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JOHN H. MILLICAN
SENIOR CONSULTANT
(NOT A MEMBER OF THE FLORIDA BAR)

RECEIVED

March 9, 1990

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DER-BAQM

BY HAND DELIVERY

Mr. Clair Fancy
Deputy Chief
Bureau of Air Quality
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Construction Permits Numbers AC 54-142282,
AC 54-142283, AC 54-142288, AC 54-142291 for the Batch
Digester System, the Multiple Effect Evaporation
System, the Condensate Stripper System, and the TRS
Incinerator, Respectively

Dear Mr. Fancy:

This will serve as a request for an extension of the expiration dates for the above-referenced construction permits. The current expiration date of these permits is March 9, 1990. As you are probably aware, on June 9, 1989 Georgia-Pacific Corporation timely applied for operating permits for the above-referenced sources. To date those permits have not been issued by the Department of Environmental Regulation. Under Section 120.60, Fla. Stat., the above-referenced construction permits may not legally expire until the Department acts upon Georgia-Pacific Corporation's timely filed request for operating permits for these sources. Therefore, an extension of time is requested for a time sufficient to allow the Department to act on the applications for operating permits.

Mr. Clair Fancy March 9, 1990 Page 2

If you have any questions or comments please contact either myself or Terry Cole.

Very truly yours,

Terry Cole Scott Shirley

Attorneys for Georgia-Pacific Corporation

SS:slw

cc: Mr. William H. Congdon Mr. Vernon Adams

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Georgia Pacific Corporation Palatka-Operations

Southern Pulp & Paper Division

P.O. Box 919
Palatka, Florida 32078-0919
Telephone (8) 325 2007 DISTRICT



Mr. Johnny Cole Florida Department Of Environmental Regulation 3426 Bills Road Jacksonville, Florida 32207

Dear Mr. Cole:

Please find enclosed the results from the compliance testing of Georgia-Pacific's TRS incinerator in Palatka. The tests were conducted by Roy F. Weston, Inc. with Stan Mazur observing. The results are in compliance with the standards and within the emission limits imposed by the permit.

Production data for the three 3 hour runs is tabulated below.

	Run 1	Run 2	Run 3	Avq.
Pulp Tons/hr.	67	62	62	64
Stripper gpm	180	180	180	180
Evaps. BLS/hr.	190,320	190,320	190,320	190,320

The peak pulp production rate for a one hour period during the testing period was 101.5 tons.

If you have any questions or if I can be of further assistance, please call me at 904-325-2001.

Sincerely,

Vernon L. Adams

Superintendent of Environmental Affairs

cc: W. L. Baxter

H. Hirschman -

E. J. Schmidt

W. R. Wilson

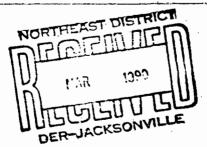
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WESTON Project No. 0414-09-01

NON-CONDENSIBLE GAS INCINERATOR
EMISSION TEST REPORT
GEORGIA-PACIFIC CORPORATION
PALATKA, FLORIDA
JANUARY 1990

Prepared For:

GEORGIA-PACIFIC CORPORATION
P.O. BOX 919
PALATKA, FLORIDA 32078-0919

Prepared By:

ROY F. WESTON, INC. 1635 Pumphrey Avenue Auburn, AL 36830-4303

Trees, The



PROJECT MANAGER CERTIFICATION

I certify the data presented in this report was collected under my direction. To the best of my ability it represents the conditions of the processes and the emissions on the date and time tested.

Michael E. Steele
(WESTON Project Manager)

(Date)

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TABLE OF CONTENTS

										Paq	_
SECTION	1.	INTRODUCTION			:						1
SECTION	2.	RESULTS AND DISCUSSION		•	:	:	•				2
SECTION	З.	TEST METHODOLOGY						.•		· •	3
		LIST OF TABLES									
2.1. 3.1.		SUMMARY OF EMISSIONS - NCG INCINERATOR SUMMARY OF PERMEATION DEVICE INFORMATION									
		LIST OF FIGURES									
		USEPA METHOD 5 STACK SAMPLER									4
		LIST OF APPENDICES									
APPENDIX	A.	PERSONNEL RESUMES AND PROJECT SUMMARY									
APPENDIX	в.	NCG INCINERATOR - TRS FIELD DATA									
APPENDIX	c.	NCG INCINERATOR - PARTICULATE FIELD AND	LA	BO	RAI	OF	RΥ	DA	TA		
APPENDIX	D.	NCG INCINERATOR - SULFUR DIOXIDE AND VI	SIE	LE	EN	115	SSI	ON	ī		
APPENDIX	E.	NCG INCINERATOR - PROCESS DATA									
APPENDIX	F.	SPECIFIC CONDITIONS FOR THE INCINERATOR	3								
APPENDIX	G.	EPA REFERENCE METHOD 16 ANALYTICAL METH	HODO	LO	ΞY						
APPENDIX	н.	CERTIFICATION AND CALIBRATIONS									
APPENDIX	Ι.	EXAMPLE CALCULATIONS									

