

MEETING THE REPORTING CHALLENGES OF THE MACT STANDARDS DEFINED UNDER 40CFR PART 63 SUBPART S THROUGH THE USE OF AN EVENT LOGGING/REPORTING SOFTWARE SOLUTION

Matthew J. Radigan
VIM Technologies, Inc.
7464 New Ridge Rd. – Suite 2
Hanover, MD 21076

Darius Rogers
Smurfit Stone Containerboard
19th and Main Streets
West Point, VA 23181

Kevin Sullivan
VIM Technologies, Inc.
347 New Street – Suite 11
Quakertown, PA 18951

ABSTRACT

Under the NESHAPS regulatory guidelines for the Pulp & Paper industry defined by 40CFR 63, Subpart S, the mill is required to demonstrate continuous compliance of specified control devices, continuous parameters monitoring devices, and computer-controlled valves, at all times. Any paper mill process that utilizes such devices is subject to this requirement, whether it is called out in the list of monitored parameters or not. For those not called out in the Rule, the plant must propose and demonstrate to the local Department of Environmental Quality (DEQ) a set of monitoring parameters proving continuous compliance that is in line with the standards that have been set. Given the number of devices and possible monitoring points in the average mill, management of this data and demonstration of continuous compliance may be a real challenge. This paper addresses one software solution, which uses electronic data gathered from the operating statuses of the regulated processes on a 1-minute average basis. Transitions in operating mode and excess emissions are logged by the software and reported chronologically as Event Logs. The software accounts for every minute of every day including “out of service” periods and flags reported data appropriately and prepares a Summary Report and Excess Emissions Report pursuant to 40 CFR 63 Subpart A. The introduction of this type of software solution in conjunction with the mill standard operating procedures allows for full compliance, with minimal operator intervention.

INTRODUCTION

The general provisions of the Clean Air Act Amendments (CAAA) of 1990 and the National Emissions Standards for Hazardous Air Pollutants (NESHAPS) provide industry specific standards and definitions for maintaining air compliance guidelines through the use of Maximum Achievable Control Technologies or MACT Standards. Owners and operators of facilities subject to MACT Standards and the associated monitoring methodologies to ensure compliance are further defined under the Code of Federal Regulations (CFR) Part 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories. These general provisions are further broken down into Subparts, which speak, to specific industry types and in some cases individual emission sources (i.e. Coke Ovens, Dry Cleaning Facilities, Secondary Lead Smelting, Pulp & Paper Industry, etc.). For the purposes of this paper, 40CFR Part 63 and the associated Subparts will also be referred to as the Rule.

40CFR Part 63 Subpart A Section §63.2 provides definitions of terms used throughout the remainder of the Rule. Included in this list of definitions is an outline of monitoring methodologies, which are called out in the industry specific Subparts. The monitoring choices include; Continuous Emission Monitoring Systems (CEMS), Continuous Monitoring System (CMS), Continuous Opacity Monitoring System (COMS) and Continuous parameter monitoring system. Monitoring methods are defined by the relevant standards applicable to each affected source. In most cases Continuous Monitoring Systems (CMS) apply, calling for representative measurements of emissions or process parameters from the affected source to be obtained¹. An affected source, in this case, is defined as a control device used in the regulated process. Unlike stack emission systems, the CMS measures parameters and the status of control devices, not gaseous effluent of the source outlet. All the monitoring requirements are provided in greater detail under 40CFR Part 63 Subpart A Section §63.8.

Pulp and Paper mills are subject to the rules and guidelines found in 40CFR Part 63 Subpart S. An overview of the Rule text may be found in Appendix A of this paper. It is here where plant specific processes and affected sources are identified for compliance monitoring. The mill is required to demonstrate continuous compliance of specified control devices, continuous parameters monitoring devices, and computer-controlled valves, in accordance to the referenced Rule Sections §63.2, §63.453 (Subpart S) and §63.8 (Subpart A). The means for achieving these monitoring requirements is not defined. The mill must determine how they will comply with the Rule and determine

if they will satisfy their continuous monitoring requirements with the monitoring plan they choose to implement. This is all subject to the approval of the governing regulatory agency.

This paper outlines the monitoring plan process, continuous monitoring strategy and data acquisition/software solution used by one mill to satisfy the environmental reporting of their MACT Rule affected sources. The referenced continuous monitoring system (CMS) has been on line and operational since April 2001. The monitoring system has satisfactorily met the reporting requirements of NESHAPS, 40CFR Part 63 Subpart S and the Virginia DEQ since the implementation date and continues to log data for future reports. It is the intent of this paper to present the results of this total solution process, which brought together the efforts of a well defined site monitoring plan, the operational excellence of site personnel and the use of application specific software tools, to achieve MACT monitoring compliance.

