INTERNATIONAL PAPER CORPORATION
PENSACOLA MILL

MACT I AND MACT II

STARTUP, SHUTDOWN, AND MALFUNCTION PLAN

DRAFT

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1. GENERAL INTRODUCTION

1.1 PURPOSE

It is the policy of International Paper and the Pensacola Mill to manage personnel and operations in full compliance with environmental laws and regulations, and in a manner that will minimize the potential impact on the environment.

This Startup, Shutdown and Malfunction (SSM) Plan outlines the management systems and procedures for implementation at this facility as required by federal regulation 40 CFR 63.6(e). The objective of the plan is to document procedures that minimize the release of hazardous pollutants during periods of startup, shutdown and malfunction of emission sources, associated pollution control equipment and monitoring equipment. During startup and shutdown, good safety and air pollution practices will be invoked to the greatest extent practicable to ensure compliance with the emission limitations in the applicable standard. If this is not possible, the actions outlined in this plan will be invoked to minimize emissions to the greatest extent practicable.

This SSM plan will be updated within 45 days of an event that is not addressed or is inadequately addressed in the plan. The plan will be revised when there is a change in mill design, construction, operation, or maintenance that materially affects the potential for emissions to exceed regulated limits. The plan will be retained for the life of the affected source. Superseded versions of the plan will be retained for a period of 5 years. This plan will be made available upon request to the Florida Department of Environmental Protection (FDEP) and/or EPA Region IV.

1.2 REGULATORY REQUIREMENTS

The U.S. EPA has published various National Emission Standards to control the release of Hazardous Air Pollutants (HAPs) to air and water from the pulp and paper industry. These emission standards are published in the Code of Federal Regulations at:

- 40 CFR 63, Subpart S - Pulp and Paper Industry NESHAP (also referred to as the Cluster Rule or MACT I)
- 40 CFR 63, Subpart MM - Chemical Recovery Combustion Sources NESHAP (also referred to as MACT II)

Sources regulated by each of the above subparts are also required to meet the General Provisions, promulgated at 40 CFR 63, Subpart A. The General Provisions codify general procedures and criteria for implementing the emission standards in each of the industry specific subparts. The requirements for developing a written Startup, Shutdown and Malfunction (SSM) Plan are fragmented throughout the General Provisions and within the individual subparts as follows:

§63.2 - Definition of startup, shutdown and malfunction
§63.6(e) - Operation and maintenance requirements
§63.6(e)(3) - SSM plan purpose and requirements
§63.6(f) - Statement that non-opacity standards apply except during SSM events
§63.6(h) - Statement that opacity standards apply except during SSM events
§63.8(c) - Operation and maintenance of continuous monitoring systems (CMS)
§63.10(b)(2) - SSM recordkeeping
§63.10(c) – Additional recordkeeping requirements for sources with CMSs
§63.10(d)(5)(i) – Periodic SSM reporting requirements
§63.10(d)(5)(ii) – Immediate SSM reporting requirements
§63.866 (a) – Startup, Shutdown and Malfunction plan (MACT II)

This SSM Plan has been developed to address all of the MACT regulated systems including the associated process equipment, air pollution control equipment and continuous monitoring equipment.

The purpose of this plan is to:

1.) Ensure at all times that *emission sources*, including associated *air pollution control equipment* and *monitoring equipment*, are operated in a manner consistent with safety and good air pollution control practices for minimizing emissions.

2.) Ensure malfunctions are corrected as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants (or in the case of continuous monitoring systems, ensure malfunctions are corrected as soon as practicable in order to minimize downtime).

3.) To identify the Mill's reporting requirements for periods of startup, shutdown, and malfunction including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation.

Excess emissions during startup and shutdown refer to non-typical emissions from initiating and stopping manufacturing process operations. Malfunctions refer to excess emissions occurring outside of the ability to reasonably control upset conditions and equipment failures. The regulatory definitions for startup, shutdown and malfunction are:

Startup - The setting in operation of an affected source for any purpose.

Shutdown - The cessation of operation of an affected source for any reason.

Malfunction - Any **sudden**, **infrequent** and **not reasonably preventable failure** of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

Deviations from the SSM plan are allowed only in those instances where the plan does not address or inadequately addresses good pollution control practices or when it is necessary to prevent loss of life, personal injury or severe property damage. Regardless of whether the plan has or has not be deviated from, actions must be taken *as soon as practicable*: 1) to minimize the period of excess emissions and operating parameter exceedances, and 2) to minimize periods of CMS downtime.

1.3 PLAN MAINTENANCE AND UPDATES

The Environmental Department maintains a hard copy of this Plan. An electronic copy of the most recent SSM Plan is located on the Mill's intranet site for accessibility in all operating areas. The Environmental Engineer responsible for air compliance has the overall responsibility to ensure that the Plan is maintained and updated as required by the rules (see Section 1.1). The Environmental Engineer works with the Area Process Managers to obtain the information needed to maintain and update the Plan. The Pensacola Mill's standard approach that outlines the procedures for modifying the SSM Plan for a given system is detailed below:

- Area Process Managers notify the Environmental Engineer immediately when procedures inconsistent with the Plan must be incorporated to respond to an SSM event.
- Area Process Managers track the MACT regulated equipment and systems in the Area and notify the Environmental Engineer in the event that the systems will change in any fashion that affects the validity of the Plan.
- The Environmental Engineer updates the Plan consistent with the new procedures or systems. The updated Plan must be clearly labeled with the revision date.
- The Environmental Department maintains one copy of the earlier versions of any Plan revisions.

The Pensacola Mill's document control system procedures are applicable to this Plan. However, all earlier versions of the Plan that have been subsequently revised will be maintained by the Environmental Department for a period of five years.

1.4 STANDARD OPERATING PROCEDURES, EQUIPMENT MALFUNCTION CLASSIFICATIONS AND EQUIPMENT MAINTENANCE PROGRAM

1.4.1 REFERENCE TO STANDARD PROCEDURES and Equipment Malfunction Classifications

Certain sections of this SSM Plan reference other Pensacola Mill documents, including preventative maintenance procedures, standard operating procedures for equipment and systems, and other similar mill documents. When referring to other documents, this SSM Plan is referring to the most recent version of any such applicable document and is only referring to the portions of the referenced document that are specifically applicable to the equipment or system to which the relevant portion of this SSM Plan is directed.

In addition, certain equipment malfunction classifications that result in MACT excess emissions are referred to throughout this document. Therefore, in this document, these equipment malfunction classifications shall have the general meaning given to them as follows:

- **Electrical Malfunction** – Refers to the loss or interruption of electrical power serving equipment associated with a particular process.
- **Mechanical Malfunction** – Refers to the loss of mechanical components of a system such as pumps, motors, drives, etc.
- **Process Malfunction** – Refers to an upset condition caused by process variability such as loss of steam flow, K number out of range, plugged lines/reactors, etc..
- **Instrument/Process Control Malfunction (PCS)** – Refers to the inability of the process logic controller (digital or analog), process monitoring equipment, or distributive control system equipment to perform a required task.

1.5.2 Equipment Maintenance Program

In accordance with □63.6(e), all process equipment, pollution control equipment and continuous monitoring systems affected by the SSM requirements will be operated and maintained in such a

fashion as to minimize emissions (*general duty*). Mill production and maintenance departments have the responsibility to ensure that equipment repairs are made in an expeditious manner.

1.5.2.1 Maintenance Tracking Database

A maintenance tracking database will be used to track the maintenance history of the equipment identified as potentially impacting the MACT standard, "critical" equipment. Examples include:

- pollution control equipment (specified by the standard),
- continuous monitoring systems (specified by the standard),
- process equipment, i.e., equipment failures known to create excess emissions (specified by the general duty clause),
- process surrogate parameters for detecting excess emissions (specified by the general duty clause).

Critical pieces of equipment will be "flagged" in the maintenance database and may be subject to one or more of the following types of maintenance:

- Preventative Maintenance
- Shutdown Maintenance
- Emergency Maintenance
- Mill Outage Maintenance
- No-destructive Testing (mechanical integrity)
- Vibration Analysis

The maintenance frequency will be based on the manufacturer's recommendations, equipment history, or the industry standard. Adjustments in the frequency will be made as necessary. Mechanical problems identified during basic care routes will be identified in the work request system and repaired at the next available opportunity or during the next shutdown depending on the severity of the problem and the potential environmental impact.

1.5.2.2 Work Request System

Work requests will be used to document all maintenance of critical equipment (including emergency and unscheduled repairs) as required by □63.8(c)(1)(i) and □63.10(b)(2)(iii), (x), (xi). When a work order is complete, the instrument electrician or mechanic must clearly indicate on the work order his/her *name, date* and what (if any) *problems* were identified. The acting area maintenance supervisor must sign his/her name certifying that the PM route has been properly completed. Completed work orders will be retained on file by each maintenance process manager for a period of 5 years [□63.10(b)].

1.5.2.3 Delinquent Reports

If a PM has not been completed by the due date, the maintenance tracking database (SAP) interface will indicate the due date, status and keep it on the schedule until complete.

1.5.2.4 Spare Parts

Sufficient spare parts must be readily available at all times to ensure timely repair or replacement of critical equipment and CMS instruments [63.8(c)(1)(i)]. The spare parts maintained onsite will be based on manufacturer recommendations and/or equipment history. Spare parts maintained are indicated in SAP and are automatically restocked once used.

1.5.2.5 Continuous Monitoring Systems

All CMS's specifically required by the NESHAP standard will be calibrated, operated and maintained according the manufacturers specifications. Calibration checks, adjustments and maintenance are documented by the work request system and/or the CEMS monitor downtime logbooks.

1.5.2.6 Equipment Modifications

All process modifications and changes to affected equipment will be evaluated to determine the possible impact to ant regulated system described in the plan (i.e., LVHC collection and treatment, foul condensate collection and treatment, bleach plants, etc.). An environmental checklist will be completed for capital projects and routed through the appropriate approval process. Indirect work requests will be reviewed by the production area superintendent or area maintenance manager (or designee) for possible SSM plan implications.

1.5 PLAN ORGANIZATION AND CONTENT

The SSM Plan has been organized into two parts to correspond to the MACT I and MACT II affected sources at the mill. Within these parts, each system regulated under the MACT rules are addressed and an individual SSM Plan is identified. The following information is summarized for each Regulated system:

- *Process Descriptions* – Includes individual subsections for each of the Mill's MACT regulated areas. Each subsection includes an overview of the regulated systems in the area and details for the process equipment, pollution control equipment and continuous monitoring systems in the area including simple process flow diagrams showing pertinent details.
- *Process Operating Time* – Process operating time or time when there is a Potential to Emit (PTE) has been defined for each regulated source. The Proficy System is an electronic database programmed to "poll" the process for excess emissions and CMS downtime only while the process is running i.e., only during periods when the PTE = CAN EMIT. No hazardous air pollutants would be emitted in a CAN NOT EMIT state.

- *SSM Events* – Includes subsections for each of the Mill's MACT regulated areas that include important definitions, provide details for process-specific SSM events and corrective actions.
- *CMS Events* – Includes tables for each of the Mill's CMS variables on MACT regulated treatment devices that provide details for process-specific CMS events and corrective actions.

1.6 RECORDKEEPING REQUIREMENTS

Recordkeeping and Reporting is required by the MACT Rules to document that proper procedures are followed during Startup/Shutdown and Malfunction events. The procedures outlined below should be followed to ensure that such events are excluded from excess emissions determinations.

