



Jefferson Smurfit Corporation

Telephone (904) 261-5551

CERTIFIED MAIL
Z 406 520 718

Containerboard Mill Division
North 8th Street
Fernandina Beach, FL 32034

March 5, 2001

Mr. Bruce Mitchell
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399

Re: Jefferson Smurfit Corporation (U.S.)
Cluster Rule MACT I Compliance Demonstration

Dear Mr. Mitchell:

Please find enclosed your copy of our correspondence with Mr. Lee Page of USEPA regarding the Fernandina Beach Mill's Cluster Rule MACT I Compliance Demonstration. An alternative compliance demonstration procedure utilizing our UNOX biological treatment system was submitted to the Administrator on June 15, 2000, and approved, with minor comment, on November 2, 2000. The enclosed correspondence addresses the questions raised in the November 2 approval and submits the mill's initial Compliance Test Report for testing conducted October 12 - November 3, 2000.

Because our compliance plan was submitted in June of last year, it does not follow your most recent guidance developed from discussions with the Florida Pulp and Paper Association entitled Condensate Collection Compliance Test Protocol. However, as noted above, it has been approved by the Administrator for our UNOX biological treatment system.

If you have any questions regarding this information, please contact me at (904) 277-7746.

Sincerely,

William O. Crews
Environmental Manager

Enclosures

CC: Chris Kirts, FDEP NED



Jefferson Smurfit Corporation

Telephone (904) 261-5551

Containerboard Mill Division
North 8th Street
Fernandina Beach, FL 32034

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Z 406 520 717

March 5, 2001

Mr. Lee Page
Office of Air, Pesticides & Toxics Management
U.S. Environmental Protection Agency, Region IV
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Re: Jefferson Smurfit Corporation (U.S.)
Cluster Rule MACT Compliance Demonstration

Dear Mr. Page:

The Jefferson Smurfit facility in Fernandina Beach has installed a system to collect pulping system condensate and provide treatment of that condensate in an on-site UNOX biological treatment system as required in §63.446, using the "hardpiping" option. Because the UNOX system used by the Fernandina mill is different from the "open" and "closed" biological systems described in the Rule, an alternative compliance demonstration procedure to demonstrate compliance with the requirements at 40 CFR 63.446 (e)(2)(ii) and 40 CFR 63.453 was submitted to the Administrator on June 15, 2000. This alternative compliance demonstration procedure was approved, with minor comment, in a letter to Mr. Richard Bowman on November 2, 2000. This correspondence addresses the questions raised in the November 2, 2000 approval letter and provides documentation showing compliance with the requirements at 40 CFR 63.446 and 40 CFR 63.453.

The questions raised in your November 2, 2000 letter are addressed as follows:

- (1) Continuous Monitoring – Your letter requested clarification of the monitoring frequency of the surrogate parameters to meet the continuous monitoring requirements. A revised redline version of the compliance demonstration procedure is enclosed that clarifies the monitoring frequency of the surrogate parameters. Minor typographical corrections have also been made to the procedure. Also enclosed is the Compliance Test Report which includes documentation of the operating ranges for the surrogate parameters.
- (2) NCASI Test Method – The Fernandina Mill proposed to use the NCASI direct injection test procedures to analyze for acetaldehyde, methanol, propionaldehyde, and methyl ethyl ketone. As each specific source must make its own alternative test method request on a case-by-case basis, and the authority to approve such a request was retained by the Emissions Monitoring and Analysis Division, your letter stated that you forwarded our request accordingly. Enclosed for your records is a letter dated December 11, 2000 from Mr. J. David Mobley approving our use

of the alternative test method (NCASI Method DI/HAPS-99.01: Selected HAPS in Condensates by GC/FID).

(3) Averaging Time – The Fernandina Mill proposed to use a 15-day averaging time for demonstrating compliance with the condensate requirements and submitted NCASI generated data to justify this averaging period. Your letter noted that the burden is on the mill to demonstrate what compliance averaging time is appropriate for that particular mill and that mill specific data is required for the demonstration. Documentation of the appropriate averaging period using data generated during the initial compliance testing is included in the enclosed Compliance Test Report.

As mentioned above, the Initial Condensate Collection and Treatment Compliance Test Report for the Fernandina Mill, as requested in your letter, demonstrating compliance with the requirements at 40 CFR 63.446 and 40 CFR 63.453 is enclosed with this correspondence. Though compliance was demonstrated by the initial compliance test results in November 2000, the test also demonstrated that we are not collecting as much methanol in the collected condensate as anticipated. Since the test was conducted we discovered that the condensate segregation systems that were recently installed on our evaporator system are not operating as advertised and we are taking steps to resolve this problem. As soon as these changes can be made, we intend to repeat the condensate collection and treatment compliance tests and expect a much larger margin of compliance. Notification of additional testing will be made as appropriate.

If you have any questions regarding this information, please contact me at (904) 277-7746.

Sincerely,



William O. Crews
Environmental Manager

Enclosures

CC: Douglas Neeley, Office of Air, Pesticides & Toxics Management, USEPA, Region 4
Chris Kirts, FDEP NED
Bruce Mitchell, FDEP DARM

MACT Condensate Treatment Initial Performance Test and
Monitoring Procedures for the Fernandina Mill Closed Biological Treatment System

The Kraft pulping system, condensate biological treatment option, compliance demonstration procedures provided in the MACT Rule Appendix C and in 40 CFR 63.453~~6~~ are not applicable where condensates are treated in UNOX (closed) biological treatment systems. In the preamble to the amendments to the Rule proposed on January 25, 2000, EPA indicates that the appropriate monitoring parameters and the parameter values used to demonstrate compliance for closed systems must be approved by the administrator. The alternative compliance demonstration procedure proposed for use by the Fernandina mill to demonstrate compliance with the requirements at 40 CFR 63.446 (e)(2)(ii) and 40 CFR 63.453 is described herein. A flowchart¹ summarizing the procedure is attached.

Compliance Requirements:

✓ Initial Performance Test:

The initial performance test should consist of three elements for UNOX treatment systems:

1. Direct measurement of vent gas HAP mass.
2. Demonstration that the required lbs. HAP per ton of production or percent HAP reduction is achieved by the UNOX process
3. Selection of a compliance operating parameter and establishment of the range of values for that parameter within which the required HAP removal has been demonstrated to have been achieved.