SOLUTION OVERVIEW

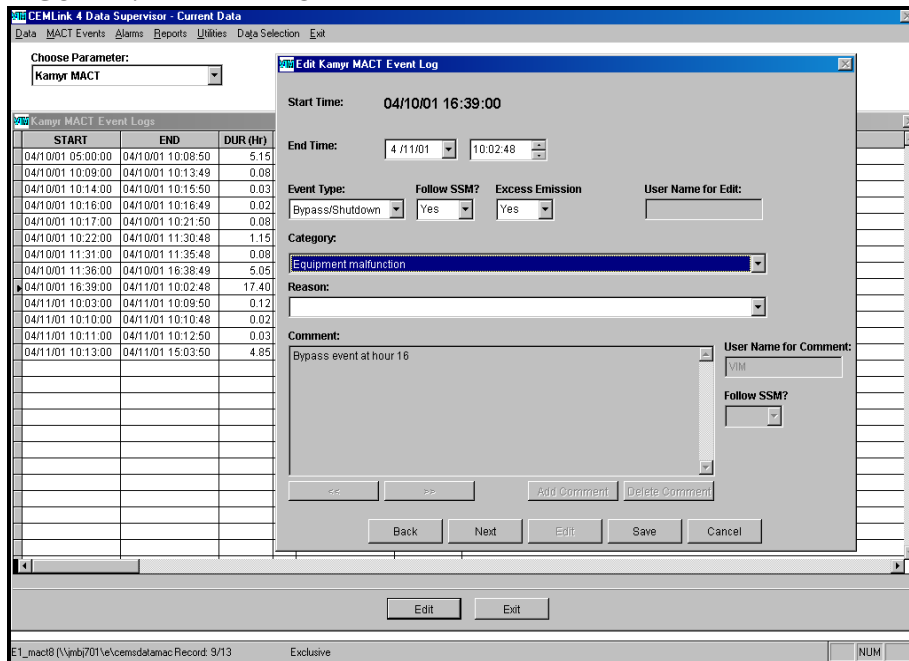
The process of identifying all the affected sources and determining the applicable continuous monitoring system methods starts with a thorough review of the Rule. The objective is to identify all the process elements called out in the Rule that have the potential for emitting Hazardous Air Pollutants (HAPs). The environmental team at the mill needs to take the time to understand how the mill is affected before they can determine a plan for compliance. Table I (Appendix B) represents a general summary of affected sources and processes defined under 40CFR Part 63 Subpart S. This Table was derived from a review of the referenced Rule subsections. Regulatory resources available on the Internet can be useful in streamlining the source identification process. Appendix C provides a representative sample of a decision tree flowchart found on the TNRCC Natural Resources Home Page for 40CFR Part 63 Subpart S. By following this flowchart the mill can determine which standards apply to specific mill processes, establishing the groundwork necessary to formulate the compliance plan.

The subject mill organized their monitoring requirements into a site specific environmental management system document. This site plan not only identified the systems (Table II Appendix D) and processes (Table III Appendix D) covered under the Rule but also addressed the Compliance Monitoring System (CMS) that would be used to demonstrate continuous compliance, at all times. The system relies on both electronic monitoring of analog signals and manual data entry by designated Control Room Operators. In order to simplify the reporting and record-keeping requirements (§63.454, §63.455), the mill brought the problem to their CEMS data acquisition partners and began to define a data acquisition system to deal with the designated inputs.

It was determined through careful analysis of the compliance requirements that the mill needed to develop event logs to monitor control device transitions and emissions from each of the affected sources. Each event log is a chronological record of every event that occurs for every minute of every day to the regulated process or control device. All periods of operation must be accounted for in this plan including out-of-service periods. In accordance with the Rule, event logs may be edited for reporting accuracy. Ten event logs were created to monitor the subject mill. In order to ensure data validity and true data integrity the mill assigned data editing responsibility to specific site personnel. A list of these logs and the approved Operator Editor may be found below in Table IV- Appendix E.

It was an important consideration that the applicable software have the capability to edit data and to also be able to track changes (Figure 1). The *CEMLink*[™] system from VIM Technologies, Inc., has standard features that allow the end user to access data for editing and to track their changes an edit log. Edited data is automatically time stamped and logged by the editor. In this manner a history of data changes can be tracked, monitored and incorporated into standard data QA/QC functions at the mill.

FIGURE 1: DATA EDITOR



Since the Rule calls for continuous monitoring the event logging system had to be capable of capturing data on a regular time interval. Using their experience with CEMS data acquisition systems and the associated regulatory requirements for smoke stack air emissions, the mill specified data collection of 1-minute averages to monitor the operating status of the regulated processes. Each 1-minute average is made up of six (6) 10-second scans of the process signals. These signals come to the CMS data acquisition system (DAS) from various datalogging devices throughout the plant, including; Pulp Mill Control Room DCS, WWTP Control Room Field Signals PLC and the CEMS PLCs for No. 8 Power Boiler. The collection of all the data points allows the event logs to be built on a continuous basis. Event logs are maintained in the DAS relational database. The relational database stores logged data, which may be later accessed for editing and reporting purposes. Using other standard features of the software, the mill can print individual event logs on a daily, monthly, quarterly and semi-annual basis, without having to export data outside the DAS application. Event logs are also linked to a comments log, which allows the operator to input an unlimited amount of comments to each event that is logged. With the plan in place, the logical sequence of events identified and the monitoring strategy defined, the mill then set out about the task of building the key components of the CMS.