1.6.1.1 Recordkeeping Provisions

The Pensacola Mill must keep records of the following events:

- The occurrence and duration of each startup, shutdown, or malfunction event of operation for the regulated process equipment.
- The occurrence and duration of each malfunction of the air pollution control equipment;
- All maintenance performed on the air pollution control equipment;
- Actions taken during periods of startup, shutdown, and malfunction when such actions are different from the procedures specified in this SSM Plan, including corrective actions to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation;
- All information necessary to demonstrate conformance with this SSM Plan when all actions taken during periods of startup, shutdown, and malfunction are consistent with the procedures; and

- Each period during which a CMS is malfunctioning or inoperative, including out-of-control periods.

The following General Recordkeeping Requirements should also be addressed:

- The mill maintains files of all information (including all reports and notifications) required with the environmental files located in the EH&S Department. The files must be readily available for expeditious inspection and review.
- Files may be maintained in a hardcopy or electronic format for a period of 5 years.

1.6.1.2 International Paper Recordkeeping Techniques

International Paper has developed an electronic tracking/reporting database call Proficy to satisfy the recordkeeping requirements associated with SSM Plans. The electronic database is integrated with process control computers and instrumentation to identify and record startup/shutdown conditions, excess emission conditions and CMS downtime events. Logic has been developed utilizing process control computers and the mill's Plant Information (PI) system to electronically determine when processes begin to have and cease to have the potential to emit pollutants. If a vent valve opens during a period when the process logic determines there is the potential to emit pollutants, an event log will be activated in the electronic database. If a vent valve opens when the PI logic for potential to emit is not satisfied (process has no potential to emit), no action is taken.

The electronic database, Proficy, will require operators to answer a series of questions and input comments when SSM events are triggered. In the comments section the operators will be required to provide specific information regarding the actual cause and corrective actions taken. The operator will also be required to input a work request into the maintenance tracking database with equipment identification if equipment repairs are needed. The maintenance information will be used to track equipment maintenance history. The Environmental Engineer will review

information input by the operators to make sure we do not have a recurring problem that should be addressed through process/equipment changes. Information in the database will be used by the Environmental Engineer to compile the requisite reports as outlined in the following subsection.

1.7 REPORTING REQUIREMENTS

1.7.1.1 Periodic Startup, Shutdown, and Malfunction Reports

The Mill's SSM Coordinator conducts the following reporting activities for actions during a startup, shutdown, or malfunction that occur during the specified reporting period (e.g., quarter) of a MACT regulated system. This includes actions taken to correct a malfunction that are consistent with the procedures specified in this SSM Plan.

- *Periodic SSM Report Contents:*
  - A cover letter including the name, title, and signature of the responsible Mill official who is certifying its accuracy.
  - A summary of the SSM events during the reporting period and duration of each event.

- *Submittal Requirements:*
  - Postmarked by the 30th day following the end of each calendar half (or other calendar reporting period, as appropriate).

1.7.1.2 Immediate Startup, Shutdown, and Malfunction Reports

The Mill's SSM Coordinator will submit an Immediate Startup, Shutdown, and Malfunction Report at any time an action taken during a startup, shutdown, or malfunction (including actions taken to correct a malfunction) is not consistent with the procedures specified in the SSM Plan.

Immediate SSM Report Contents:

- A cover letter containing the name, title, and signature of the responsible Mill official who is certifying its accuracy.
  - The circumstances of the event.
  - The reasons for not following the SSM Plan.
  - The occurrence of any excess emissions and/or parameter monitoring exceedences.

- *Submittal Requirements:*
  - Immediately report via a telephone call or a facsimile transmission to the Administrator within two (2) working days after commencing actions inconsistent with the plan.
  - Submit a follow-up letter within seven (7) working days after the end of the event.

1.7.1.3 CMS Reporting Requirements

The Mill's SSM Coordinator reports the following CMS related SSM items for those malfunctions or other events that affect the CMS and are <u>not addressed</u> by the startup, shutdown, and malfunction plan:

- *Immediate CMS Report Contents:*
  - A cover letter containing the name, title, and signature of the responsible Mill official who is certifying its accuracy.
  - The circumstances of the event.
  - The reasons for not following the SSM Plan.
  - The actions inconsistent with the SSM Plan.
  - The occurrence of any excess emissions and/or parameter monitoring exceedences.

- *Submittal Requirements:*
  - Immediately report via a telephone call or a facsimile transmission to the Administrator within 24 hours after commencing actions inconsistent with the plan.

- *Follow-up CMS Report Contents:*
  - A cover letter containing the name, title, and signature of the responsible Mill official who is certifying its accuracy.
  - The circumstances of the event.
  - The reasons for not following the SSM Plan.
  - The actions inconsistent with the SSM Plan.
  - Certification that corrections have been made or a Corrective Action Plan and Schedule has been prepared and implemented.
  - Proof that repair parts have been ordered or any other records that would indicate that the delay in making the repairs is beyond his/her control.

- *Submittal Requirements:*
  - Submit the follow-up letter within two (2) weeks after the end of the event.

PART I

MACT I SOURCES

40 CFR 63, Subpart S – Pulp and Paper Industry NESHAP

2. PULP MILL SYSTEMS

2.1 KAMYR DIGESTER SYSTEM

2.1.1 PROCESS DESCRIPTION

The Kamyr Digester System at the Pensacola Mill is a continuous digester process used for pulping wood. The system includes a series of process units into which wood chips, white liquor and steam are continuously fed producing pulp and weak black liquor. The chips are fed by conveyor into the chip bin and then metered into a low-pressure feeder to a steaming vessel where fresh steam and/or flash steam from the process is introduced to preheat and soften the chips. From the steaming vessel, the chips are transferred via a high-pressure feeder to the impregnation vessel. White liquor is introduced into the high pressure feeder and the impregnation vessel and the chips, impregnated with the white liquor, are subsequently transferred directly to the top of the Kamyr digester where high pressure steam and additional white liquor are introduced. Weak black liquor is extracted from the digester at two different levels and piped to two separate flash tanks, Tanks 1A and 1B, where the liquor flashes due to the reduced pressure. The flash steam is vented back to the steaming vessel and the liquor is sent to the No. 2 Flash Tank and ultimately to the weak liquor storage area. Off-gas from the No. 2 Flash Tank vents through the No. 1 Stripper system and ultimately to the LVHC gas collection system. The pulp is continuously discharged from the bottom of the digester and sent on to the diffusion washer.

The EPA defines a ***Digester System*** as follows:

> "*Digester system* means each continuous digester or each batch digester used for the chemical treatment of wood or non-wood fibers. The digester equipment includes associated flash tank(s), blow tank(s), chip steamer(s) not using fresh

steam, blow heat recovery accumulator(s), relief gas condenser(s), prehydrolysis unit(s) preceding the pulp washing system and any other equipment serving the same function as those previously listed. The digester system includes any of the liquid streams or condensates associated with the batch or continuous digester relief, blow, or flash steam process."

Based on this definition, the MACT-regulated equipment associated with the Kamyr Digester System is detailed in Table 2.1-1:

Table 2.1-1
Kamyr Continuous Digester System [(a)]
List of MACT-Regulated Equipment

Equipment Description	LVHC System Tie-In	Pulping Condensate System Tie-In
Chip Steaming Vessel		
Impregnation Vessel		
Kamyr Digester	(b)	
#1A Flash Tank	(c)	
#1B Flash Tank	(c)	
#2 Flash Tank	(b)	
Entrainment Separator	(b)	✓

(a) The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.
(b) Off-gas containing NCG vent through the No. 1 Stripper System and Turpentine Recovery System to the LVHC System.
(c) The #1A and #1B flash tank vents have been modified to vent to the #2 flash tank. While these would be vents on a typical Kamyr system, at the Pensacola Mill they are not relief vented to the atmosphere and are therefore no longer monitored.

2.1.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.1.2.1 Process Operating Time

The Kamyr Digester System will have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
Kamyr Digester System	White liquor flow to the Kamyr is > 150 gpm	Blow flow to the diffusion washer has been achieved for 60 minutes	Shutdown begins with the shutting off chips to the chip bin	White liquor flow is < 150 gpm, blow line flow < 100 gpm, extraction flow < 75 gpm and the digestor blow is < 200 gpm

2.1.2.2 Startup Procedures

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup

to normal operating conditions. To account for this, startup of the Kamyr Digester System is considered to be complete once blow flow to the diffusion washer has been achieved for 60 minutes.

There are two different types of startup conditions for the Kamyr Digester System: a "hot" startup and a "cold" startup.

- A "cold" startup is defined as a startup following a prolonged shutdown or mill outage.
- A "hot" startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 2.1-2 is an outline of the Startup procedures for the Kamyr Digester System. The steps have been identified as applicable to a "hot" startup, "cold" startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both "hot" and "cold" startup conditions.

TABLE 2.1-2
KAMYR DIGESTER SYSTEM
STARTUP PROCEDURES

Procedure	Hot	Cold
1. Verify the following: • Water available to the Entrainment Separator • Pulping Process Condensate System and the No. 1 Stripper Condenser Systems are operating • LVHC Collection System and treatment unit operating	✓	✓
2. Contact Recovery/Utilities – confirm steam availability	✓	✓
3. Check valve positions and controller(s) • Liquor • Condensate • Vapors • Steam	✓	✓
4. Check Pumps, verify water feed to Entrainment Separator to control pressure	✓	✓
5. Pressurize the Steaming Vessel	✓	✓
6. Pressurize the Impregnation Vessel	✓	✓
7. Pressurize the Digester	✓	✓
8. Begin feeding chips to the Chip Bin	✓	✓
9. Start Feed System	✓	✓
10. Sluice chips to Digester	✓	✓
11. Open Blow Valve	✓	✓
12. Start Diffusion Washer	✓	✓
13. Confirm Steady-state operations for 60 minutes (end of startup) • **Blowing pulp to the Diffusion Washer**	✓	✓
14. End Startup	✓	✓

The following Operating Procedures are used during Startup to minimize emissions:

- Confirm water availability to the Entrainment Separator.
- Confirm that the No. 1 Stripper Condenser Systems are operational.
- Confirm that the LVHC gas collection system is venting to the Gas Treatment Unit(s).
- ***Once confirmation is obtained***, startup of the Kamyr Digester System can be initiated. This will ensure that any LVHC gas generated will be vented through the collection system and to the control device.

2.1.2.3 Shutdown Procedures

A summary of Shutdown Procedures is provided in Table 2.1-3. Except for unique situations, the procedures should be followed for all shutdowns of the Kamyr Digester System. Shutdown begins with the shutting off chips to the chip bin. Subsequent steps in the Kamyr Digester System procedure are intended to minimize any MACT regulated releases during the process startup.

TABLE 2.1-3
KAMYR DIGESTER SYSTEM
SHUTDOWN PROCEDURES

Procedure	Hot	Cold
1. Notify Recovery/Utilities of Shutdown and maintain LVHC gas collection until Step 7 is completed	✓	✓
2. Shut off Chip Bin Feed (Begin Shutdown)	✓	✓
3. Sluice Out Impregnation Vessel	✓	✓
4. "Close Off" Impregnation Vessel and depressurize the feed system	✓	✓
5. Blow out Digester		✓
6. Close Digester Blow Valve	✓	✓
7. Cool Digester • Introduce Liquor • Extract for up to 2 hours • Shut off Extraction Valve	✓	
8. End of Shutdown	✓	✓

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- No venting except through LVHC Collection System until the digester extraction and blow valves are closed.

2.1.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

A summary of excess emission/malfunction events for the Kamyr Digester System is provided below.