✓ Vent Gas f_{bio} adjustment:

The fraction of inlet HAP biodegraded in a UNOX system, f_{bio} , is calculated as:

$$f_{bio} = (HAP_{IN} - HAP_{OUT} - V_{HAP})/HAP_{IN}$$

where V_{HAP} is the mass of methanol, acetaldehyde, methyl ethyl ketone, and propionaldehyde (HAP) measured in the vent off-gas.

✓ Biological HAP Removal Demonstration:

As proposed in the January 25, 2000, amendments, compliance may be demonstrated for open biological treatment systems on a percentage basis (92% adjusted for non-methanol HAPs) or on a mass basis (lb./ODTP adjusted for non-methanol HAPs). In the latter case (§ 63.457~~(g)~~⁽¹⁾(4)), the pounds of methanol biodegraded is calculated as the product of the average methanol loading during the collection averaging period (E_b) and f_{bio} , with corrections made for non-methanol HAPs. The mass removal methanol procedure with correction made for non-methanol HAPs is calculated as:

$$E = E_b * (f_{bio}/(1 + 1.087r))$$

¹ Figure 1 - Compliance Monitoring for Fernandina Mill UNOX Activated Sludge Plant

Assuming typical Kraft condensate characteristics, the above procedure will likely result in a requirement to remove approximately 6.71 lbs. of methanol per ton of pulp. (Please note that if an adjustment has been already made for the vent gas emissions in the f_{bio} , the above calculation is very conservative.)

✓ Continuous Compliance Monitoring:

The objective of compliance operating parameter monitoring is to demonstrate that the UNOX process is operating under design conditions. Such parameters must be determined on a site-specific basis and may include vent gas oxygen purity, aerator amperage, dissolved oxygen concentration and/or biomass (MLVSS) concentration. During the initial performance test, the permittee must document the range of values within which selected operational parameters fall during the initial performance test. For example, the range of vent gas purity may be stated as "greater than 30 percent for at least 21 hours in a 24-hour period". This range establishes the initial range of the compliance operating parameters for daily monitoring.

The following summarizes the proposed initial, annual, and ongoing MACT I compliance demonstration for the MACT condensate collection and treatment requirements at the Fernandina Mill:

Fernandina Mill Compliance Plan:

Summary:

To facilitate selection of the operating parameters used for monitoring and insure that compliance is demonstrated over a representative range of biological treatment system loading, a 15-day initial compliance test is proposed. In the case of the Fernandina mill, use of the mass removal methanol option at § 63. 457(g)(1)(4)² is proposed. Composited samples will be obtained from each inlet and the outlet of the UNOX reactor each day using NCASI sampling and compositing procedures, will be discretely composited into daily samples, and analyzed for the four principal HAPs using the NCASI direct injection procedure.

Compliance will be demonstrated on a daily basis. Each day, the surrogate compliance operating parameter will be quantified and compared with the operating range established for the mill. If the surrogate compliance operating parameter falls within the range, compliance is demonstrated. If the compliance operating parameters is not within the range and the mill and/or wastewater treatment process are not in a Startup, Shutdown, Malfunction mode, the Fernandina Mill may demonstrate compliance by direct measurement (as opposed to use of the surrogate compliance operating parameter). Compliance is demonstrated by analyzing samples of inlet (condensate plus other mill flow) and outlet flow for methanol and calculating f_{bio} as modified for the Fernandina demonstration described below. The (modified) f_{bio} required is calculated on a mass basis using the average methanol collected during the collection averaging period (adjusted for non-methanol HAPs). If the required fraction biodegraded is achieved, compliance has

been demonstrated and the Fernandina Mill may apply for an expansion of the compliance operating parameter range.

The criteria proposed for demonstrating that the Fernandina Mill's UNOX "closed biological treatment" system complies with the MACT condensate treatment requirements are as follows:

Condensate Collection, Production, and flow determination

A continuous 15-day test will be used to develop a lbs. of methanol per ton of pulp factor for each of the named collected condensate streams. The NCASI method described in Appendix A² of this report will be used in this 15-day test to demonstrate the variability of the test data and to establish statistical justification for an averaging period per NCASI methods. The pulp factor (lbs. of methanol per ton of pulp) developed during the initial performance test for each of the named collected condensate streams would be verified and updated as described in Appendix B³ of this report. (Note: The MACT condensate collection system at the Fernandina Mill includes all named streams, and the aforementioned determination of the condensate methanol mass collection is not the only condensate collection compliance demonstration option available to the Fernandina Mill.)

- ✓ Over the 15-day test period, determine pulp production as tons per batch digester cook, tons per Kamyr digester chip meter revolution, and tons of pulp per 1,000 pounds of black liquor solids.
- ✓ During the 15-day test period, measure individual flow with a daily totalizer for each of the following streams: the turpentine system, blow heat accumulator, combined No.5 hot well / feed condensates, Kamyr primary turpentine condenser, and No.6 hot well / feed condensates.
- ✓ For the initial tests, and any subsequent compliance test, composited samples (comprised of at least 3 grab samples/day) from the turpentine system, blow heat accumulator, combined No.5 hot well / feed condensates, No.6 hot well / feed condensates and Kamyr primary turpentine condenser condensate streams will be collected, composited, and analyzed for methanol concentration using the NCASI direct injection procedure.
- ✓ Using data collected during a 15-day test period, develop methanol collection factors (i.e., lb. methanol per oven dry ton of pulp) for turpentine system, Kamyr primary turpentine condenser, blow heat accumulator, and combined No. 5 hot well / feed condensates, and No. 6 hot well/ feed condensates.
- ✓ Using the averaging period justified by the attached statistical method ², the mass value of the methanol in the condensate collected will be established on a daily basis.
- ✓ Measure flow with a daily totalizer for the outlet from UNOX and for the pulping process condensates piped into the UNOX reactor. The main UNOX inlet flow from cooling tower (i.e., the effluent to the UNOX from other mill sources) will be calculated by difference.