SOLUTION SUMMARY

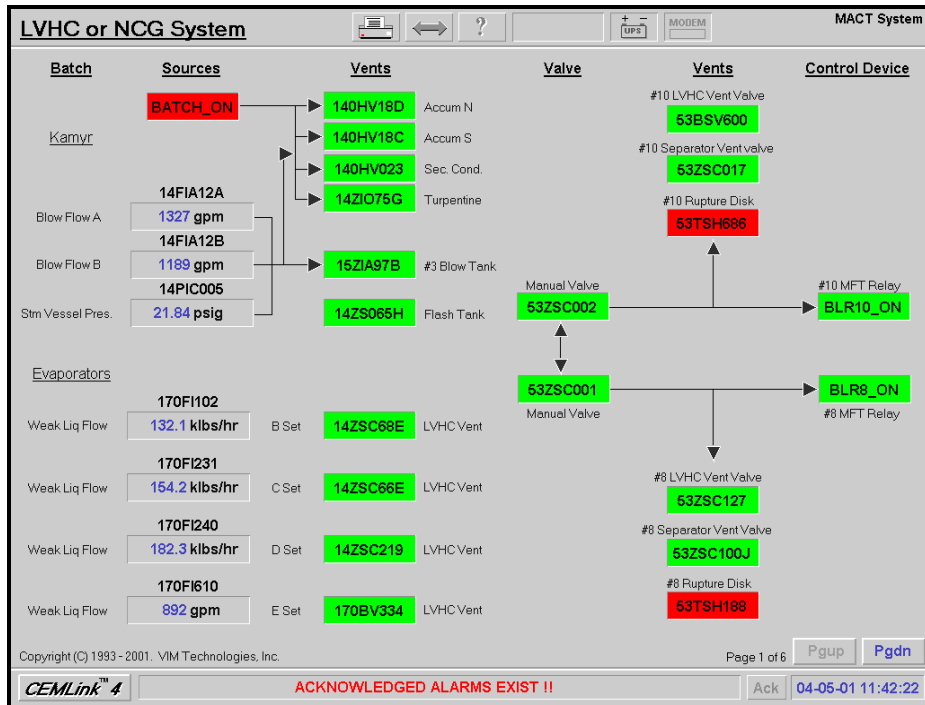
The DAS portion of the mill CMS had to be able to capture the control device operating status as they happen on a real time basis. They achieved this by utilizing available analog signals from the regulated control devices (i.e. valves, vent lines) that are representative of the compliance-monitored events. All significant events had to be logged by the DAS, including; start up or process transition periods, normal operations, shutdown, process down, bypass, etc. Programmable logic control devices were used to capture the available process signals. These devices were configured to mill standards and used design conventions that were consistent with the existing CEMS DAS systems that were on site. From this list of available operating parameters, the software assigned process codes to each event. The criteria for defining the process codes is part of the site-monitoring plan and may be found in Appendix F - Table V. Each of the processes listed in Table IV, had to be assigned a process monitoring scheme. Table VI – Appendix G shows how this was handled for the Batch Digester. Similar tables were created for the other nine (9) processes.

The identified analog signals and associated status bits are used to create the event logs for the specified process. In addition to building the process monitoring criteria, the DAS had to also be capable of logging excess emissions. Excess emissions exist whenever LVHC gases or pulping process condensates are not captured by the designated

closed vent collection system. Plant personnel easily monitor the overall operation of the CMS through PC terminals located in strategic locations. Operators generally access the CMS through DAS PCs located in the control room of each of the monitored areas of the mill. Operators interface with the DAS through normal Windows™ based, mouse/keyboard functions.

Graphical screens in each control room display the status of each bypass valve and the value of each analog signal (Figure 2). The screens are accessible to any MACT PC logged into the mill network. Although individual DAS PCs were assigned to individual plant locations (i.e. Pulp Mill, WWTP area), the CMS took advantage of the networking capability of the DAS and allows access to any process area from any of the licensed PCs on the mill MACT network. In this manner process values or compliance events (excess emissions) from any process can be retrieved and edited from any of the networked PCs. See Appendix H for a site map of the CMS DAS solution.

FIGURE 2: VALVE SCREEN



The DAS is designed with the ability to generate a series of pre-defined, event log reports. The mill personnel responsible for reporting can access the report database through the Data Supervisor. Reports are selected through a series of pull down menus and check boxes. Semi-annual event log reports are submitted to the Virginia DEQ, to complete the compliance requirements of the mill. To date, Smurfit Stone –West Point Mill has met all the MACT compliance requirements using the CMS system described above.

CONCLUSIONS

The CMS implemented at the subject mill was specifically designed to simplify the compliance process. This goal was achieved through the combination of a well thought out plan, trained operator personnel and innovative software development resulting in a fully compliant continuous monitoring system. With this baseline of successful compliance in place, the mill has laid a solid compliance model foundation and is prepared to meet the challenges of future regulatory requirements.

ACKNOWLEDGEMENTS

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References

1. *Code of Federal Regulations 40CFR Part 63 Subpart A*, “General Provisions §63.8 Monitoring Requirements, Source: [59 FR 12408, Mar. 16 1994; as amended at 64 FR 7457, Feb. 12, 1999].
2. *Code of Federal Regulations 40CFR Part 63 Subpart S*, “National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry §63.443 - §63.450 Standards, Source: [63 FR 18503, April 15, 1998; as amended at FR 17563, April 12, 1999].
3. Environmental Management System, “Section 11.0 Monitoring Requirements”, EMS-03-11-14K, pp.1-15 (2001)

APPENDIX A

40 CFR 63 Subpart S - Rule Text

National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry

- ! [§63.440](#) Applicability.
- ! [§63.441](#) Definitions.
- ! [§63.442](#) [Reserved]
- ! [§63.443](#) Standards for the pulping system at kraft, soda, and semi-chemical processes.
- ! [§63.444](#) Standards for the pulping system at sulfite processes.
- ! [§63.445](#) Standards for the bleaching system.
- ! [§63.446](#) Standards for kraft pulping process condensates.
- ! [§63.447](#) Clean condensate alternative.
- ! [§63.448-449](#) [Reserved]
- ! [§63.450](#) Standards for enclosures and closed-vent systems.
- ! [§63.451-452](#) [Reserved]
- ! [§63.453](#) Monitoring Requirements.
- ! [§63.454](#) Recordkeeping Requirements.
- ! [§63.455](#) Reporting Requirements.
- ! [§63.456](#) [Reserved]
- ! [§63.457](#) Test methods and procedures.
- ! [§63.458](#) Delegation of authority.
- ! [§63.459](#) [Reserved]
- ! [Table 1](#) General Provisions Applicability to Subpart S