Kamyr System Excess Emission Events		
Excess Emission Event	***Cause***	***Corrective Action***
No. 1A Flash Tank PRV Venting	• No longer vents to the atmosphere	
No. 1B Flash Tank PRV Venting	• No longer vents to the atmosphere	
No. 2 Flash Tank Primary PRV Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
No. 2 Flash Tank Secondary PRV Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

No. 2 Flash Tank Vacuum Breaker Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
Low Pressure Feeder Purge to Atmosphere Valve Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
Steaming Vessel PRV Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

Kamyr Digester PRV Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

2.2 BATCH DIGESTER SYSTEM

2.2.1 PROCESS DESCRIPTION

The Batch Digester System at the Pensacola Mill includes 12 individual batch digester units and the associated blow tanks and heat recovery equipment used for producing softwood pulp. The chips are fed into an empty digester from an overhead conveyor system. When the digester is filled with chips the top is closed and sealed and steam and white liquor are introduced for the cooking cycle. At the end of the cooking cycle, the digester contents are released to one of two blow tanks. The Nos. 1 through 6 digesters discharge to the No. 1 blow tank and the Nos. 7 through 12 digesters discharge to the No. 2 blow tank. During the cooking cycle, relief gases from the digesters also vent to the respective blow tanks. The blow tanks separate the pulp and cooking liquor from the vapor stream and the pulp is sent on to the pulp washing process. The vapors from the blow tanks vent to a cyclone separator and then to the accumulator tank. Additional pulp and liquor removed in the cyclone is combined with the pulp from the blow tanks and sent to the washers. The accumulator is equipped with a barometric condenser and is used to recover heat from the digester exhaust gases. The vent gas leaving the accumulator passes through a secondary condenser prior to entering the LVHC gas collection system. The hot water collected in the accumulator is sent to the accumulator hot water tank which is included in the Condensate Collection and Treatment section of this document.

The EPA defines a ***Digester System*** as follows:

> "*Digester system* means each continuous digester or each batch digester used for the chemical treatment of wood or non-wood fibers. The digester equipment includes associated flash tank(s), blow tank(s), chip steamer(s) not using fresh

steam, blow heat recovery accumulator(s), relief gas condenser(s), prehydrolysis unit(s) preceding the pulp washing system and any other equipment serving the same function as those previously listed. The digester system includes any of the liquid streams or condensates associated with the batch or continuous digester relief, blow, or flash steam process."

Based on this definition, the MACT-regulated equipment associated with the Batch Digester System is detailed in Table 2.2-1:

Table 2.2-1
Batch Digester System [(a)]
List of MACT-Regulated Equipment

Equipment Description	**LVHC System Tie-In**	**Pulping Condensate System Tie-In**
Batch Digesters #1 through #12	(b)	
#1 Blow Tank	(b)	
#2 Blow Tank	(b)	
Primary Condenser/Accumulator Tank	(b)	
Accumulator Hot Water Tank	✓	✓
Secondary Condenser	✓	

(a) The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.
(b) Off-gas containing NCG vents through the Secondary Condenser to the LVHC System.

2.2.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.2.2.1 Process Operating Time

The Batch Digester System is considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
Batch Digester System	When one or more of the digesters have attained a digester pressure of 10 psig	Confirm Steady-state operations for 60 minutes (end of startup) Pulp off of the Washers	Shutdown begins when chips and cooking liquor are no longer being fed to the digesters	If all digesters have a pressure less than 10 psig, the system will be considered down.

2.2.2.2 Startup Procedures

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. The Batch Digester System is separated into two distinct lines that can be started independently and share a common blow heat recovery system. While one

line may be up and running, malfunctions can occur as a result of starting up the other line. To account for this, startup of the Batch Digester System is split into two logic lines that require each of the 6 digesters on a line to achieve a pressure greater than 10 psig. Therefore, normal operating conditions are not achieved until both lines have met the logic requirements for start-up completion.

There are two different types of startup conditions for the Batch Digester System: a "hot" startup and a "cold" startup.

- A "cold" startup is defined as a startup following a prolonged shutdown or mill outage.
- A "hot" startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 2.2-2 is an outline of the Startup procedures for the Batch Digester System. The steps have been identified as applicable to either a "hot" startup, "cold" startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both "hot" and "cold" startup conditions.

TABLE 2.2-2
BATCH DIGESTER SYSTEM
STARTUP PROCEDURES

Procedure	Hot	Cold
1. Verify the following are operating: • LVHC Collection System and Treatment Unit • Pulping Process Condensate Collection System	✓	✓
2. Cap Digester(s)		✓
3. Pressurize Digester(s) to raise temperature		✓
4. Relieve Pressure from Digester(s)		✓
5. Open Digester Cap(s)		✓
6. Charge Digester(s) with chips and cooking liquor	✓	✓

7. Cap Digester(s)	✓	✓
8. Confirm Gas Relief and Steam Admission off manual		✓
9. Verify Accumulator operation		✓
10. Activate Digester Program		✓
11. Confirm Steady-state operations for 60 minutes (end of startup) • **Pulp off of the Washers**	✓	✓
12. End Startup	✓	✓

The following Operating Procedures are ***mandatory*** *during Startup to minimize emissions and ensure that any LVHC gas generated will be vented through the collection system and to the control device:*

- Confirm that the LVHC gas collection system is venting to the Gas Treatment Unit(s).
- Confirm all valve positions are set for proper venting and condensate flow.
- Confirm that the accumulator system is operational and ready to receive blow gases.
- ***Once confirmation is obtained***, startup of the Batch Digester System can be initiated.

2.2.2.3 Shutdown Procedures

A summary of Shutdown Procedures is provided in Table 2.2-3. Except for unique situations, the procedures shall be followed for all shutdowns of the Batch Digester System. Shutdown begins when chips and cooking liquor are no longer being fed to the digesters. All subsequent steps are considered to be steps in the Batch Digester System procedure intended to minimize any MACT regulated releases during the shutdown process.

TABLE 2.2-3
BATCH DIGESTER SYSTEM
SHUTDOWN PROCEDURES

Procedure	Hot	Cold

1. **Discontinue feeding chips and cooking liquor to digesters (Begin Shutdown). Maintain LVHC gas collection until Step 3 is completed.**	✓	✓
2. Complete Digester blow cycle	✓	✓
3. Clear system, shutdown ends when system is cleared and checked.		✓
4. Maintain steam pad, shutdown ends when digester startup begins.	✓	

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- No venting except through LVHC Collection System until the system is cleared and checked.

2.2.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.
Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

A summary of excess emission/malfunction events for the Batch Digester System is provided below.

BATCH DIGESTERS MALFUNCTIONS		
Excess Emission Event	**Cause**	**Corrective Actions**
#1 Blow Tank Relief Valve Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
#2 Blow Tank Relief Valve Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

#1 - #12 Batch Digester Gas-off PRV Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
Batch Accumulator Secondary Condensor PRV Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
Accumulator Water Seal Level Low	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

NCG's From Hot Water Tank, Line Exceeded Rupture Disk Rating	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
Relief Valve on Hot Water Tank NCG Line Venting	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

2.3 NO. 1 STRIPPER SYSTEM

2.3.1 PROCESS DESCRIPTION

The No. 1 Stripper System at the Pensacola Mill was used to control the flash steam from the Kamyr number 2 flash tank, remove TRS compounds from contaminated condensate and as a turpentine recovery unit. Due to the very poor methanol removal efficiency of the No.1 Stripper and the installation of the No.2 Stripper, the No.1 Stripping column has been shut down. The No. 1 Stripper Reflux and Turpentine Condensers continue to operate as a blow heat recovery system for the Kamyr Digester. The original equipment design allowed for the column to be by-passed and the flash steam from the No. 2 Flash tank to be routed directly to the Reflux Condenser and subsequently to the Turpentine Condenser and LVHC gas collection system. This operational configuration allows the system to be operated as a standard condensing system for blow heat control. Flash steam from the No. 2 flash tank still vents through an entrainment separator prior to the Reflux Condenser. Condensate streams from the reflux condenser and the turpentine condenser are sent to the reflux tank which has been reconfigured as a turpentine decanter. The turpentine underflow goes to the foul oil tank and is then pumped to the condensate collection tank.

The EPA defines a ***Turpentine Recovery System*** as follows:

"*Turpentine recovery system* means all equipment associated with recovering turpentine from digester system gases including condensers, decanters, storage tanks, and any other equipment serving the same function as those previously listed. The turpentine recovery system includes any liquid streams associated with the turpentine recovery process such as turpentine decanter."

Based on this definition, the MACT-regulated equipment associated with the No. 1 Stripper System is detailed in Table 2.3-1:

Table 2.3-1
No. 1 Stripper System [(a)]
List of MACT-Regulated Equipment

Equipment Description	**LVHC System Tie-In**	**Pulping Condensate System Tie-In**
Reboiler	(b)	✓
#1 Stripper Column	(b)	
Reflux Condenser	(c)	✓
Turpentine Condenser	✓	✓
NCG Gas Cooler	✓	
Turpentine Decanter	✓	
Turpentine Underflow Tank	✓	✓
Turpentine Storage Tank	✓	✓

(a) The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.
(b) Out of service
(c) Off-gas containing NCG vent through the Turpentine Recovery System to the LVHC System.

2.3.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.3.2.1 Process Operating Time

The #1 Stripper will considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
#1 Stripper	White liquor flow to the Kamyr is > 150 gpm	Blow flow to the diffusion washer has been achieved for 60 minutes	Shutdown begins with the shutting off chips to the Kamyr chip bin	Kamyr white liquor flow is < 150 gpm, blow line flow < 100 gpm, extraction flow < 75 gpm and the Kamyr digestor blow is < 200 gpm

2.3.2.2 Startup Procedures

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. Since the #1 Stripper Condensing System is directly linked to the Kamyr Digester System, we have the potential to have SSM events on the #1 Stripper

Condensing System caused by problems on the Kamyr Digester System. As such, we have defined the end of the startup period to be the end of any Kamyr startup.

There are two different types of startup conditions for the No. 1 Stripper System: a “hot” startup and a “cold” startup.

- A “cold” startup is defined as a startup following a prolonged shutdown or mill outage.
- A “hot” startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 2.3-2 is an outline of the Startup procedures for the No. 1 Stripper System. The steps have been identified as applicable to either a “hot” startup, “cold” startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both “hot” and “cold” startup conditions.

TABLE 2.3-2

NO. 1 STRIPPER SYSTEM
STARTUP PROCEDURES

Procedure	Hot	Cold
1. Verify the following are operating: • LVHC Collection System and Treatment Unit • Pulping Process Condensate Collection System	✓	✓
2. Check valve positions and controller(s)	✓	✓
3. Send 165 pound steam to ejectors		✓
4. Verify 165 pound steam to ejectors	✓	
5. Verify Turpentine Condenser controls, verify cooling water flow	✓	✓
6. Verify Reflux Condenser controls, verify cooling water flow	✓	✓
7. Condensing System is ready to receive Kamyr System waste heat	✓	✓
8. Monitor condenser conditions	✓	✓
9. Confirm Steady-state operations for 60 minutes (end of startup) • **Blowing pulp to the diffusion washer** • **Flash steam being sent to the condensers**	✓	✓
10. End Startup	✓	✓

*The following Operating Procedures are **mandatory** during Startup to minimize emissions:*

- Confirm that the Turpentine Recovery System is operational and that the LVHC gas collection system is venting to the Gas Treatment Unit(s).
- ***Once confirmation is obtained***, startup of the No. 1 Stripper Condensing System and Turpentine Collection System can be initiated. This will ensure that any LVHC gas generated will be vented through the collection system and to the control device.

