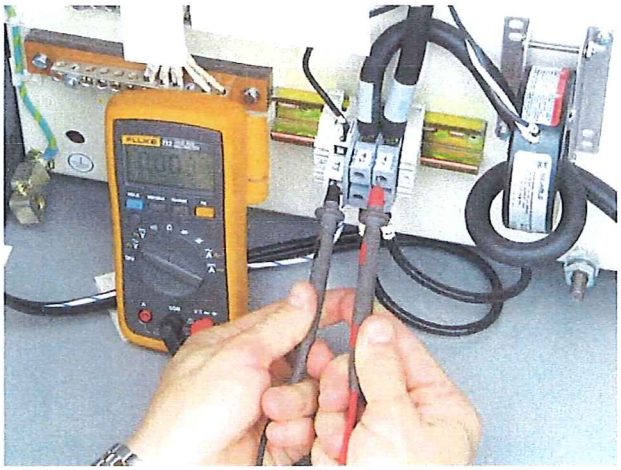
V-B CALIBRATING PRIMARY VOLTAGE:

- Using the true RMS AC voltmeter, read the voltage across the primary of the transformer (T1 and T3).

  NOTE: Be careful not to read the voltage of the reactor or the transformer and the reactor.

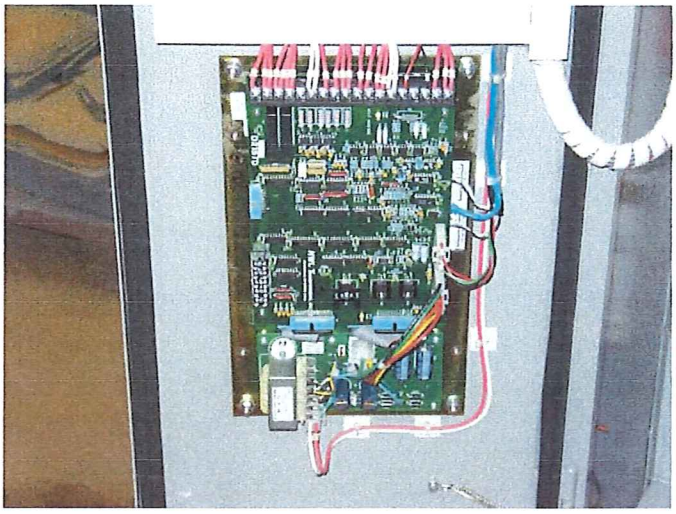
- Using the <+Incr> and <-Decr> keys adjust the Primary Volt Gain until the GVC display matches the T1-T3 voltage reading.



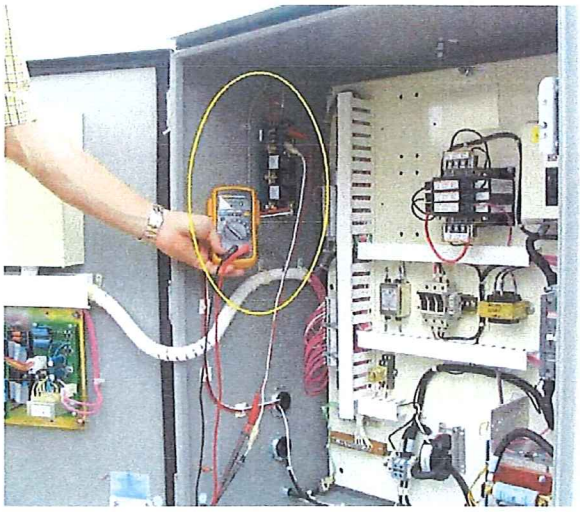


V-C CALIBRATING THE SECONDARY:

- Locate the Microprocessor Controller board located in the control cabinet.



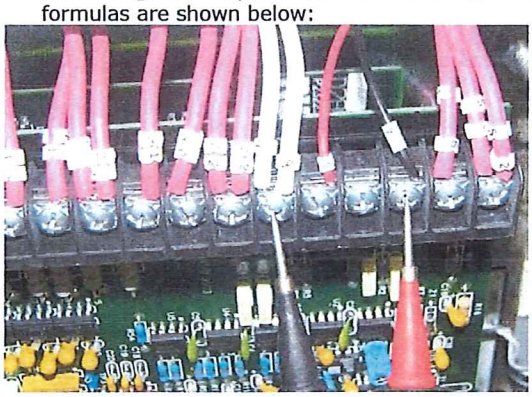
- Or Locate the Feed Back Board



V-C1 CALIBRATING SECONDARY VOLTAGE (KV1):

- Using the DC voltmeter, read the voltage across the secondary voltage divider. Again, each design is different, but NWL usually uses an 120 Meg ohm resistor on 65kv & 75kv units and an 80 Meg ohm resistor on 55kv units, in series with two series 10 K ohm resistors as a voltage divider.

- The voltage across points 7A and 9 is a ratio of the secondary voltage. The formulas are shown below:



KV = 12 * Voltage 7A – 9 (for 120 meg ohm t/r's) or
KV= 8 * Voltage 7A – 9 (for 80 meg ohm t/r's)

- Using the <+Incr> and<-Decr> keys ,adjust the KV1 Gain until the GVC display matches the calculated secondary voltage reading.

V-C2 CALIBRATING SECONDARY CURRENT (KV1):

- With the high voltage on, using the DC voltmeter, read the voltage across points 5 and 9. This voltage divided by the resistance of the milliamp shunt resistor yields the secondary current. The formula is shown below:

  Secondary Current = DC Voltage (5 and 9) *1000 / milliamp shunt resistor

- Using the <+Incr> and <-Decr> keys adjust the Secondary Current Shunt value until the GVC display matches the calculated secondary current reading.