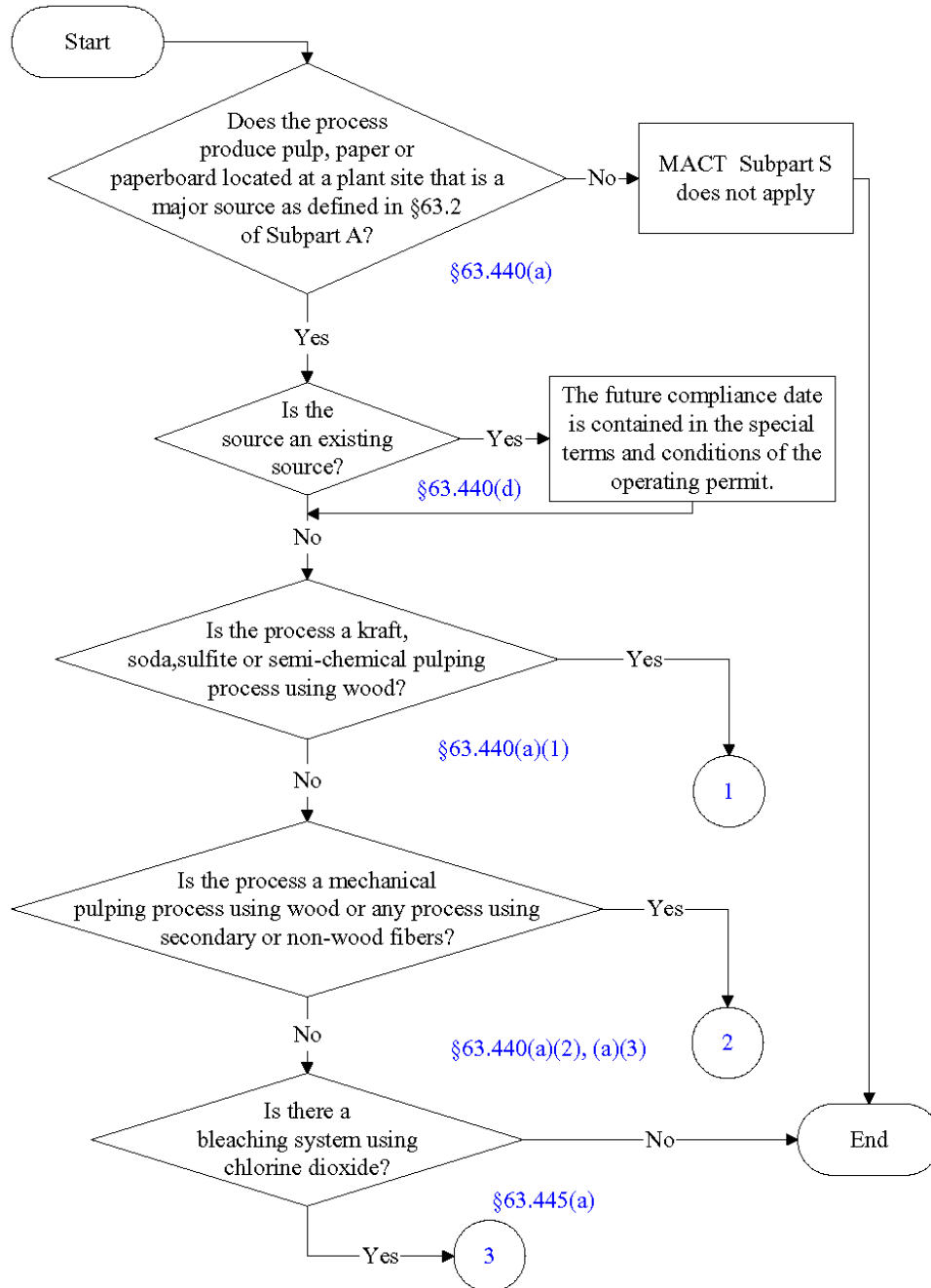
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APPENDIX B