2.3.2.3 Shutdown Procedures

A Summary of Shutdown Procedures is provided in Table 2.3-3. Except for unique situations, the procedures shall be followed for all shutdowns of the No. 1 Stripper Condenser System. ***Shutdown begins when the Kamyr Digester System stops feeding chips***. All subsequent steps are considered to be steps in the No. 1 Stripper Condensing System procedure intended to minimize any MACT regulated releases during the process .

TABLE 2.3-3
NO. 1 STRIPPER CONDENSING SYSTEM
SHUTDOWN PROCEDURES

Procedure	Hot	Cold
1. **Stop feeding flash steam from the No. 2 Flash Tank to the Stripper Condensers. (Begin Shutdown).** Maintain LVHC gas collection until Step 5 is completed.	✓	✓
2. Shutdown associated equipment	✓	✓
3. Stop feeding 165-pound steam to the Ejector		✓
4. End of Shutdown		✓
5. End of Shutdown when Startup begins	✓	

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- No venting except through LVHC Collection System until the 165 pound steam ejector is shut down.

2.3.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

A summary of excess emission/malfunction events for the Number 1 Stripper System is provided below.

NO. 1 STRIPPER EXCESS EMISSIONS		
Excess Emission	**Cause**	**Corrective Actions**
#1 Stripper Rupture Disk Failure	• The No. 1 Stripper has been taken out of service so this rupture disk is no longer monitored.	
#1 Stripper Post Eductor Rupture Disk Failure	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event

* The mill maintains a computerized Spare Parts Inventory. All No. 1 Stripper System spare parts are summarized by equipment in the system.

2.4 NO.2 STEAM STRIPPER - PULPING CONDENSATE TREATMENT

2.4.1 PROCESS DESCRIPTION

The No. 2 Stripper System at the Pensacola Mill is a pressurized system used to remove contaminants from condensate streams. Foul condensate from the condensate feed tank and other sources is pumped through a fiber filter to a pre-heater and into the stripper column where 65 pound fresh steam is used to strip the compounds from the condensate. The off-gas from the stripper column passes through the reflux condenser before venting into the LVHC gas collection system. The condensate stream from the reflux condenser is sent back to the stripper column.

The EPA defines a ***Steam Stripper System*** as follows:

> "*Steam Stripper System* means a column (including associated stripper feed tanks, condensers, or heat exchangers) used to remove compounds from wastewater or condensates using steam. The steam stripper system also contains all equipment associated with a methanol rectification process including rectifiers, condensers, decanters, storage tanks, and any other equipment serving the same function as those previously listed."

Based on this definition, the MACT-regulated equipment associated with the No. 2 Stripper System is detailed in Table 2.4-1:

Table 2.4-1
No. 2 Stripper System [(a)]
List of MACT-Regulated Equipment

Equipment Description	**LVHC System Tie-In**	**Pulping Condensate System Tie-In**
#2 Stripper Column	(b)	
Reflux Condenser	✓	
Condensate Pre-heaters		

(a) The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.
(b) Off-gas containing NCG vent through the reflux condenser to the LVHC System.

Methanol treatment compliance will be demonstrated through verifying 92% treatment efficiency at a set effective steam ratio. Compliance tests will determine the minimum effective steam ratio and the No. 2 Stripper will be operated at or above this minimum to ensure adequate treatment. Effective Steam Ratio (ESR) is computed as the ratio of effective steam flow divided by the foul condensate flow, or:

$$ESR = \frac{\text{Effective Steam Flow}}{\text{Foul Cond Flow}} = \frac{SSF - ((FCFF \times (SBT-FCFT) \times (1\ BTU/lb\text{-}F)) / H)}{FCFF}$$

For example, assuming:

Stripper Steam Flow (SSF)	= 10,000 lb/hr
Foul Condensate Feed Flow (FCFF)	=100 gpm (100gpm x 500 lb/hr/gpm = 50,000 lb/hr)
Stripper Bottom Temp (SBT)	= 275 °F
Foul Condensate Feed Temp (FCFT)	= 255 °F
Enthalpy (H)	= 1000 BTU/lb (assumed constant)

yields an effective steam ratio of

$$ESR = \frac{10{,}000 - (((50{,}000 \times (275-255)) \times (1\ BTU/lb - °F)) / 1000)}{50{,}000} = \frac{9000\ lb/hr}{50{,}000\ lb/hr} = 0.18$$

The following Continuous Monitoring System (CMS) variables will be monitored for verification that the system is operating within required parameters:

Kamyr Chip Meter RPM (for calculating tons produced)
Batch Blows/day (for calculating tons produced)
#2 Stripper Condensate Feed Flow
#2 Stripper Condensate Feed Methanol Concentration
#2 Stripper Column Feed Temperature
#2 Stripper Steam Flow
#2 Stripper Bottoms Temperature
#2 Stripper Condensate Diversion Valve

In the event of a failure in the ability to record one or more of the above CMS variable, the following surrogates will be used to verify proper operation and compliance until repairs can be made:

Kamyr Chip Meter RPM – will use manual calculation based on set point and time
Batch Blows/day – will use manual count from operators log sheet
#2 Stripper Condensate Feed Flow – will use valve position to verify flow rate
#2 Stripper Feed MeOH Concentration – will retain duplicate samples
#2 Stripper Feed Temperature – will record manual temperature readings
#2 Stripper Steam Flow – will use valve position to verify flow rate
#2 Stripper Bottoms Temperature – will record manual temperature readings
#2 Stripper Condensate Diversion Valve – will use manual valve to isolate

2.4.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.4.2.1 Process Operating Time

The #2 Stripper System will be considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
No.2 Steam Stripper	Steam flow to the stripper is >5000 lbs/hr	Steady-state operation, based on stable pressure in the stripper off-gas (SOG) at the outlet of the reflux condenser	Shutdown begins when the 65-pound steam is shut off to the stripper column	Steam flow to the stripper is < 5000 lbs/hr and no condensate feed

2.4.2.2 Startup Procedures

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. To account for this, **startup of the No. 2 Stripper System is**

considered to be complete once steady-state operation, as determined based on stable pressure in the stripper off-gas (SOG) at the outlet of the reflux condenser.

There are two different types of startup conditions for the No. 2 Stripper System: a "hot" startup and a "cold" startup.

- A "cold" startup is defined as a startup following a prolonged shutdown or mill outage.
- A "hot" startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 2.4-2 is an outline of the Startup procedures for the No. 2 Stripper System. The steps have been identified as applicable to either a "hot" startup, "cold" startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both "hot" and "cold" startup conditions.

TABLE 2.4-2
NO. 2 STRIPPER SYSTEM
STARTUP PROCEDURES

Procedure	Hot	Cold
1. Verify the following are operating: • LVHC Collection System and Treatment Unit • Pulping Process Condensate Collection System	✓	✓
2. Notify Recovery and White Liquor/Tall Oil	✓	✓
3. Check valve positions and controller(s)	✓	✓
4. Verify that the Lime Kiln (Caustic Room Operator) will accept SOGs	✓	✓
5. Start flow from Condensate Feed tank to the Stripper Column	✓	✓
6. Verify Reflux Condenser controls	✓	✓
7. Begin feeding 65 pound steam to Stripper Column	✓	✓
8. Monitor Stripper Column conditions	✓	✓

9. Confirm Steady-state operations for 60 minutes (end of startup) • **Stable pressure in SOGs at the outlet of the Reflux Condenser**	✓	✓
10. End Startup	✓	✓

*The following Operating Procedures are **mandatory** during Startup to minimize emissions:*

- Confirm that the LVHC gas collection system is venting to the Gas Treatment Unit(s) and that the valves are correctly positioned.
- ***Once confirmation is obtained***, startup of the No. 2 Stripper System can be initiated. This will ensure that any LVHC gas generated will be vented through the collection system and to the control device.

2.4.2.3 Shutdown Procedures

A Summary of Shutdown Procedures is provided in Table 2.4-3. Except for unique situations, the procedures shall be followed for all shutdowns of the No. 2 Stripper System. ***Shutdown begins when the 65-pound steam is shut off to the stripper column***. All subsequent steps are considered to be steps in the No. 2 Stripper System procedure intended to minimize any MACT regulated releases during the process.

TABLE 2.4-3
NO. 2 STRIPPER SYSTEM
SHUTDOWN PROCEDURES

Procedure	Hot	Cold
1. Notify Lime Kiln (Caustic Room Operator) and maintain LVHC gas collection until Step 2 is completed		✓
2. Stop feeding 65-pound steam to the Stripper Column (Begin Shutdown)		✓
3. Discontinue condensate feed to the Stripper Column		✓
4. End of Shutdown		✓

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- No venting except through LVHC Collection System until the 65-pound steam is shut down.

2.4.2.4 Malfunction Events

The No. 2 Stripper is the mill's methanol treatment device. Methanol removal efficiency and CMS variables will be discussed in this section of the plan. The CMS variables were listed in section 2.4.1 above. Malfunctions that can occur to each of the CMS variables are covered below.

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

A summary of excess emission/malfunction events for the Number 2 Stripper System is provided below.

NO. 2 STRIPPER MALFUNCTIONS		
Excess Emission Event	**Cause**	**Corrective Actions**
#2 Stripper Reflux Vapor Rupture Disk Fails	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Complete Proficy database for event
#2 Stripper Effective Steam Ratio Below Minimum	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

NO. 2 STRIPPER CMS MALFUNCTIONS		
CMS Event	**Cause**	**Corrective Actions**
No.2 Stripper Inlet Steam Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
No.2 Stripper Stripped Condensate Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
No.2 Stripper Condensate Feed Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event

No.2 Stripper Condensate Inlet Temperature Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
No.2 Stripper Bottoms Temperature Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
No.2 Stripper Condensat Diversion Valve Position Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required • Return signal after maintenance is complete • Position verified; identify and repair malfunction • Complete Proficy database for event

Kamyr Chip Meter Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Input tons manually • Complete Proficy database for event
Batch Digester Blows/Day Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Blows verified; identify and repair malfunction • Input tons manually • Complete Proficy database for event
No.2 Stripper Feed MeOH Concentration	• Shutdown • Lost sample • Sample damaged in route • Sampling error • other	• No action required • Contact courier • Evaluate and correct • Submit retained duplicate sample • Other • Complete Proficy database for event

2.5 PULPING PROCESS CONDENSATE SYSTEM

2.5.1 PROCESS DESCRIPTION

The Pulping Process Condensate System at the Pensacola Mill includes the physical equipment for collecting, transporting, and storing the MACT regulated condensate streams. The regulated streams originate from the feed effects of the No. 1 and No. 2 evaporator sets, the evaporator gas condensers, the LVHC gas collection system drains, the No. 1 Steam Stripper system and the turpentine recovery system. The collected condensates are ultimately piped to the main Condensate Collection Tank from which they are pumped to the No. 2 Stripper System for treatment. The mill will show compliance with methanol collection by using the flow and concentration to the No. 2 Stripper. The sample for concentration analysis will be obtained by continuously collecting a small stream to a refrigerated collection container. The composite sample will be transferred to the required VOC sample bottle and sent to the lab for analysis. In the event of a plugged sample line, a grab sample will be collected and used for that days sample.