² "Averaging Time for KRAFT Condensate Collection" by Ashok K. Jain, NCASI, 9/1/99

³ "Periodic Tests to Verify and Update Emission Factors" NCASI, 10/25/99

Initial Condensate Treatment Efficiency tests:

The only treatment alternative currently in the promulgated MACT I rule for the hard pipe option is 92% HAP removal. However, the January 25, 2000 proposed amendments to the Rule for "open (not well mixed) biological treatment systems" include an alternative of proving compliance by demonstrating removal of at least 6.6 lbs. HAP/ODTP plus an adjustment requiring additional methanol removal to account for non-methanol HAPs. Also, in the January 25, 2000, proposed amendments, the sum of four HAP compounds (methanol, acetaldehyde, methyl ethyl ketone, and propionaldehyde) was proposed to serve as a surrogate for "total HAP" in the case of the MACT condensate treatment requirements. The UNOX biological treatment system at the Fernandina Beach mill is best described as a well-mixed "closed" biological treatment system. The Fernandina Beach mill proposes to demonstrate compliance with the hardpipe treatment option requirements in a manner similar to that proposed in January for "open" treatment system, though altered to account for the inherent differences in the two types of treatment systems. As the initial tests will be used to confirm surrogate parameters and parameter ranges, a continuous fifteen-day test is proposed.

- ✓ The Fernandina mill proposes to perform initial tests to determine compliance with the lb./ton (lb. HAP/ODTP) removal requirement, measuring inlet and outlet flow and analyzing for "total HAP" concentration utilizing the NCASI direct injection procedures for the four "total HAP" compounds.
- ✓ The initial compliance tests will include "total HAP" and flow measurement of the "hardpiped" condensate stream, the UNOX influent stream, and UNOX effluent stream for a period of 15 days.
- ✓ To confirm the minimal atmospheric "total HAP" losses from an UNOX vent system, the initial tests will also include analysis of the UNOX vent gases. Three vent tests will be conducted during the initial test period using the NCASI impinger method (CI/SG/PULP-94.02) for the four principal HAPs. As long as the maximum vent gas total HAP mass is found to be less than 0.05 lb./ton during initial vent gas testing, V_{HAP} will be assumed to be equal to the test results measured during the initial vent gas testing, as well as, for subsequent initial performance tests and for compliance with daily monitoring requirements for the next 12 months. Quarterly vent tests will be performed only if the initial tests indicate emissions in excess of 0.05 lb. HAPs /ton.
- ✓ In the initial compliance test, the amount of HAP determined in the UNOX vent (V_{HAP}), if any, will be used in a mass balance to determine the net HAP/ODTP removal requirement. The following calculation will be used for determine a HAP removal efficiency fraction during the initial tests:

$$\text{HAP fraction removed (fR)} = \frac{((\text{HAP}_{in} + \text{HAP}_{cond}) - (V_{HAP} + \text{HAP}_{out}))}{(\text{HAP}_{in} + \text{HAP}_{cond})}$$
$$\text{Net HAP/ODTP removal} = (\text{fR} * \text{HAP}_{cond})$$

Where: (fR) = HAP fraction removed
(HAP_{in}) = HAPs(4) in the UNOX influent from cooling tower
(HAP_{cond}) = HAPs(4) in the collected condensate*

$$\begin{aligned}(V_{\text{HAP}}) &= \text{HAPs(4) in the UNOX vent samples} \\ (\text{HAP}_{\text{out}}) &= \text{HAPs(4) in the UNOX effluent}\end{aligned}$$

- ✓ In the initial tests, the fraction of methanol removed by the UNOX treatment will be compared to the fraction of "total HAP" removed. Methanol will be used as a surrogate for "total HAP" in the quarterly and other compliance tests required, adjusted for the difference or ratio $(M/H)(H/M)$ between the fraction of methanol and "total HAP" removed in the initial test. *Note that the total mass of the 4 HAPs determined in the collected condensate hardpiped to the UNOX in the initial compliance test will be compared to the collected condensate average factor determined during the initial condensate collection compliance demonstration.
- ✓ During the initial tests, the vent gas purity of each train and the oxygen feed rate of the UNOX system will be continuously monitored to develop ranges for continuous compliance monitoring.

Quarterly and Continuous Compliance Demonstration:

- ✓ Three quarterly tests, to be performed within 45 days of the beginning of the 2nd, 3rd, and 4th quarters, will include measurement of methanol only (dependant upon the initial demonstration of equivalent HAP removal efficiency), as a surrogate for total HAP. Surrogate parameter "compliance ranges" will be developed from initial compliance tests using the protocol described in Appendix C⁴ for range selection. During the initial and quarterly tests, the average daily range of vent gas purity (%O₂) and oxygen feed, will be compared to daily biological HAP removal, using the vent gas purity monitor from the fourth train and oxygen feed flow meter.
- ✓ Composited samples (comprised of at least 3 grab samples) of the UNOX influent from the cooling tower and the UNOX effluent will be collected daily, and retained for 24 hours. Flows from two of the three test streams will be continuously monitored (UNOX inlet from the cooling tower is determined by difference) and totaled daily. Total pulp production (ODTP) from the facility will be determined and recorded daily. From the pulp production, the average collected condensate methanol determination, the initial vent test result, and water flow data, lb. HAP/ODTP factors will be developed daily for each of these two streams: collected condensate (HAP_{cond}) and the UNOX vent (V_{HAP}). The average collected condensate methanol determination will be adjusted (MeOH_{cond}) to reflect any difference in HAP_{cond} mass measured in the initial test and the averaged collected condensate methanol determined during the initial condensate collection compliance demonstration.
- ✓ Vent gas purity (averaged across the three trains) and oxygen feed rate will be continuously monitored and 1-hour averages calculated. When either of these surrogate parameters is out of the "compliance range" for a total of 3 hours within a 24-hour period 3 consecutive⁵ 1-hour averages, and a Startup, Shutdown, or

⁴ "Selection of Surrogate Parameter for Biological Treatment Option", NCASI, 6/7/00

⁵ Three hours corresponds to the residence time of the UNOX biological treatment system.

Malfunction event is not demonstrated, a hardpipe treatment efficiency compliance demonstration test will be conducted.