Table I: Summary of Affected Sources²

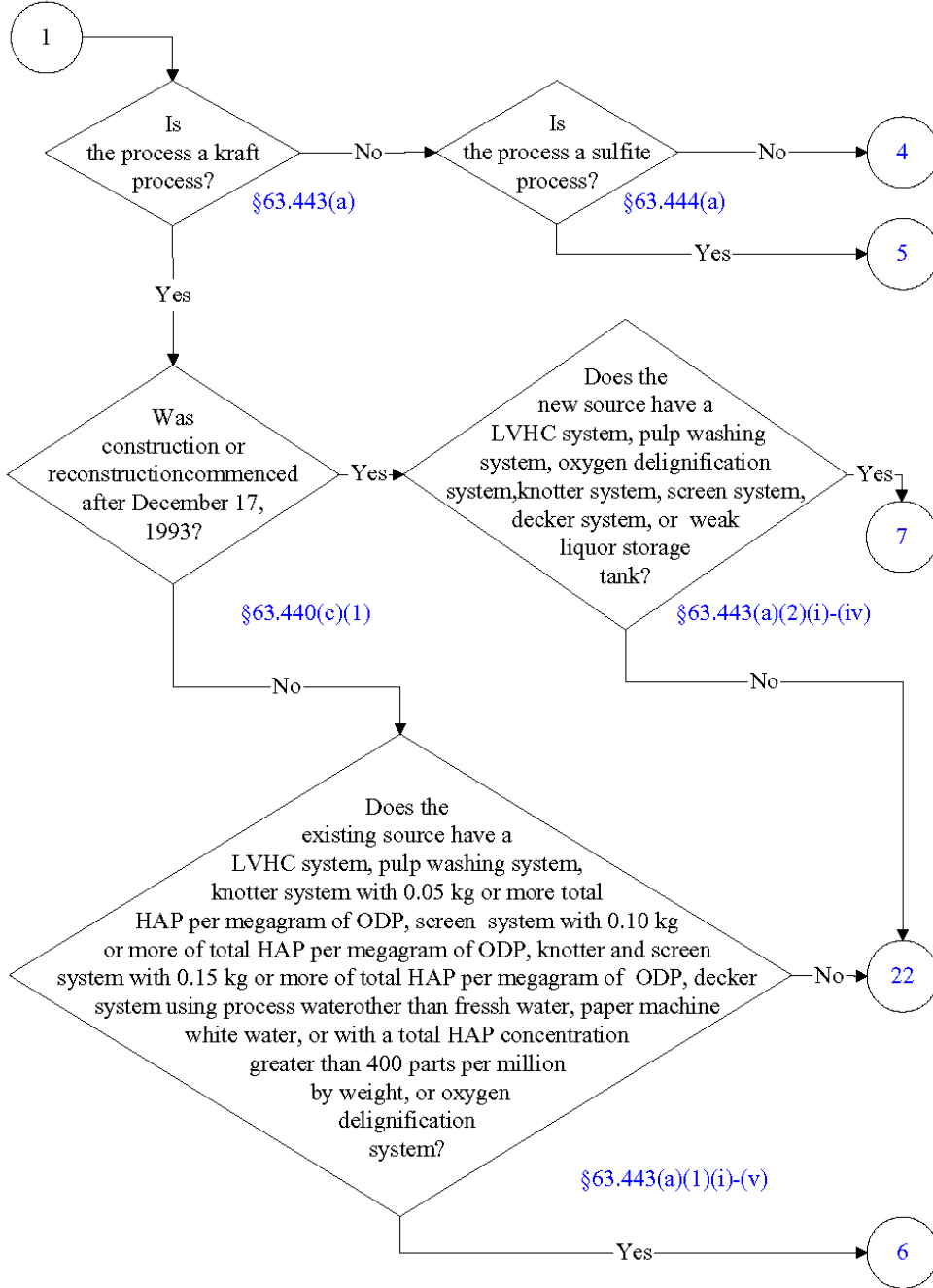
Subpart S Reference	Affected Process	Affected Sources
§63.443	Pulping system at kraft, soda and semi-chemical processes	<ul style="list-style-type: none"> ▪ LVHC system ▪ HVLC system ▪ Knotter or screen system ▪ Pulp washing system ▪ Decker system ▪ Oxygen delignification system ▪ Weak liquor storage
§63.444	Pulping system at sulfite processes	<ul style="list-style-type: none"> ▪ Digester vent ▪ Evaporator system vent ▪ Pulp washing system ▪ Weak liquor storage ▪ Strong liquor storage tank ▪ Acid condensate tank
§63.445	Bleaching system	<ul style="list-style-type: none"> ▪ Bleaching systems that use chlorine ▪ Bleaching pulp from kraft, sulfite or soda pulping processes ▪ Bleaching pulp from mechanical pulping processes using wood or from any process using secondary or non-wood fibers ▪ Bleaching systems where chlorinated compounds are introduced to a closed vent system or through control devices ▪ Vent streams
§63.446	Kraft pulping process condensates	<ul style="list-style-type: none"> ▪ Digester system ▪ Turpentine recovery system ▪ Evaporator system condensate ▪ Weak liquor feed stages ▪ HVLC collection system ▪ LVHC collection system
§63.447	Clean condensate alternative	<ul style="list-style-type: none"> ▪ All HAP emission points in the pulping, bleaching, causticizing and paper making systems ▪ LVCH system ▪ All equipment associated with converting sodium carbonate into active sodium hydroxide ▪ Smelt dissolving tanks ▪ Lime mud washers ▪ White & mud liquor clarifiers ▪ Dreg washers ▪ All equipment used to convert pulp into paper, paperboard or market pulp
§63.450	Enclosures and close vent systems	<ul style="list-style-type: none"> ▪ Closed vent systems described under §63.443(c), §63.444(b) and §63.445(b) ▪ Closed vent system ▪ Bypass vent system

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APPENDIX D³

Table II. Systems Covered by the NESHAP for which Continuous Monitoring is Required¹

Process	Regulated Pollutant	Surrogate Pollutant	Continuous Monitoring
Kraft Pulping	Total HAPs in LVHC and HVLC gases	None	Exempted (incineration in power boiler)
Kraft Bleaching	Chlorinated HAPs (excluding chloroform)	Chlorine	Surrogate operating parameters of Bleach Plant Scrubber
Kraft Pulping Condensates	Total HAPs (in condensates)	Methanol ²	Surrogate operating parameters of UNOX biological treatment plant (daily)