The following Continuous Monitoring System (CMS) variables will be monitored for verification that the system is operating within required parameters:

Kamyr Chip Meter RPM (for calculating pine tons produced)
Batch Blows/day (for calculating HW tons produced)
#2 Stripper Condensate Feed Flow
#2 Stripper Condensate Feed Methanol Concentration

The above malfunctions are common with CMS events on No. 2 Stripper and have been covered in section 2.4.2.3 (No. 2 Stripper Malfunctions). As such, there will not be a duplicate explanation for these variables in this section of the plan.

The EPA defines a ***Pulping Process Condensate*** as follows:

> "*Pulping process condensate* means any HAP-containing liquid that results from contact of water with organic compounds in the pulping process. Examples of process condensates include digester system condensates, turpentine recovery system condensates, evaporator system condensates, LVHC Collection System condensates, HVLC system condensates, and any other condensates from equipment serving the same functions as those previously listed. Liquid streams that are intended for byproduct recovery are not considered process condensate streams."

The EPA defines an ***Individual Drain System*** as follows:

> "*Individual drain system* means a stationary system used to convey wastewater streams or residuals to a waste management unit or to discharge or disposal. The term includes hard-piping, all drains and junction boxes, together with their associated sewer lines and other junction boxes (e.g., manholes, sumps, and lift stations) conveying wastewater streams or residuals. For the purpose of this subpart, an individual drain system is not a drain and collection system that is designed and operated for the sole purpose of collecting rainfall runoff (e.g., stormwater sewer system) and is segregated from all other individual drain systems."

Based on this definition, the MACT-regulated equipment associated with the Pulping Process Condensate System is detailed in Table 2.6-1:

Table 2.6-1
Pulping Process Condensate System [(a)]
List of MACT-Regulated Equipment
*****add the new Turpentine system**

Equipment Description	LVHC System Tie-In	Pulping Condensate System Tie-In
ABC Condensate Tank	✓	✓
#1 Hot Well	✓	✓
#2 Hot Well	✓	✓
Foul Condensate Feed Tank	✓	✓
Reflux/Foul Oil Tank		✓
NCG Seal Pot		✓
SOG Seal Pot		✓
Combined Condensate Tank	✓	✓
Spill Collection Tank		✓
Rectifier Feed Tank		✓
Condensate collection (piping, pumps, tanks, etc.)		✓
No. 2 Stripper System (Described in Previous Section)	✓	✓

[(a)] The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.

There will be frequent times where one or more sources contributing to the Pulping Process Condensate System will be in startup, shut down or malfunction conditions. During these periods the potential exists to loose methanol to either air or water streams. As such, SSM procedures for each of the emitting devices contributing to methanol collection will be referenced in this section as applicable.

Our compliance calculation utilizes the feed flow to the No. 2 Stripper and MeOH concentration to calculate methanol collection and treatment. Therefore, the No. 2 Stripper SSM procedures will be referenced where applicable in the Pulping Process Condensate System.

2.5.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.5.2.1 Process Operating Time

The Pulping Process Condensate System will considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
Pulping Condensate System	When any of the following sources have a PTE	When all of the sources have completed startup	When any one of the following sources has initiated shutdown	When all of the following sources have no PTE

2.5.2.2 Startup Procedures

The Pulping Process Condensate System collects and treats condensates from nearly all areas of the Pulp System. Conditions where all sources will be down at the same time are very rare. As such, the collection portion of the Pulping Process Condensate System will be operating nearly 100% of the time. The following emitting equipment startup procedures will need to be followed in order to comply with methanol collection and treatment regulations:

No. 2 Stripper
Batch Digester System
Kamyr Digester System
No. 1 Evaporators
No. 2 Evaporators

The Pulping Process Condensate System collection will be considered in startup whenever any of the above emitting units are in startup conditions as described in the applicable section of this plan.

2.5.2.3 Shutdown Procedures

The Pulping Process Condensate System collects and treats condensates from nearly all areas of the Pulp System. Conditions where all sources will be down at the same time are very rare. As such, the collection portion of the Pulping Process Condensate System will be operating nearly 100% of the time. The following emitting equipment shutdown procedures will need to be followed in order to comply with methanol collection and treatment regulations:

No. 2 Stripper
Batch Digester System
Kamyr Digester System

No. 1 Evaporators

No. 2 Evaporators

The Pulping Process Condensate System collection will be considered in shutdown mode whenever any of the above emitting units are in shutdown conditions as described in the applicable section of this plan.

2.5.2.3 Malfunction Events

The calculation for compliance with the applicable standards will be completed after the results of methanol testing are received from the laboratory. As such, SSM events that could have an impact on compliance must be tracked daily. For example, if the mill is experiencing a malfunction on the No. 2 Evaporators and not able to collect the hot well stream due to high conductivity, we may experience lower than the required amount of methanol collection at some point during the averaging period. Therefore, all emission points in the Pulping Process Condensate System as well as each emission point in the emitting devices will be monitored electronically. If a malfunction occurs which causes the mill to bypass condensates from the Pulping Process Condensate System or limit the collection efficiency of an emitting unit, a Proficy event will be triggered and operators will fill out the required information. This information may be used to describe any periods where the applicable average falls below the required amount of collection from the Pulping Process Condensate System in reports to the regulatory agencies.

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

A summary of excess emission/malfunction events for the Pulping Process Condensate System is provided below.

Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

PULPING CONDENSATE COLLECTION MALFUNCTIONS/BYPASS EVENTS		
Excess Emission Event	**Cause**	**Corrective Actions**
Condensate Collection Tank Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
Accumulator Hot Water Tank Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
#2 Evaporator Hot Well Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

Contaminated Condensate Tank Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
NCG Seal Pot Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
SOG Seal Pot Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

Boil Out Tank Overflow	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
#1 Hot Well Dump Valve Open	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
Stripper Feed Divert Valve Open	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

Condensate From No.1 Evaporators Dumped to Sewer (see SSM plan for No. 1 Evaporators)	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
Condensate From No. 2 Evaporators Dumped to Sewer (see SSM plan for No. 2 Evaporators)	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

2.6 NO. 1 AND NO.2 EVAPORATOR SYSTEMS

2.6.1 PROCESS DESCRIPTION

The No. 1 and No.2 Evaporator Systems at the Pensacola Mill are multi-effect evaporator systems with six effects. The purpose of the systems is to convert the weak black liquor from the pulp washing process to strong black liquor that can be used in the recovery process. Weak black liquor is fed to the 6th effect and 65 pound steam is introduced at the 1st effect. The liquor and steam flow counter currently through the system. The strong liquor exits the 1st effect and is sent to storage. Steam and vent gases leave the 6th effect and are routed to the gas condensers.

On No.1 Evaporator set the regulated condensates are collected and routed to either the No. 1 Hotwell or to the Foul Condensate Flash Tank. The condensate from the Foul Condensate Flash Tank is then pumped to the No. 2 Evaporator Hotwell and ultimately to the No. 2 Steam Stripper. The condensate from the No. 1 Evaporator Hotwell is used as level control for the main Condensate Collection Tank.

On #2 Evaporator Set condensates from the 6th effect are regulated MACT streams and are collected and routed to the No. 2 Hot Well and ultimately to the No. 2 Steam Stripper System. The condensates from the Hot Well may be routed to the Combined Condensate Tank on high conductivity. The condensates routed to the Combined Condensate Tank are not lost from the system unless the tank overflows. As such, Combined Condensate Collection Tank level is monitored as part of the Condensate Collection section of this plan.
Unregulated condensates are collected and routed to the A-Section or the B-Section of the ABC Tank. Unregulated condensates from the 1st effect are sent directly to the Powerhouse Area. The NCGs are collected in the LVHC Collection System and are routed to the Gas Treatment Unit(s).

Condensates from the gas condensers are also MACT regulated streams and are sent to the No. 2 Hotwell and ultimately to the No. 2 Steam Stripper System. The NCG's leaving the gas condensers are collected in the LVHC Collection System and are routed to either the Gas Treatment Unit(s).

Steam powered hogging jets located in the gas condenser area are used to vent the evaporator system directly to atmosphere during startup and certain malfunction situations. Use of the hogging jets will be tracked manually by the Evaporator Operator. If the hogging jet is used while there is a potential to emit, the Environmental Department will generate a Proficy event to document and report the LVHC venting.

The EPA defines an ***Evaporator System*** in the MACT Rules as follows:

> "*Evaporator System* means all equipment associated with increasing the solids content and/or concentrating spent cooking liquor from pulp washing system including pre-evaporators, multi-effect evaporators, concentrators, and vacuum systems, as well as associated condensers, hot wells, and condensate streams, and any other equipment serving the same function as those previously listed."

Based on this definition, the MACT-regulated equipment associated with the No. 1 and No.2 Evaporator Systems is detailed in Table 3.1-1:

Table 3.1-1
No. 1 and No.2 Evaporator Systems [(a)]
List of MACT-Regulated Equipment

		Pulping

Equipment Description	**LVHC System Tie-In**	**Condensate System Tie-In**
#1 Condensers - 4-Pass Condenser - 1st After Condenser - Inner Condenser - After Condenser #2 Condensers - Existing Condenser - Auxiliary Condenser - Inner Condenser - After Condenser	✓	✓
#1 Evaporator Set (Effects 5 and 6) #2 Evaporator Set (Effects 5 and 6)	✓	✓
#1 Evaporator Feed Effects Hot Well #2 Evaporator Hot Well	✓	✓
Foul Condensate Flash Tank	✓	✓

[a] The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.

2.6.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.6.2.1 Process Operating Time

The No.1 and No.2 Evaporate Sets are considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
No.1 and No.2 Evaporator Sets	Steam flow to the 1st effect is greater than 20K lbs/hr	25-28+ deg. Baume, a stabilized evaporator system vacuum level, and a conductivity of less than 850 in the condensate for at least 60 minutes	Cut back steam to 1st effect with the intent to shutdown the evaporator set.	When 65# steam flow to the 1st effect is < 20 KPPH

2.6.2.2 Startup Procedures

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps. Minor

malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. To account for this, normal operating ranges have been established for common evaporator system parameters. Three parameters should be monitored to indicate normal operating conditions:

- Baume
- Stabilized vacuum
- Conductivity

There are two different types of startup conditions for the No. 1 and No.2 Evaporator System: a "hot" startup and a "cold" startup.

- A "cold" startup is defined as a startup following a prolonged shutdown or mill outage.
- A "hot" startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 3.1-2 is an outline of the Startup procedures for the No. 1 and No.2 Evaporator System. The steps have been coded to indicate if they pertain to a "hot" startup, "cold" startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both "hot" and "cold" startup conditions.

TABLE 3.1-2
NO. 1 and NO.2 EVAPORATOR SYSTEM
STARTUP PROCEDURES

Procedures	Hot	Cold
1. Verify the following are operating: • LVHC Collection System and Treatment Unit • Pulping Process Condensate Collection System	✓	✓
2. Check valve positions • Liquor • Condensate • Vapors (NCG from hot well to collection system is opened) • Steam	✓	✓
3. Check Conductivity switch on condensate	✓	✓
4. Check Pumps	✓	✓
5. Maintenance follow-up check	✓	✓
6. Contact Utilities – confirm steam availability	✓	✓
7. Verify Cooling Tower operations	✓	✓
8. Activate Hogging jets, if necessary	✓	✓
9. Verify Hot Well water level, if necessary	✓	✓
10. Start 15% Liquor pumps (feed liquor) to No. 6 effect and fill all 6 effects	✓	✓
11. Confirm liquor flow into 50% liquor flash tank	✓	✓
12. Circulate liquor back to 15% Liquor tank from No. 1 effect	✓	✓
13. Check vacuum/shut off hogging jets @ 20-22 inches of water, ejectors take control		
14. Add 65# steam to No. 1 effect	✓	✓
15. Switch to 50% liquor flash tank @ Baume >25 deg.	✓	✓
16. Confirm Steady-state operations for 60 minutes (end of start-up) • **>25 deg. Baume** • **Vacuum stabilized** • **Conductivity < 850 and auto valve is sending condensate to the Steam Stripper System**	✓	✓
17. End Startup	✓	✓

*The following Operating Procedures are **mandatory** during Startup to minimize emissions:*

- Confirm that the NCG collection system is venting to the Gas Treatment Unit(s). This is accomplished by shutting off the hogging jets before liquor is put to the 6th Effect. This will ensure that the NCGs will be vented through the collection system and to the control device.
- Confirm that the condensate system is routed to the Steam Stripper System and that the automatic conductivity system is on-line. If the conductivity is above 850, the condensate is sent to the sewer and if the conductivity is below 850, the condensate is always sent to the Steam Stripper System.