- ✓ The compliance tests will consist of measuring the HAP (methanol) concentration and flow of the UNOX influent from the cooling tower (MeOH_{in}) and the UNOX effluent (MeOH_{out}) from the composited samples collected during the day that the "compliance range exceedance" occurs. If the tests and compliance calculation indicate compliance with the standard, the surrogate parameter "compliance range" will be modified. A violation will have occurred only if the test does not demonstrate that at least 6.6 lbs. net HAP/ODTP removal did occur during the three-day compliance test period, using the following two calculations:

$$\text{HAP fraction removed (fR)} = \frac{(\text{M/HH/M}) * (((\text{MeOH}_{\text{in}} + \text{MeOH}_{\text{cond}}) - (\text{V}_{\text{HAP}} + \text{MeOH}_{\text{out}})) / (\text{MeOH}_{\text{in}} + \text{MeOH}_{\text{cond}}))}{1}$$

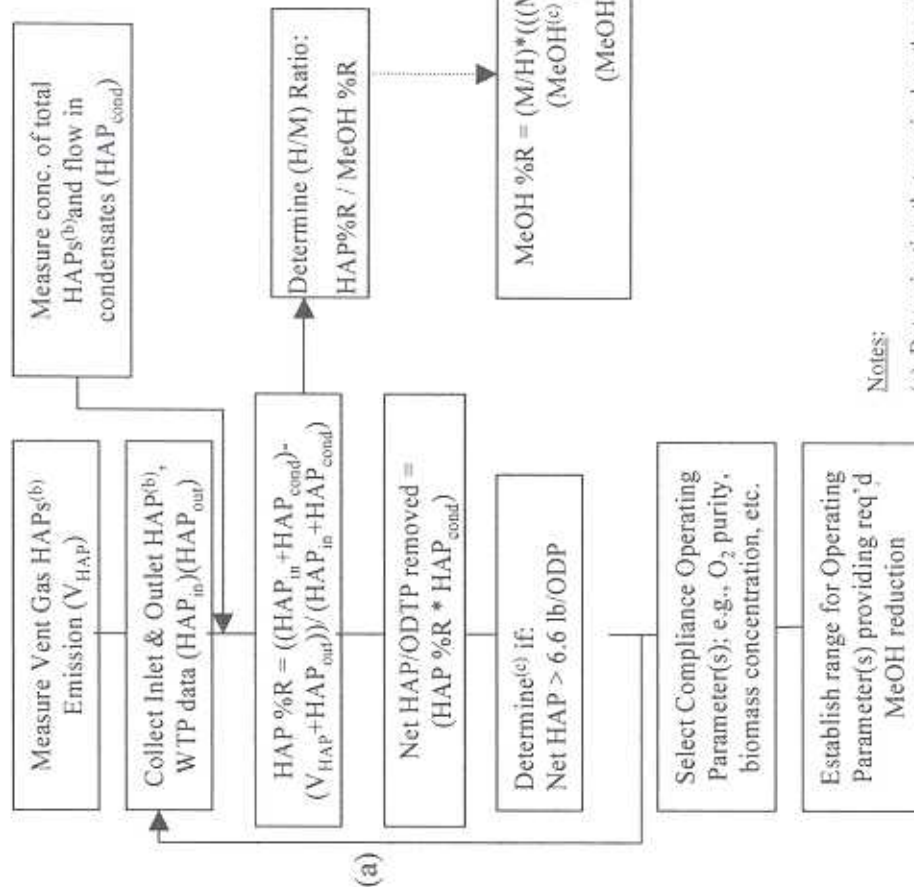
$$\text{Net HAP/ODTP removal} = (\text{fR} * \text{MeOH}_{\text{cond}})$$

Where: (fR) = fraction of HAP removed
 (M/HH/M) = the ratio between the methanol and "Total HAP" demonstrated in the initial test.
 (MeOH_{in}) = methanol measured in UNOX influent for cooling tower
 ($\text{MeOH}_{\text{cond}}$) = condensate collection compliance demonstration methanol determination, ~~adjusted for the difference between initial test HAP_{cond} and collected condensate average methanol determination~~
 (V_{HAP}) = HAPs(4) determined in the initial vent test

- ✓ Daily logs of surrogate parameter range exceedance and of UNOX downtime, shutdown, startup, and malfunction times will be maintained. The startup, shutdown and malfunction plan for the UNOX treatment of HAP will be developed and will be incorporated into the mill's Title V permit by reference, as required.

COMPLIANCE MONITORING FOR FERNANDINA MILL UNOX ACTIVATED SLUDGE PLANT

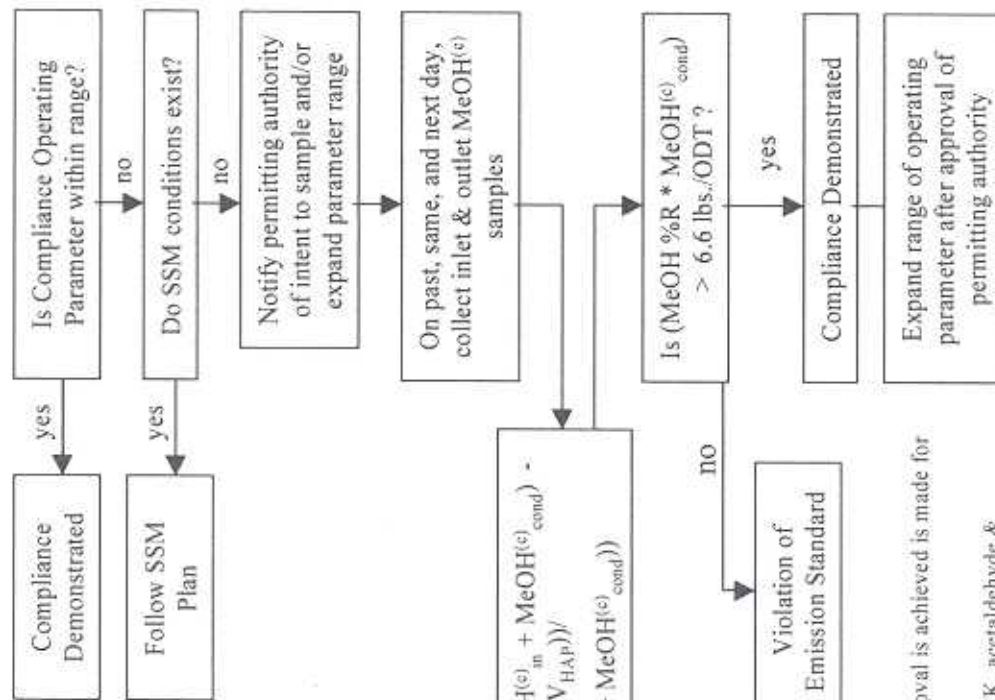
Initial Performance Test (15+ Days)