Table III. Enclosure and Closed-Vent System Periodic Monitoring Requirements

For each...	Then ...	And Report...	And Keep Records of...
Enclosure opening	Visually inspect every 30 days to ensure closed and sealed	Any exceedences of the closed-vent standard in quarterly reports. If no exceedences occur, submit semi-annual reports.	All visual checks and any repairs
	Annually demonstrate negative pressure	Any exceedences of the closed-vent standard in quarterly reports. If no exceedences occur, submit semi-annual reports.	All negative pressure tests
Closed-vent system	Visually inspect every 30 days for visible defects	Any exceedance of the closed-vent standard in quarterly reports. If no exceedance occurs, submit semi-annual reports.	All visual checks and repairs
Positive pressure closed-vent system	Annually demonstrate no detectable leaks (less than 500 ppmv)	Any exceedance of the closed-vent standard in quarterly reports. If no exceedences occur, submit semi-annual report.	All leak tests
Bypass line valve	Inspect every 30 days to ensure valve is in a closed position and vent stream is not diverted through bypass line	Any exceedance of the closed-vent standard in quarterly reports. If no exceedance occurs, submit semi-annual report.	All visual checks and repairs

¹ Chloroform monitoring is required by the mill's VPDES Permit and is described [in EMS-05-06-011 Bleach Plant Sampling for Chloroform](#).

² The initial performance test and 1st quarter percent reduction tests must be performed for total HAPs. However, if a relationship between total HAPs and methanol destruction is established in the 1st quarter percent reduction tests, methanol can be used as a surrogate for total HAPs in the 2nd, 3rd, and 4th quarter tests.

APPENDIX E³**TABLE IV: EVENT LOGS**

SSM Plan Reference No.	Event Log	Approved Editor
11.3.1	Batch Digesters	Batch Operator
11.3.2	Kamyr Digester	Kamyr Operator
11.3.3	Evaporator Set B	Chemical Operator #2
11.3.4	Evaporator Set C	Chemical Operator #2
11.3.5	Evaporator Set D	Chemical Operator #2
11.3.6	Evaporator Set E	Chemical Operator #2
11.3.7	Beach Plant	Bleach Plant Operator
11.3.8	No. 8 Power Boiler	#8 Boiler Operator
11.3.9	No. 10 Power Boiler	#10 Boiler Operator
11.3.10	Waste Water Treatment Plant	WWTP Operator

APPENDIX F³

Table V. Operating Status of Affected Processes, Collection Systems, and Control Devices

Process or Control Device	Criteria for when Startup Begins	Criteria for Normal Operation	Criteria for when Shutdown Ends
<p>Process: Batch Digesters Operating Status</p>	<p>Batch Digesters have only “in service” or “out of service” operation. The Batch system is considered to transition from the “out of service” mode to an “in service” mode whenever any of the following parameters are met on any one of the eight digesters:</p> <ul style="list-style-type: none"> <input type="checkbox"/> digesters steam and relieving OR <input type="checkbox"/> digesters blowing <p>“Holding” of digesters is defined as ceasing the steaming, relieving, and blowing of digesters. The Batch Digester System is considered to be “out of service” when all previously loaded and steamed digesters are transferred to a “hold” status, i.e., all steaming, relieving, and blowing is stopped. The Batch system is considered to transition from an “out of service” to an “in service” mode when the steaming, relieving, or blowing of previously “held” digesters is resumed.</p> <p>Batch Digesters are in service when the Batch Operator selects “IN SERVICE” from the DCS (BATCH_ON.PV = “on”) Bit Status: 1 = Online</p> <p>Batch Digesters are NOT in service when the Batch Operator selects “OUT OF SERVICE” from the DCS (BATCH_ON.PV = “Off”) Bit Status: 0 = Offline</p>		
<p>Process: Kamyrdigester Operating Status</p>	<p>“Data Supervisor” logs the Kamyrdigester in service when the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Steaming vessel pressure (14PIC005.PV) > 5 psig AND EITHER OF THE FOLLOWING ARE TRUE: <input type="checkbox"/> Kamyrdigester Blow Flow A (14FIA12A.PV) > 200 gpm <input type="checkbox"/> OR Kamyrdigester Blow Flow B (14FIA12B.PV) > 200 gpm <p>Bit Status: 1 = Online</p>	<p>Kamyrdigester Operator must manually enter the clock time when normal operation is reached after startup, and when normal operation ended prior to the shutdown.</p> <p>Normal operation occurs when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chip feed to digester is established (chip meter RPM is greater than 0). <input type="checkbox"/> Cooking circulation flows are established (upper and lower cook circulation flows are greater than 0). <input type="checkbox"/> Continuous blow flow is established (blow flow is greater than 500 gpm). 	<p>“Data Supervisor” logs the Kamyrdigester out of service when ALL of the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Steaming vessel pressure (14PIC005.PV) < 5 psig <input type="checkbox"/> Kamyrdigester Blow Flow A (14FIA12A.PV) < 200 gpm <input type="checkbox"/> Kamyrdigester Blow Flow B (14FIA12B.PV) < 200 gpm <p>Bit Status: 0 = Offline</p>
<p>Process: Evaporator Set B Operating Status</p>	<p>“Data Supervisor” logs the B-Set in service when the weak liquor feed to evaporator (170FI102.PV) > 50 klbs/hr</p>	<p>Chemical Operator #2 must manually enter the clock time when normal operation is reached after startup of each set, and when normal operation ended prior to the shutdown of each set.</p>	<p>“Data Supervisor” logs the B-Set out of service when the weak liquor feed to evaporator (170FI102.PV) < 50 klbs/hr</p>
<p>Process: Evaporator Set C Operating Status</p>	<p>“Data Supervisor” logs the C-Set in service when the weak liquor feed to evaporator (170FI231.PV) > 50 klbs/hr</p>	<p>Normal operation occurs when all the following conditions are satisfied:</p>	<p>“Data Supervisor” logs the C-Set out of service when the weak liquor feed to evaporator (170FI231.PV) < 50 klbs/hr</p>
<p>Process: Evaporator Set D Operating Status</p>	<p>“Data Supervisor” logs the D- Set in service when the weak liquor feed to evaporator (170FI240.PV) > 50 klbs/hr</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Evaporator product solids is at least 29 Baumé (63% TS for E-Set). <input type="checkbox"/> “Foul” condensate is valved to the UNOX Feed Tank. 	<p>“Data Supervisor” logs the D-Set out of service when the weak liquor feed to evaporator (170FI240.PV) < 50 klbs/hr</p>
<p>Process: Evaporator Set E Operating Status</p>	<p>“Data Supervisor” logs the E-Set in service when the weak liquor feed to evaporator (170FI610.PV) > 100 gpm</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Hogging jet is shut down. <input type="checkbox"/> Evaporator set is vented to the LVHC collection system. 	<p>“Data Supervisor” logs the E-Set out of service when the weak liquor feed to evaporator (170FI610.PV) < 100 gpm</p>