2.6.2.3 Shutdown Procedures

The following procedures shall be followed for shutdown of the No. 1 and No.2 Evaporator System. Shutdown begins with the reduction of steam to the No. 1 Effect. All subsequent steps are considered to be steps in the Evaporator Shutdown procedure. A Summary of Shutdown Procedures is provided in Table 3.1-3.

TABLE 3.1-3
NO. 1 and NO.2 EVAPORATOR SYSTEM
SHUTDOWN PROCEDURES

1. Notify Utilities of Shutdown and maintain LVHC gas collection until Step 6 is completed
2. Cut back steam to the No. 1 Effect (Begin Shutdown)
3. Replace liquor feed to the No. 6 effect with water
4. Switch product liquor to 15% liquor feed tank @ Baume 25 deg.
5. Switch product liquor to boilout tank @ Baume 5 deg.
6. Valve water to sewer when clean
7. Secure steam flow to evaporators
8. Start hogging jets when there is no PTE
9. Open auxiliary vents/purge for 2 hours
10. End shutdown

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- No venting except through NCG system until the steam is shut off.
- Confirm that the condensate system is routed to the Steam Stripper System and that the automatic conductivity system is on-line.
  - If the conductivity is above 850, the condensate is sent to the sewer.
  - If the conductivity is below 850, the condensate is always sent to the Steam Stripper System.

2.6.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

NO. 1 and NO.2 EVAPORATOR SYSTEM MALFUNCTIONS		
Excess Emission Event	**Cause**	**Corrective Actions**
Hogging Jet A Open (high discharge temp.)	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contigency Plan • Shutdown if necessary • Complete Proficy database for event
Hogging Jet B Open (high discharge temp.)	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contigency Plan • Shutdown if necessary • Complete Proficy database for event
Condensate dumped on high conductivity	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

2.7 LVHC COLLECTION SYSTEM

2.7.1 PROCESS DESCRIPTION

The LVHC Collection System at the Pensacola Mill includes the various systems, hoods, vents, ductwork and gas movers that collect the low volume, high concentration gases from the digesters, evaporators, steam strippers, turpentine recovery and pulping process condensate collection systems and are used to convey these gases to the Thermal Oxidizer or Lime Kiln for destruction. The Mill operates two separate systems that are identified as the LVHC Collection System: the NCG system that receives the off-gas from the Batch digester sources, the Kamyr digester sources, Evaporator system sources and the Turpentine Recovery System sources, and the SOG system that receives the off-gas from the No. 2 Stripper System only.

The EPA defines a ***LVHC Collection System*** as follows:

> "*Low volume, high concentration* or *LVHC Collection System* means the collection of equipment including the digester, turpentine recovery, evaporator, steam stripper systems, and any other equipment serving the same function as those previously listed."

The EPA also defines a ***LVHC Collection System*** as follows:

> "*Low volume, high concentration* or *LVHC Collection System* means the gas collection and transport system used to convey gases from the LVHC Collection System to a control device."

The EPA also defines a ***Closed-Vent System*** as follows:

> "*Closed-vent system* means a system that is not open to the atmosphere and is composed of piping, ductwork, connections, and if necessary, flow-inducing devices that transport gas or vapor from an emission point to a control device."

The components of the LVHC Collection System that are regulated under the MACT rules and must be considered in terms of SSM events have been included. Areas in the system where MACT regulated releases could possibly occur are also noted.

2.7.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

2.7.2.1 Process Operating Time

The LVHC System is considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
LVHC System	When any of the regulated sources has a PTE.	When all regulated sources have completed startup.	When any regulated source has initiated shutdown.	When all regulated sources are at a "CAN NOT EMIT" state.

2.7.2.2 Startup Procedures

The LVHC Collection System collects and treats gases from nearly all areas of the Pulp System. Conditions where all sources will be down at the same time are very rare. As such, the LVHC Collection System will be operating nearly 100% of the time. Start-up and Malfunction conditions on any of the attached emitting units or control devices can cause venting situations in the LVHC Collection System. As such the emitting unit and control device SSM events will be referenced as possible causes within this section of the plan. Where applicable, the appropriate procedures will be referenced to avoid duplication.

There are two different types of startup conditions for the LVHC Collection System: a "hot" startup and a "cold" startup.

- A "cold" startup is defined as a startup following a prolonged shutdown or mill outage.
- A "hot" startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 3.3-1 is an outline of the Startup procedures for the LVHC Collection System. The steps have been identified as applicable to either a "hot" startup, "cold" startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both "hot" and "cold" startup conditions.

TABLE 3.3-1
LVHC COLLECTION SYSTEM
STARTUP PROCEDURES

Procedure	Hot	Cold
1. Confirm Treatment Unit is operating and meeting minimum requirements to accept LVHC gases.	✓	✓
2. Check valve positions and controllers to Thermal Oxidizer and/or Kiln	✓	✓
3. Manually open 165 pound steam flow to the LVHC Collection System ejectors		✓
4. Verify 165 pound steam flow to the LVHC Collection System ejectors		
5. Establish vacuum on steam ejectors	✓	✓
6. Notify Regulated Systems collected by the LVHC Collection System	✓	✓
7. Select Treatment Unit; Thermal Oxidizer or Kiln	✓	✓
8. Start LVHC Collection and transport system	✓	✓
9. Confirm collection of all regulated feed streams operating under normal conditions and start feed to the Treatment Unit	✓	✓
10. Confirm Steady-state operation of LVHC Collection System and treatment of LVHC gases for 60 minutes (end of startup)	✓	✓
11. End Startup	✓	✓

*The following Operating Procedures are **mandatory** during Startup to minimize emissions:*

- Confirm that the Gas Treatment Units have a flame present and are ready to receive the LVHC gases.
- Confirm that all system valves are positioned properly to direct the gases to one of the treatment units.
- ***Once confirmation is obtained***, startup of the LVHC Collection System can be initiated. This will ensure that any LVHC gas generated will be vented through the collection system and to the control device.

2.7.2.3 Shutdown Procedures

A Summary of Shutdown Procedures is provided in Table 3.3-2. Except for unique situations, the procedures shall be followed for all shutdowns of the LVHC Collection System. ***Shutdown begins when notification to the regulated systems have been completed.*** The subsequent steps identified are considered to be steps in the LVHC Collection System procedure intended to minimize any MACT regulated releases during the shutdown process.

TABLE 3.3-2
LVHC COLLECTION SYSTEM
SHUTDOWN PROCEDURES

Procedure	Hot	Cold
1. Notify Regulated Systems collected by the LVHC Collection System (Begin Shutdown)	✓	✓
2. Regulated Systems manually shut off supply line to the LVHC Collection System and open vent.	✓	✓
3. LVHC Collection System automatically vents to atmosphere	✓	✓
4. Purge LVHC Collection System vent lines until clear	✓	✓
5. Shut manual valves and controller(s)	✓	✓
6. Shut off 165-pound steam to the ejectors.	✓	✓
7. End of Shutdown	✓	✓

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- Notification of planned shutdown of the LVHC Collection System must be made to all regulated systems controlled by the LVHC Collection System prior to the shutdown.
- Confirm that the regulated systems have manually shut off supply line(s) to the LVHC Collection System.

2.7.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

A summary of excess emission/malfunction events for the LVHC Collection System is provided below.

Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

LVHC COLLECTION SYSTEM MALFUNCTIONS		
Excess Emission Event	**Cause**	**Corrective Actions**
No. 1 Stripper Rupture Disk Fails	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event
No. 1 Stripper Post Eductor Rupture Disk Fails	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event

No. 2 Stripper Rupture Disk Fails	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event
Hot Water Tank Vent Line Rupture Disk Fails	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event

Hot Water Tank Vent Line PRV Open	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event
SOG Vent Valve Open	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event

NCG Vent Valve Open	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event
SOG Line Pressure Exceeding Rupture Disk Rating	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event

NCG Ejector Pressure From Secondary Condenser Exceeding Rupture Disk Pressure Rating	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down • EmittingUnit/Control Device Malfunction	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown if necessary • Reference Applicable Emitting Unit/Control Device SSM Plan • Complete Proficy database for event

2.8 LOW VOLUME HIGH CONCENTRATION (LVHC) GAS TREATMENT

2.8.1 PROCESS DESCRIPTION

The Thermal Oxidizer at the Pensacola Mill serves as the primary control device for treating LVHC gases collected from the MACT regulated systems. The Lime Kiln serves as the back-up control device for periods of upset conditions and maintenance on the Thermal Oxidizer. The LVHC gases are introduced directly into the burner flame zone through concentric burners in both the Thermal Oxidizer and the Lime Kiln. Burner management logic prevents gases from being introduced into either unit until the appropriate operating conditions have been met. The Thermal Oxidizer has been designed to comply with the residence time/temperature requirements of the MACT Regulations. The Lime Kiln has more than adequate residence time and cannot be operated below the required temperature and still produce the quality product required to operate the mill. As such, there is no CMS variable for the Lime Kiln needed while treating LVHC gases. There is only one CMS required for the Thermal Oxidizer which is the fire box temperature.

2.8.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

LVHC treatment devices themselves are not MACT I regulated systems, therefore startup, shutdown and malfunctions of the Thermal Oxidizer and Lime Kiln are only relevant to this Plan in terms of their ability to control the LVHC gases. LVHC gases will not be routed to the Thermal Oxidizer or the Kiln during normal startup or shutdown conditions. However, a Thermal Oxidizer or Kiln malfunction could occur while burning the LVHC gases and, therefore, Thermal Oxidizer and Kiln malfunction events are addressed in the following section. The term malfunction is defined in the regulations as:

Malfunction - *Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part*

by poor maintenance or careless operation are not malfunctions.

2.8.2.1 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

A summary of malfunction events for the LVHC Incineration System are provided below.