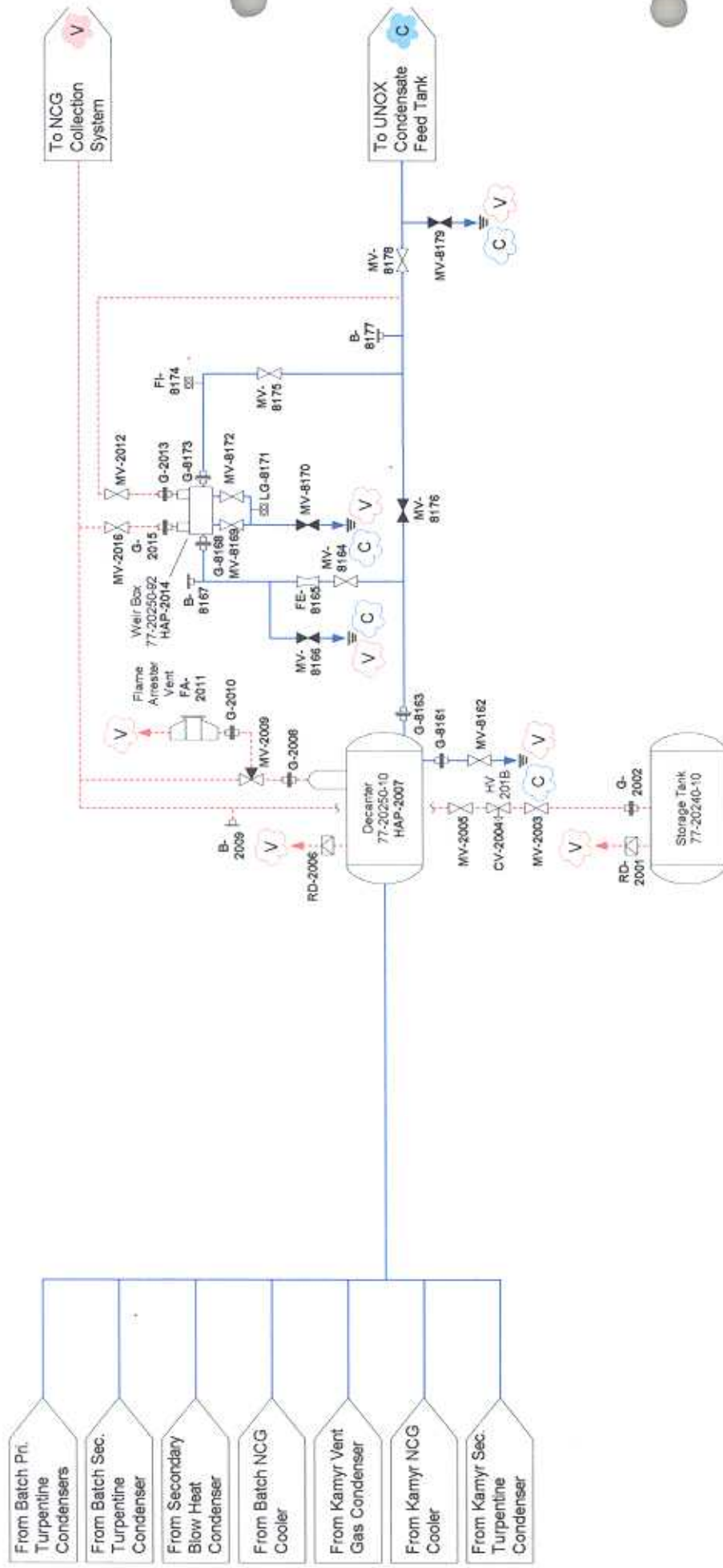
Notes:

- (a) Determination that required methanol removal is achieved is made for each day of performance test.
- (b) Total HAPs is summation of methanol, MEK, acetaldehyde & propionaldehyde.
- (c) MeOH is the methanol fraction of the condensate or waste stream, unadjusted for non-methanol HAPs, expressed in lbs./ODTP.