<u>Process or Control Device</u>	<u>Criteria for when Startup Begins</u>	<u>Criteria for Normal Operation</u>	<u>Criteria for when Shutdown Ends</u>
<p>Process: Bleaching System Operating Status</p>	<p>“Data Supervisor” logs the Bleaching System in service when the ClO₂ flow (sum) to mixers (260FC017.PV + 260FC132.PV + 260FC232.PV) > 10 gpm</p>	<p>Bleach Plant Operator must manually enter the clock time when normal operation is reached after startup, and when normal operation ended prior to the shutdown.</p> <p>Normal operation begins when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Stock flow to either D/C Stage Washer from the D/C Bleaching Tower >0 <input type="checkbox"/> Stock flow to either Oxygen Stage Washer from the Oxygen Blow Tank >0 <input type="checkbox"/> Stock flow to either D-Stage Washer from the D-Stage Tower >0 <input type="checkbox"/> D/C Stage Brightness >45 wet pad <input type="checkbox"/> Oxygen Stage Brightness >60 wet pad <input type="checkbox"/> Final D-Stage Brightness >84 wet pad <p>D-Stage Updraft Residual >0.10 g/L</p> <p>Normal operation ends when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Feed of the Oxygen Stage Reactor ceases <input type="checkbox"/> Recirculation of stock from the Mix Tanks back to the Brown Stock Tank commences. <input type="checkbox"/> Brown stock feed to the D/C Tower ceases 	<p>“Data Supervisor” logs the Bleaching System out of service when the ClO₂ flow (sum) to mixers (260FC017.PV + 260FC132.PV + 260FC232.PV) < 10 gpm</p>
<p>Collection System: LVHC Collection System</p>	<p>The LVHC closed-vent collection system must be in operation prior to the startup of any regulated process. Hence, there is no “Startup Period,” only a period of normal operation or malfunction. The LVHC collection system is “in service” when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> LVHC vent gas temperature is less than 120°F <input type="checkbox"/> White liquor scrubber flow is 25 ± 10 gpm <input type="checkbox"/> LVHC system vacuum is -2 ± 2 inches of water column between Batch digester blows, with spikes to 10 inches of water column at initial blow. 		
<p>Collection System: “Foul” Condensate Collection System</p>	<p>The pulping process “foul” condensate “hard-pipe” collection system must be in operation prior to the startup of any regulated process. Hence, there is no “Startup Period,” only a period of normal operation or malfunction. The condensate collection system is “in service” when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The UNOX feed tank level is stable and the level control loop is in “auto” mode. <input type="checkbox"/> One of the two “foul” condensate pumps are in service, registering a flow of condensate to the UNOX treatment plant. <input type="checkbox"/> The temperature indication on the “foul” condensate tank overflow line reads near ambient temperature, verifying that the tank is not overflowing 		
<p>Control Device: Bleach Plant Scrubber</p>	<p>The Bleach Plant Scrubber must be in operation prior to the startup of the Bleaching System. Hence, there is no “Startup Period,” only a period of normal operation or malfunction. The Bleach Plant Scrubber is “in service” when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The operating level in the scrubber recirculation tank is within normal range. <input type="checkbox"/> The scrubber recirculation flow is within normal range. <input type="checkbox"/> The mill water flow to the recirculation tank is within normal range. <input type="checkbox"/> The scrubber fan power draw is within normal range. <input type="checkbox"/> The NaHS and caustic flows to scrubber are within normal range. <input type="checkbox"/> The scrubber loop pH is indicating in range for efficient scrubbing. 		