LVHC Treatment System Malfunctions		
Excess Emission	**Cause**	**Corrective Actions**
Thermal Oxidizer Flame Failure/Temperature Low	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Switch LVHC gases to Lime Kiln • Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown LVHC emitting units if necessary • Complete Proficy database for event
Lime Kiln Flame Failure	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Switch LVHC gases to Thermal Oxidizer • Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Implement the Mill's NCG Contingency Plan • Shutdown LVHC emitting units if necessary • Complete Proficy database for event

LVHC TREATMENT SYSTEM CMS EVENTS		
Malfunction Event	**Cause**	**Corrective Actions**
Thermal Oxidizer Incineration Temperature Signal Error	• DCS Malfunction • PI System Malfunction • Process Malfunction • Instrument Malfunction • Routine Maintenance • Thermal Oxidizer Shut Down • Other	• No action required • Temperature verified; repair malfunction • Identify and repair malfunction • Return signal after maintenance completed • Other • Complete Proficy database for event

2.9 B-LINE BLEACH PLANT SYSTEM

2.9.1 PROCESS DESCRIPTION

The B-Line Bleach Plant System at the Pensacola Mill uses 100% chlorine dioxide substitution in the D, EoP, D Bleaching sequence to bleach softwood produced by the Mill's Batch Digester System. Washed pulp first passes through an oxygen delignification process before entering the blend chest at the Bleach plant. The Blend Chest is used to control consistency and pH of the stock entering the D0 tower. Chlorine dioxide is mixed with the pulp in a chemical mixer at the bottom of the D0 tower and the pulp flows upward through the tower. The pulp then passes through the D0 washer to wash out spent bleaching chemicals and removed lignin. In the extraction (Eop) stage, the pulp is reacted with caustic, oxygen and hydrogen peroxide. The pulp is subsequently washed in the EoP washer before entering another chemical mixer where chlorine dioxide is mixed with the pulp for the final D1 stage Bleaching. The D1 stage is configured similarly to the D0 stage. Chlorine dioxide bleaching towers, bleach plant washers following the chlorine dioxide towers, the seal pits associated with the bleach plant washers and the bleach plant sewer are vented to a 2-stage scrubbing system that uses white liquor to remove chlorine compound emissions in the bleach plant exhaust gases.

The EPA defines a ***Bleaching System*** as follows:

> "*Bleaching system* means all process equipment after high-density pulp storage prior to the first application of oxidizing chemicals or reducing chemicals following the pulping system, up to and including the final Bleaching stage."

The EPA also defines ***Bleaching*** as follows:

> "*Bleaching* means brightening of pulp by the addition of oxidizing chemicals or reducing chemicals."

The EPA also defines ***Bleaching Line*** as follows:

"*Bleaching line* means a group of Bleaching stages arranged in series such that Bleaching of the pulp progresses as the pulp moves from one stage to the next."

The EPA also defines ***Bleaching Stage*** as follows:

"*Bleaching stage* means all process equipment associated with a discrete step of chemical application and removal in the Bleaching process including chemical and steam mixers, Bleaching towers, washers, seal (filtrate) tanks, vacuum pumps, and any other equipment serving the same function as those previously listed."

Based on this definition, the MACT-regulated equipment associated with the B-Line Bleach Plant System is detailed in Table 4.2-1:

Table 4.2-1
B-Line Bleach Plant System [(a)]
List of MACT-Regulated Equipment

Equipment Description
Blend Chest
Spill Tank
Chemical mixers
D_0 Tower
D_0 Washer
D_0 Seal Tank
D_1 Tower
D_1 Washer
D_1 Seal Tank
Large Scrubber Fan
1st and 2nd Stage Scrubbers

[(a)] The MACT-regulated system also includes all pumps, valves, flanges, piping, and other related equipment associated with the regulated system.

Please note: The Bleaching System does not include caustic towers, extraction washers, or associated filtrate tanks.

Figure 4-2 depicts the general arrangement of the B-Line Bleach Plant System. The components of the B-Line Bleach Plant System that are regulated under the MACT rules and must be considered in terms of SSM events have been included. Areas in the system where MACT regulated releases could possibly occur are also noted.

2.9.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions. A separate section for each of these operating conditions is discussed below.

2.9.2.1 Process Operating Time

The B-Line Bleach Plant System will considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT

B-Line Bleach Plant	Combined ClO2 flow to the Do and the D1 stages is >25 gpm or the stock flow to the D1 washer is > 200 gpm	Steady-state Bleach plant operation following initial discharge of pulp from last D-stage washer	Shutdown begins when the system vent fan is deactivated	Combined ClO2 flow to the Do and the D1 stages is <25 gpm for 60 minutes and the stock flow to the D1 washer is <200 gpm

2.9.2.2 Startup Procedures

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. To account for this, startup of the B-Line Bleach Plant System is considered to be complete once steady state operations have been achieved and pulp begins to be discharged from the D1 stage washer.

There are two different types of startup conditions for the B-Line Bleach Plant System: a "hot" startup and a "cold" startup.

- A "cold" startup is defined as a startup following a prolonged shutdown or mill outage.
- A "hot" startup is defined as a startup following a short-duration shutdown where process materials may still be present in system components.

Provided below in Table 4.2-2 is an outline of the Startup procedures for the Bleach Plant System. The steps have been identified as applicable to either a "hot" startup, "cold" startup, or both. Please note, the completion of startup and the transition to normal operations is defined above and is consistent for both "hot" and "cold" startup conditions.

TABLE 4.2-2
B-LINE BLEACH PLANT SYSTEM
STARTUP PROCEDURES

Procedure	Hot	Cold
1. Introduce white liquor to second stage of scrubber		✓
2. Confirm second stage liquid level		✓
3. Start second stage liquid circulation pump to first stage		✓
4. Confirm pH settings		✓
5. Start first stage liquid circulation pump		✓
6. Verify automatic pH reading > 10.0		✓
7. Start vent fan		✓
8. Confirm Steady-state Bleach plant operation following initial discharge of pulp from last D-stage washer (end of startup)		✓
9. End Startup		✓

*The following Operating Procedures are **mandatory** during Startup to minimize emissions:*

- Confirm that the Bleach plant scrubber system is fully operational.
- Confirm that the exhaust gas dampers are correctly positioned.
- Confirm that the scrubber liquor feed and discharge systems are fully functional.
- Confirm pH is above set point minimum

2.9.2.3 Shutdown Procedures

A Summary of Shutdown Procedures is provided in Table 4.2-3. Except for unique situations, the procedures shall be followed for all shutdowns of the Bleach Plant Scrubber System. ***Shutdown begins when the system vent fan is deactivated***. All subsequent steps are considered to be steps in the Bleach Plant Scrubber System shutdown procedure intended to minimize any MACT regulated releases during the shutdown process.

TABLE 4.2-3
B-LINE BLEACH PLANT SCRUBBER SYSTEM
SHUTDOWN PROCEDURES

Procedure	Hot	Cold
1. Confirm Bleach Plant down		✓
2. Shut down vent fan (Begin Shutdown)		✓
3. Stop white liquor flow to scrubber		✓
4. Shut down scrubber liquid circulation pumps		✓
5. Drain scrubbers if necessary		✓
6. End of Shutdown		✓

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- All Bleaching operations must be discontinued prior to shutdown of the vent fan and Bleach plant scrubber system.

2.9.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

In the event of an instrument or process control system malfunction, compliance will be demonstrated through manual readings of the applicable variable (fan amps, re-circulation pump amps or pH) until the trouble is corrected and the automatic monitoring system is put back into service. These manual readings will be taken once per hour during the period that automatic readings are unavailable. Verification that these readings can be used to demonstrate compliance will be obtained during the initial performance test.

A summary of malfunction events for the B-Line Bleach Plant System is provided below.

Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

B-Line Bleach Plant MALFUNCTIONS		
Excess Emission Event	**Cause**	**Corrective Actions**
Large Scrubber Fan Amps Out of Range	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
1st Stage Re-circulation Pump Amps Out of Range	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event
2nd Stage Re-circulation Pump Amps Out of Range	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Shutdown if necessary • Complete Proficy database for event

B-Line Bleach Plant MALFUNCTIONS		
Excess Emission Event	**Cause**	**Corrective Actions**
Scrubber pH Out of Range	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Run manual pH measurement if needed • Shutdown if necessary • Complete Proficy database for event

B-Line Bleach Plant CMS MALFUNCTIONS		
CMS Event	**Cause**	**Corrective Actions**
Large Fan Amp Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event

pH Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Run manual pH measurements if needed; identify and repair malfunction • Complete Proficy database for event
1st Stage Recirculation Amp signal error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
2nd Stage Recirculation Amp signal error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event

2.10 Clarifier Divert System

2.10.1 Process Description

The Pensacola Mill received approval from the Florida Department of Environmental Protection to implement the Clean Condensate Alternative (CCA) in lieu of high volume low concentration (HVLC) NCG collection. This project includes the installation of twin primary clarifiers at the waste water treatment plant to replace the 11 acre settling basin for removal of primary solids. The settling basin was converted to a multi-surge basin (MSB) to protect the WWTP from in-mill process upsets and excessive rainfall. Emission credits will be gained from the reduction of methanol emissions due to the reduction in surface area available for volatilization and through maximizing the Mill's capability to collect and treat methanol in excess of the 11.1 #/ODTUP required for MACT I Phase I. EPA approved Water 9 modeling has been completed to establish baseline emissions and verify, through an initial performance test (IPT), that the emissions reductions are sufficient to offset the reductions that would have been achieved from implementing HVLC collection and treatment.

The physical components being monitored for compliance verification are the two divert gates/valves that allow high loading primary effluent to be diverted to the MSB either pre or post clarifier. This divert ability is needed to protect the biological integrity of the WWTP from in-mill process upsets and excessive rainfall as well as to allow repair of the clarifier system in the event of a catastrophic failure.

2.10.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions. The terms startup, shutdown, and malfunction are defined in the regulations as:

> **Startup -** *Startup means the setting in operation of an affected source for any purpose.*

Shutdown - *Shutdown means the cessation of operation of an affected source for any purpose.*

Malfunction - *Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.*

A separate section for each of these operating conditions is discussed below.

2.10.2.1 Startup

The primary clarifiers were designed to have the capacity for the Mill to run on one clarifier for an extended period of time. Therefore, it is not anticipated that a clarifier start-up will result in diversion to the MSB and subsequently increased emissions. The following section describes the start-up procedure for the clarifiers system:

START-UP PROCEDURES CLARIFIERS

STEP 1: Start Clarifier Rake Motor(s) as required.

STEP 2: Start Clarifier Underflow Pump(s) as required.

2.10.2.2 Shutdown

The primary clarifiers were designed to have the capacity for the Mill to run on one clarifier for an extended period of time. Therefore, it is not anticipated that a clarifier shut down will result in diversion to the MSB and subsequently increased emissions. The following section describes the shut down procedure for the clarifiers system:

SHUT DOWN PROCEDURES CLARIFIERS

STEP 1: Stop Clarifier Motor(s) as required.

STEP 2: Stop Clarifier Underflow pump(s) as required

2.10.2.3 Malfunction

Five types of malfunctions that can result in diversion to the MSB have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction and Excessive Rainfall. The first four malfunction types are applied to both the clarifiers themselves as well as Mill processes that could impact the viability of the aeration stabilization (ASB) system. Each type of malfunction is addressed in this Plan.

Excess Emission Event	Cause	Corrective Actions
Pre-Clarifier Divert To MSB	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Excessive Rainfall • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Monitor effluent flow and return to normal ASAP • Complete Proficy database for event • Shutdown if necessary
Post Clarifier Divert To MSB	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Exessive Rainfall • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Monitor effluent flow and return to normal ASAP • Complete Proficy database for event • Shutdown if necessary

2.11 Condensate Collection

2.11.1 Process Description

The condensate collection system configuration does not change significantly due to the implementation of CCA. Therefore, if there are questions about the system configuration, please refer to section 2 of this document. The only change that is related to the CCA project is that we now have a driving force to increase methanol collection/treatment in the #2

Stripper. There are two proposals to the FDEP to track MeOH collection and get CCA credits for collecting an amount greater than the 11.1 #/ODTUP required for MACT I Phase II. The initial proposal was that the Mill would collect at least 13 #/ODTUP to the #2 Stripper and have a fixed amount of time that the Mill could divert effluent to the MSB. Our Proficy system would trigger a CCA excess emission event for condensate collection anytime the 15 day average dropped below 13 #/ODTUP and MACT I Phase I condensate collection event if the collection dropped below 11.1 #/ODTUP. The second proposal is to use a credits/debits system to calculate the project's net methanol impact on a daily basis. This system would not have hard targets for additional methanol collection or hard limits on the MSB usage. Instead, the baseline and IPT Water 9 model results along with site specific data for HVLC source emission factors will be used to calculate the net impact to methanol emissions. When the stripper is down, the system will calculate less credits due to the methanol that was being stripped will be treated biologically. Also, there will be no hard limit on the amount of time the MSB could be used; if effluent is diverted to the settling basin, the emissions increase will be calculated based on the site specific emission data already established. Conversely, if we collect more methanol in the stripper, the emissions from the WWTP will be reduced and Proficy will calculate a credit. The Mill will be deemed to be in compliance with the rule as long as the 15 day average has a positive credit balance when compared to the debits.