Daily Monitoring



Revised 3/05/01



stewart environmental inc

Process Flow Diagram
Turpentine Decanter

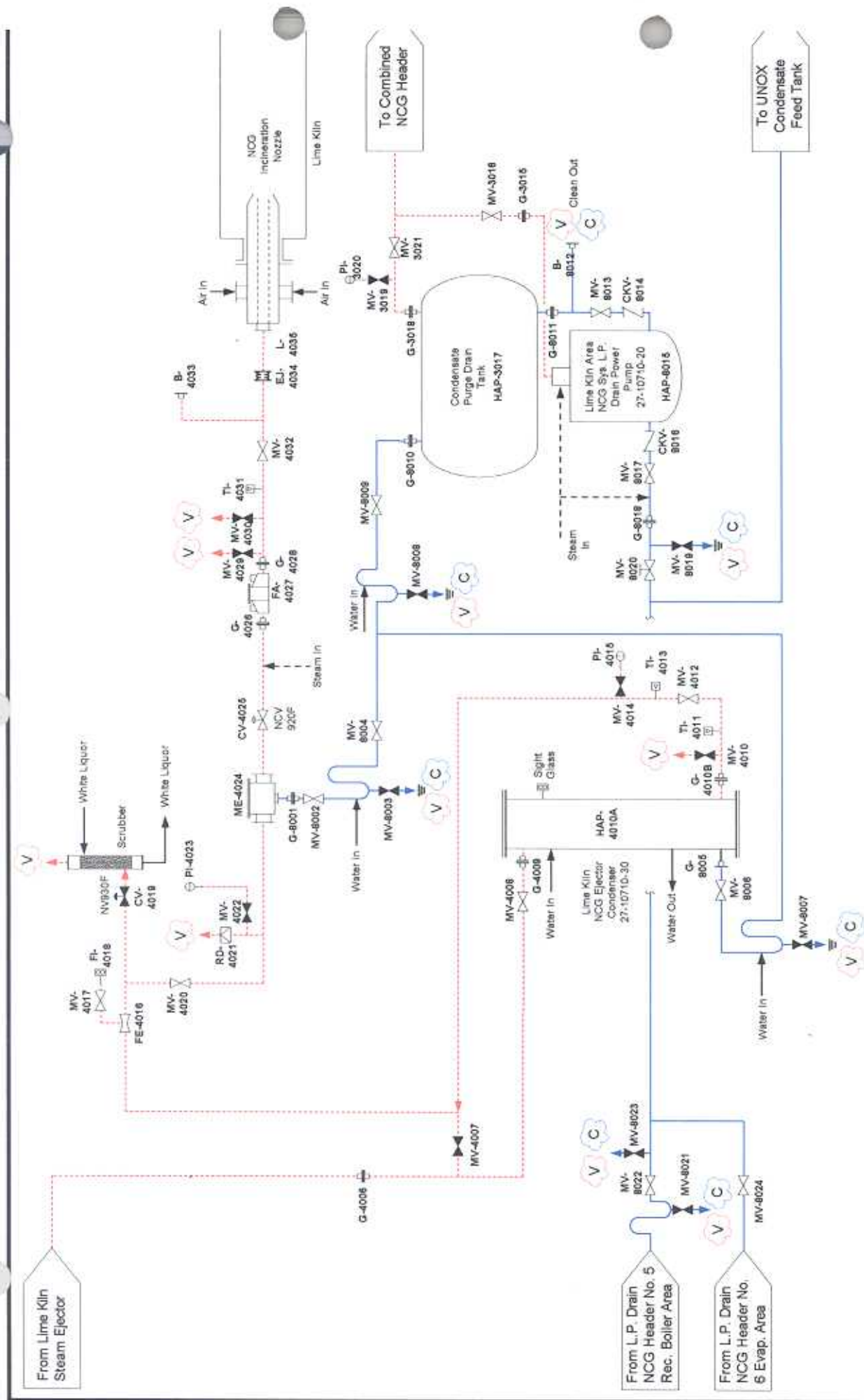
Figure 2.0


REV.
A

Smurfit-Stone Container
Corporation

Project Number
P-01-1118

DATE	BY	CHKD	APPD
01/11/18	JD	JD	JD
01/11/18	JD	JD	JD
01/11/18	JD	JD	JD
01/11/18	JD	JD	JD





stewart environmental inc.