<u>Process or Control Device</u>	<u>Criteria for when Startup Begins</u>	<u>Criteria for Normal Operation</u>	<u>Criteria for when Shutdown Ends</u>
<u>Control Device:</u> No. 8 Power Boiler Availability	<p>No. 8 Power Boiler is either “available” or “not available” to burn NCGs. The normal startup and shutdown of the boiler is not subject to the NESHAP regulation.</p> <p>The “Data Supervisor” logs the No. 8 Power Boiler as “available” when the MFT Relay Tripped (BLR08_ON = 1) <u>AND</u> the manual transfer valve is NOT CLOSED (53ZSC001 = 1).</p> <p>The “Data Supervisor” logs the No. 8 Power Boiler as “NOT available” when the MFT Relay Tripped (BLR08_OFF = 0) <u>AND</u> the manual transfer valve is CLOSED (53ZSC001 = 0).</p>		
<u>Control Device:</u> No. 10 Power Boiler Availability	<p>No. 10 Power Boiler is either “available” or “not available” to burn NCGs. The normal startup and shutdown of the boiler is not subject to the NESHAP regulation.</p> <p>The “Data Supervisor” logs the No. 10 Power Boiler as “available” when the MFT Relay Tripped (BLR10_ON = 1) <u>AND</u> the manual transfer valve is NOT CLOSED (53ZSC002 = 1).</p> <p>The “Data Supervisor” logs the No. 10 Power Boiler as “NOT available” when the MFT Relay Tripped (BLR10_OFF = 0) <u>AND</u> the manual transfer valve is CLOSED (53ZSC002 = 0).</p>		
<u>Control Device:</u> UNOX Waste Water Treatment Plant Availability	<p>The UNOX Waste Water Treatment Plant is either “available” or “not available” to treat pulping process condensates. The normal startup and shutdown of the boiler is not subject to the NESHAP regulation.</p> <p>The “Data Supervisor” logs the UNOX treatment plant as “available” when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> UNOX Inlet Flow (230FI421.PV) > 2 kgpm. <input type="checkbox"/> UNOX #1 & #2 Train Vent Gas Purity (230AIA11.PV) >15% <input type="checkbox"/> UNOX #3 Train Vent Gas Purity (230AI750.PV) >15% <input type="checkbox"/> Oxygen Flow to UNOX (230FI650.PV) > 10,000 SCFH <input type="checkbox"/> #1 & #2 UNOX Train LEL (230AIA10.PV) <15% <input type="checkbox"/> #3 UNOX Train LEL (0-100%) <15% <p>The “Data Supervisor” logs the UNOX treatment plant as “NOT available” when all the following conditions are satisfied:</p> <ul style="list-style-type: none"> <input type="checkbox"/> UNOX Inlet Flow (230FI421.PV) < 2 kgpm. <input type="checkbox"/> UNOX #1 & #2 Train Vent Gas Purity (230AIA11.PV) <15% <input type="checkbox"/> UNOX #3 Train Vent Gas Purity (230AI750.PV) <15% <input type="checkbox"/> Oxygen Flow to UNOX (230FI650.PV) < 10,000 SCFH <input type="checkbox"/> #1 & #2 UNOX Train LEL (230AIA10.PV) <15% <input type="checkbox"/> #3 UNOX Train LEL (0-100%) <15% 		

APPENDIX G³

Table VI. Batch Digesters Process Monitoring

<u>Analog Signal Description</u>	<u>Bit Status/Format</u>	<u>Loop Number</u>	<u>Criteria</u>
Batch Digesters Operating Status	1 = On Line	BATCH_ON.PV	<u>source in operation when:</u> Batch Operator selects "IN SERVICE" from the DCS (BATCH_ON.PV = "on")
Turpentine Recovery System Vent Valve Position (open/closed)	1 = Closed	14ZI075G.PV	<u>excess emission occurs when:</u> turpentine cooler vent valve not closed <u>AND</u> Batch Digesters in operation (BD _{op} = "true") <u>OR</u> Kamyrr Digester in operation (KD _{op} = "true") <u>OR</u> any evaporator system in operation (BE _{op} = "true" or CE _{op} = "true" or DE _{op} = "true" or EE _{op} = "true")
No. 3 Blow Tank Vent Valve Position (open/closed)	1 = Closed	15ZIA97B.PV	<u>excess emission occurs when:</u> No. 3 blow tank vent valve not closed <u>AND</u> Kamyrr digester in operation (KD _{op} = "true")
Blow Heat Accumulator North Primary Condenser Vent Valve Position (open/closed)	1 = Closed	140HV18D.PV	<u>excess emission occurs when:</u> Blow heat accumulator north vent valve (140HV18D.PV) not closed <u>AND</u> Batch digester in operation (BD _{op} = "true") <u>OR</u> Kamyrr digester in operation (KD _{op} = "true")
Blow Heat Accumulator South Primary Condenser Vent Valve Position (open/closed)	1 = Closed	140HV18C.PV	<u>excess emission occurs when:</u> Blow heat accumulator south vent valve (140HV18C.PV) not closed <u>AND</u> Batch digester in operation (BD _{op} = "true") <u>OR</u> Kamyrr digester in operation (KD _{op} = "true")
Secondary Condenser Vent Valve Position (open/closed)	1 = Closed	140HV023.PV	<u>excess emission occurs when:</u> Secondary Condenser vent valve (140HV023.PV) not closed <u>AND</u> Batch digester in operation (BD _{op} = "true") <u>OR</u> Kamyrr digester in operation (KD _{op} = "true")
Turpentine Decanter Condensate Overflow Pipe Temperature (OK/High)	1 = OK	14TSH147.PV	<u>excess emission occurs when:</u> Turpentine Decanter overflows to the process sewer (14TSH147.PV = "high") <u>AND</u> any of the following are true: Batch Digesters in operation (BD _{op} = "true") <u>OR</u> Kamyrr Digester in operation (KD _{op} = "true") <u>OR</u> any evaporator system in operation (BE _{op} = "true" or CE _{op} = "true" or DE _{op} = "true" or EE _{op} = "true")