2.11.2 Startup, Shutdown, Malfunction events

see section 2

2.11.2.1 Startup

see section 2

2.11.2.2 Shutdown

see section 2

2.11.2.3 Malfunction

see section 2

PART II

MACT II SOURCES

40 CFR 63, Subpart M – Chemical Recovery Combustion Sources NESHAP

3. RECOVERY BOILERS

3.1 RECOVERY BOILERS 1 AND 2

3.1.1 PROCESS DESCRIPTION

Recovery Boilers #1 and #2. These are a low odor design recovery boilers manufactured by Babcock and Wilcox. Each unit is a 655 MMBtu/hr heat input boiler designed to burn a maximum of 111,000 pounds per hour of virgin black liquor solids and recover 42,319 pounds of smelt per hour. Black liquor is normally used for fuel but natural gas, number 4, number 5, or number 6 fuel oils may be used as a backup fuel at a maximum heat input rate of 572 MMBtu/hr. Each unit has a Koppers dual chamber electrostatic precipitator to control particulate emissions. Total reduced sulfur emissions are monitored with a continuous emission monitor (CEM) system.

3.1.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

3.1.2.1 Process Operating Time

The No.1 and No.2 Recovey Boilers will considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
No.1 and No.2 Recovery Boilers	Firing black liquor	Black Liquor Solids Firing Rate = 2.4 MM lbs./day for 24 consecutive hours	Black liquor firing is reduced with the intention of taking the boiler down.	If ANY of the following are true: 1) No guns in boiler for >240 minutes, 2) Liquor Divert valve position equals "divert" for >240 minutes, 3) No steam flow for >240 minutes, 4) Wash operate switch position equals "ON"

3.1.2.2 Startup Procedures

Startup Procedures for the Recovery Boilers are detailed in the Recovery Boiler Training documents maintained by the Area Training Coordinator.

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. To account for this, startup of a Recovery Boiler is considered

to be complete when the Black Liquor Solids Firing Rate = 2.4 MM lbs./day for 24 consecutive hours.

The following Operating Procedures are used during Startup to minimize emissions:

- Confirm the operation of the Electrostatic Precipitator.
- Confirm that the Continuous Opacity Monitor is operational.
- ***Once confirmation is obtained***, startup of the Recovery Boilers can be initiated. This will ensure that any particulate matter generated will be vented through the control device.

3.1.2.3 Shutdown Procedures

Startup Procedures for the Recovery Boilers are detailed in the Recovery Boiler Training documents maintained by the Area Training Coordinator.

Shutdown begins when black liquor firing is reduced with the intention of taking the boiler down.

3.1.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.
Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

A summary of excess emission/malfunction events for the Recovery Boilers is provided below.

Recovery Boiler System Malfunctions		
Excess Emission	**Cause**	**Corrective Actions**
Opacity High	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Follow the Trouble Cause Correction Procedures • Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event

Recovery Boiler CMS Malfunctions

CMS Event	Cause	Corrective Actions
Opacity Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Opacity verified; identify and repair malfunction • Complete Proficy database for event

3.2 SMELT DISSOLVING TANKS

3.2.1 PROCESS DESCRIPTION

Smelt Dissolving Tanks #1 and #2. Each tank is rated to receive a maximum of 42,319 pounds per hour of molten smelt consisting primarily of sodium carbonate, sodium sulfide and sodium sulfate from the recovery boiler(s). The smelt is dissolved in weak wash to yield green liquor for the slaking process. Particulate emissions are controlled by a wet venturi scrubber manufactured by Air Pol.

3.2.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

3.2.2.1 Process Operating Time

The Smelt Dissolving Tanks will considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
Smelt Dissolving Tanks	Firing black liquor	Black Liquor Solids Firing Rate = 2.4 MM lbs./day	Black liquor firing is reduced with the intention	If ANY of the following are true: 1) No guns in boiler for

		for 24 consecutive hours	of taking the boiler down.	>240 minutes, 2) Liquor Divert valve position equals "divert" for >240 minutes, 3) No steam flow for >240 minutes, 4) Wash operate switch position equals "ON"

3.2.2.2 Startup Procedures

Startup Procedures for the Smelt Dissolving Tanks are detailed in the Recovery Boiler Training documents maintained by the Area Training Coordinator.

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. To account for this, startup of a Smelt Dissolving Tank is considered to be complete when the Associated Recovery Boiler Black Liquor Solids Firing Rate = 2.4 MM lbs./day for 24 consecutive hours.

The smelt dissolving tanks will have a potential to emit exists when a black liquor gun is put in the corresponding recovery boiler.

The following Operating Procedures are used during Startup to minimize emissions:

- Confirm the operation of the Scrubber.

- Confirm that the dP and Flow have reached appropriate levels.
- ***Once confirmation is obtained***, startup of the Smelt Dissolving Tanks can be initiated. This will ensure that any particulate matter generated will be vented through the control device.

3.2.2.3 Shutdown Procedures

Shutdown Procedures for the Smelt Dissolving Tanks are detailed in the Recovery Boiler Training documents maintained by the Area Training Coordinator.

Shutdown begins when black liquor firing is reduced with the intention of taking the boiler down.

The following Operating Procedures are ***mandatory*** *during Shutdown to minimize emissions:*

- The scrubber shall remain in operation until the associated recovery boiler has no potential to emit.

3.2.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

Note: Malfunctions that are associated with startup or shutdown conditions are covered under Startup and Shutdown Procedures of this plan.

A summary of excess emission/malfunction events for the Smelt Dissolving Tanks is provided below.

Smelt Dissolving Tank Malfunctions		
Excess Emission	**Cause**	**Corrective Actions**
Scrubber Flow below minimum requirement	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event
Scrubber dP below minimum requirement	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event
Smelt Dissolving Tank Bypass Damper Open	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event

Smelt Dissolving Tank CMS Malfunctions		
CMS Event	**Cause**	**Corrective Actions**
Scrubber Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
Scrubber dP Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • dP verified; identify and repair malfunction • Complete Proficy database for event

3.3 LIME KILN

3.3.1 PROCESS DESCRIPTION

A natural gas, or No.6, No.5 or No.4 fuel oil, fired kiln with a maximum operating rate of 20.83 tons per hour of lime as CaO. The Kiln produces CaO by calcining calcium carbonate recovered from the white liquor system. The kiln also serves as a backup control device for the LVHC system. Emissions are controlled by an electrostatic precipitator which is vented in series to a Ducon Ventri-Rod wet scrubber using mill water and weak wash as the scrubbing media.

3.3.2 STARTUP, SHUTDOWN, MALFUNCTION EVENTS

This section provides a summary of startup, shutdown, and malfunction events and the corresponding corrective measures or appropriate actions.

3.3.2.1 Process Operating Time

The Lime Kiln will considered to have the potential to emit LVHC gases as shown below.

	Indication of PTE = CAN EMIT	Startup Complete PTE = CAN EMIT	Shutdown Initiated PTE = CAN EMIT	Indication of PTE = CAN NOT EMIT
Lime Kiln	Flow to the mud filters and the Filtered Mud Belt Direction =	Combined flow to Mud Filters >150 gpm for 24 Hours AND Filtered Mud Belt	Mud is taken out of the kiln with the intention of taking the kiln down	Mud Flow to #1 Filter <25 gpm for 4 Hours AND Mud Flow to #2 Filter <25 gpm for 4 Hours OR

	Lime Mud Dryer	Direction = To Lime Mud Dryer		Filtered Mud Belt Direction = To Grade for 4 Hours

3.3.2.2 Startup Procedures

Startup Procedures for the Lime Kiln are detailed in the Lime Kiln training documents maintained by the Area Training Coordinator.

The exact procedures and the transition between startup and normal operations are event-specific and few system startups are completed in the identical timeframe with the identical steps noted here. Minor malfunctions may occur to process equipment that delay the transition from startup to normal operating conditions. The end of the startup period is defined to be when the combined flow to Mud Filters >150 gpm for 24 Hours AND Filtered Mud Belt Direction = To Lime Mud Dryer.

*The following Operating Procedures are **mandatory** during Startup to minimize emissions:*

- Confirm the operation of the Electrostatic Precipitator.
- Confirm Operation of the wet scrubber
- Confirm that the Continuous Opacity Monitor is operational
- Confirm that the continuous parameter monitoring system is operational.
- ***Once confirmation is obtained***, startup of the Lime Kiln. This will ensure that any particulate matter generated will be vented through to the control devices.

3.3.2.3 Shutdown Procedures

Shutdown Procedures for the Lime Kiln are detailed in the Lime Kiln Training documents maintained by the Area Training Coordinator.

Shutdown begins when Mud flow to the filters is reduced with the intention of shutting down the Lime Kiln.

*The following Operating Procedures are **mandatory** during Shutdown to minimize emissions:*

- Continue operation of the Electrostatic Precipitator until the potential to emit equals "CAN NOT EMIT".
- Continue operation of the wet scrubber until the potential to emit equals "CAN NOT EMIT".

3.3.2.4 Malfunction Events

Four types of malfunctions that can result in excess MACT emissions have been defined: Process Malfunctions, Equipment Malfunctions, Electrical Malfunctions and Instrument/PCS Malfunction. Each type of malfunction is addressed in this Plan. A description of each type of malfunction was given earlier in this document.

A summary of excess emission/malfunction events for the Lime Kiln is provided below.

Lime Kiln Malfunctions		
Excess Emission	**Cause**	**Corrective Actions**
Opacity High	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event
Scrubber Flow below minimum requirement	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event
Lime Kiln production rate above maximum limit or below minimum limit	• Electrical Malfunction • Mechanical Malfunction • Process Malfunction • Instrument/PCS Malfunction • Start-up/Shut Down	• Identify and correct malfunction • Enter work request in SAP for repair/tracking if needed • Complete Proficy database for event

Lime Kiln CMS Malfunctions		
CMS Event	**Cause**	**Corrective Actions**
Scrubber Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
Opacity Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Opacity verified; identify and repair malfunction • Complete Proficy database for event
#1 Mud Filter Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event

#1 Mud Filter Density Meter Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Density verified; identify and repair malfunction • Complete Proficy database for event
#2 Mud Filter Flow Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Flow verified; identify and repair malfunction • Complete Proficy database for event
#2 Mud Filter Density Meter Signal Error	• PI System Malfunction • Routine Maintenance • Instrument Malfunction • DCS Malfunction • Shut Down • Other	• Identify and repair malfunction • Enter work request in SAP for repair/tracking if needed • No action required – System down • Return signal after maintenance is complete • Density verified; identify and repair malfunction • Complete Proficy database for event