Process Flow Diagram
Lime Kiln System

Figure 4.0

REV. A

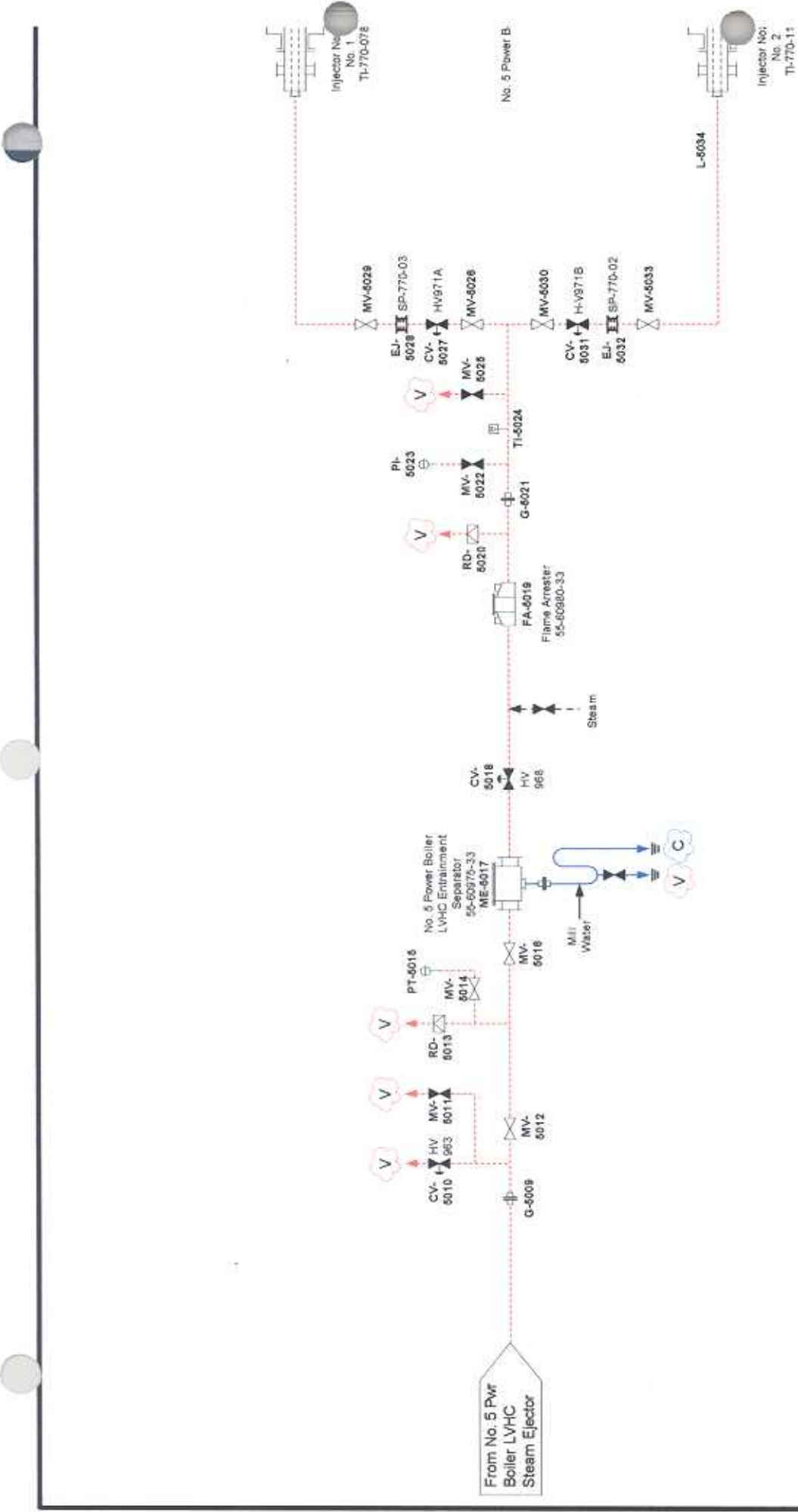
Smurfit-Stone Container Corporation

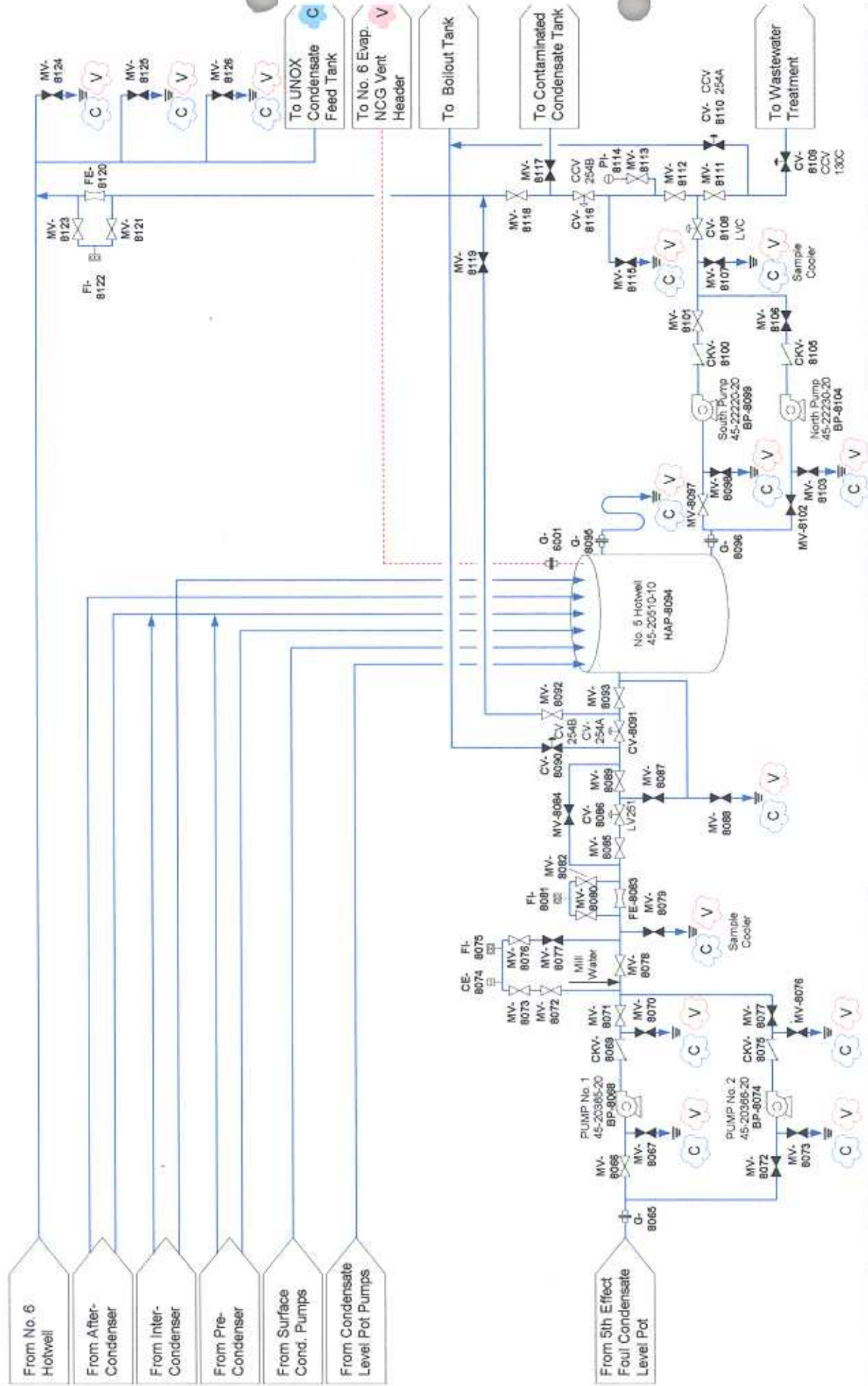
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DEC 10	TD			
JAN 11	TD			
FEB 11	TD			
MAR 11	TD			

Project Number
P-01-1118

LEGEND:

- To Vent Gas Collection System
- Possible Vent Gas Excess Emissions
- To Pulping Condensate Collection
- Possible Pulping Condensate Emissions
- Vent Gases
- Pulping Condensates
- Black Liquor/Stock Lines



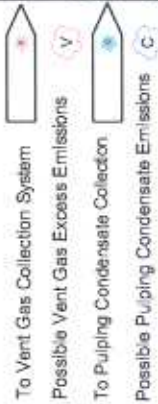


LEGEND:

Vent Gases

Pulping Condensates

Black Liquor/Stock Lines



Smurfit-Stone Container Corporation

Process Flow Diagram No. 5 Hotwell

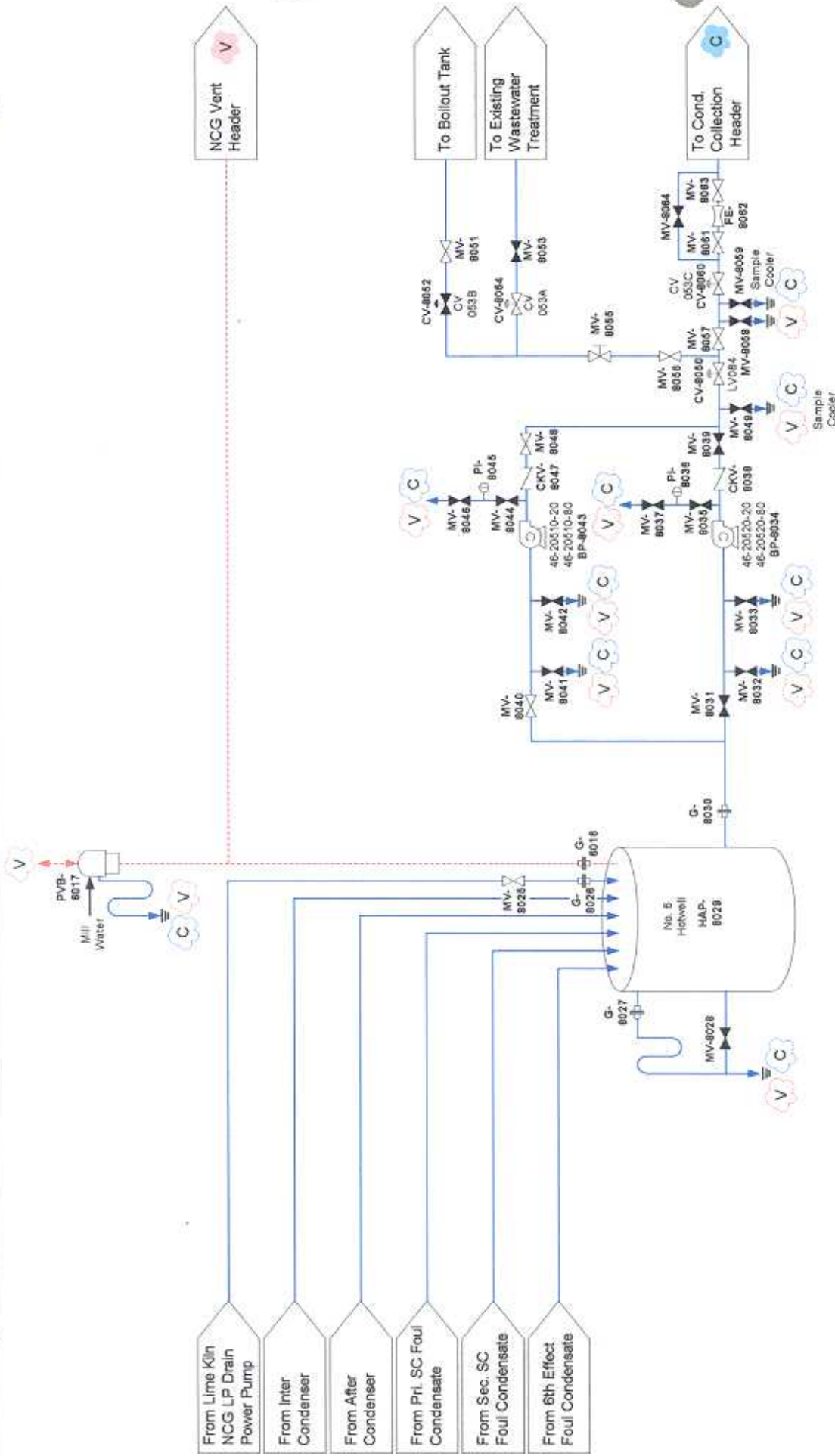
Project Number P-01-1118

Figure 6.0

REV. A



stewart environmental inc.



Process Flow Diagram
No. 6 Hotwell / L.P. NCG Drains

Smurfit-Stone Container Corporation

Project Number
P-01-1118

REV. A

Figure 7.0

LEGEND:

To Vent Gas Collection System

Possible Vent Gas Excess Emissions

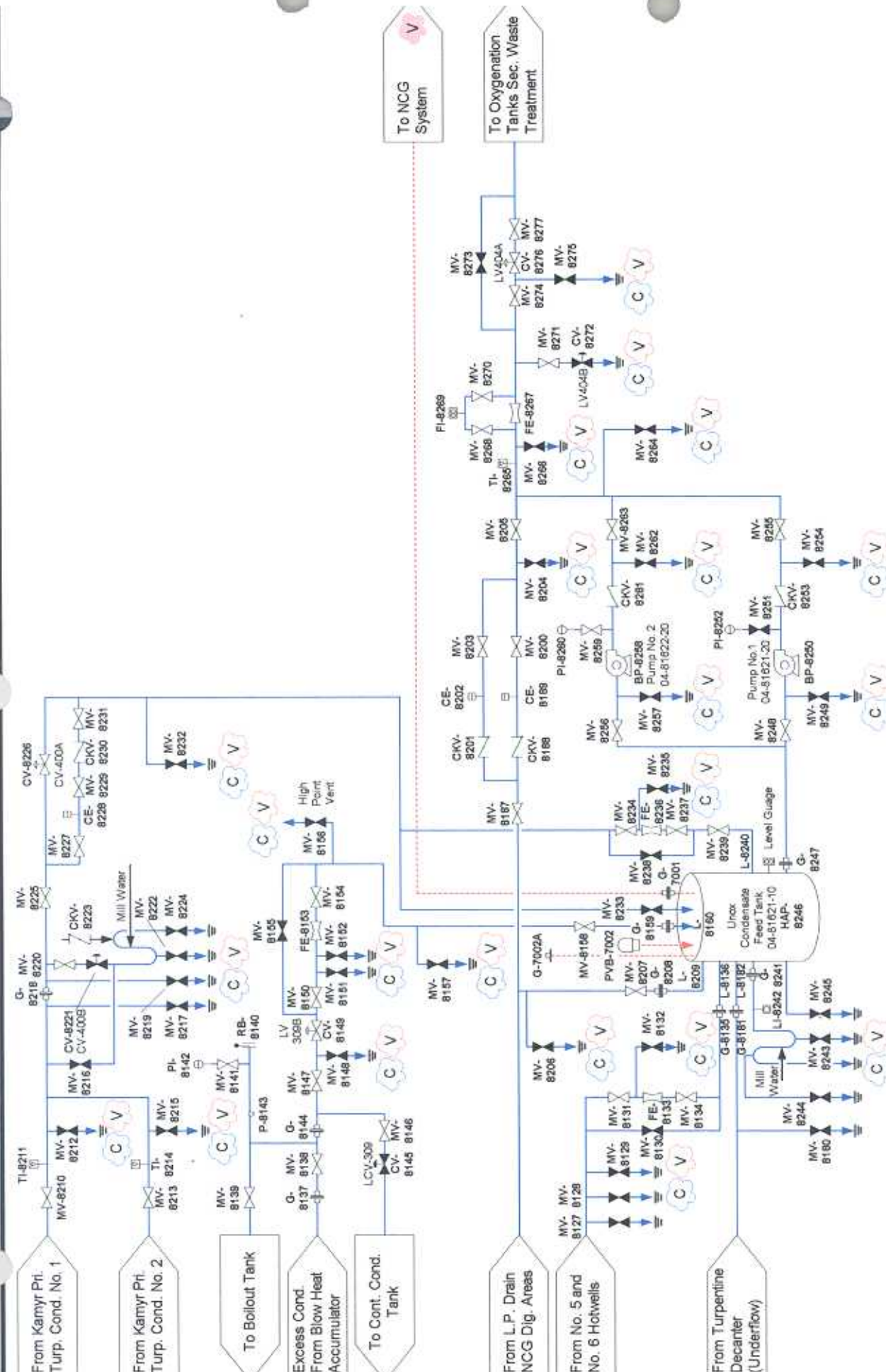
To Pulping Condensate Collection

Possible Pulping Condensate Emissions

Pulping Condensates

Vent Gases

Black Liquor/Stock Lines



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Process Flow Diagram
Condensate Collection System

Figure 8.0

REV. A

Smurfit-Stone Container Corporation

Project Number P-01-118

REV.	DATE	BY	CHKD.	APP.
1.0	07/01/00	W		

LEGEND:

- To Vent Gas Collection System
- Possible Vent Gas Excess Emissions
- To Pulping Condensate Collection
- Possible Pulping Condensate Emissions
- Black Liquor/Stock Lines