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SECTION 1. INTRODUCTION

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SECTION 1. INTRODUCTION

Roy F. Weston, Inc. (WESTON) was retained by the Georgia Pacific Corporation (GP) to perform total reduced sulfur, sulfur dioxide and particulate emission testing on the Non-Condensible Gas (NCG) Incinerator at the Palatka, Florida mill. The purpose of the test was to demonstrate compliance of the incinerator with applicable Florida Department of Environmental Regulations (FDER) permit requirements.

Emission testing was performed on 25 January 1990 by a WESTON test team comprised of Mr. Lee Cecchi, Mr. Scott Slocum, and Mr. Richard Joye. Mr. Mike Steele served as Project Manager and Dr. Bruce Ferguson served as Project Director. Resumes of the project personnel and a brief project summary are included in Appendix A. Mr. Tony Dumas of Georgia Pacific served as WESTON's technical contact and coordinated the testing with mill operations. Mr. Stan Mazur of the Florida Department of Environmental Regulations (FDER) was present for the duration of the testing.

Section 2 of this report details the results of emission testing on a component basis. Section 3 describes the analytical procedures used to perform the testing. Supporting data for each facet of the testing are included in the appendices.

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SECTION 2. RESULTS AND DISCUSSION



SECTION 2. RESULTS AND DISCUSSION

Emission testing on the NCG incinerator was performed on 25 January 1990. The results of the TRS, particulate, and SO_2 testing are summarized in Table 2.1. In addition, visible emission testing was performed according to EPA Method 9 between the hours of 0800 and 0920 on 25 January 1990 by GP personnel. A constant zero percent opacity was determined during the test, which is below the FDER allowable limit of five percent. Supporting field, laboratory, and process data are provided in Appendices B through F. Example calculations are illustrated in Appendix I.

TABLE 2.1. SUMMARY OF EMISSIONS NCG INCINERATOR

	RUN 1	RUN 2	RUN 3	MEAN
oate :	1/25/89	1/25/89	1/25/89	
ime Began	0810	0952	1130	
ime Ended	0910	1100	1230	
Itack Gas				
Temperature, T	466	496	529	497
Velocity, ft/sec	86.6	87.7	89.1	87.8
Moisture, *	6.5	6.4	7.5	6.8
Oxygen, 1	18.7	18.8	18.5	18.7
Carbon Dioxide, %	1.0	1.0	1.0	1.0
Volumetric Flow Rate		•		
At Stack Conditions			•	
x 10° ft'/min	. 4.09	4.15	4.21	4.15
At Standard Conditions	•			
x 10' ft'/min	2.19	2.15	2.09	2.14
otal Reduced Sulfur				
Concentration, ppm	<2.1	<1.9	<2.2	<2.1
Allowable, ppm	 ,			5.0
articulate			•	
Isokinetic Sampling Rate, 4	101	104	103	103
Concentration, gr/ft'	0.023	0.047	0.017	0.029
Emission Rate, lb/hr	4.3	8.7	2.9	5.3
Allowable, lb/hr				5.50
Sulfur Dioxide	•			
Concentration, ppm	2398	2320	1898	2211
Emission Rate, lb/hr	523	497	426	482
Allowable, lb/hr				1200

TRS Sampling Time

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Run 1: 0818-1118 Run 2: 1206-1506 Run 3: 1600-1900

Data biased to minimum detection of each TRS compound minimum detection of each TRS compound minimum detection limit for H.S. MeSH, DMS, or DMDS were 0.1, 0.1, 0.1, and 0.1 ppm, respectively.

^{*}Corrected to 100 percent recovery and 10 percent oxygen



SECTION 3. TEST METHODOLOGY



SECTION 3. ANALYTICAL METHODOLOGY

3.1. PROCEDURES

Testing was performed using the EPA reference methods identified below:

Parameter	EPA Reference Method
	•
Volumetric Flow	1,2
Gas Composition (CO, and O2)	(3
Moisture	4
Particulate	5
Sulfur Dioxide	6
Visible Emissions	· 9
Total Reduced Sulfur	16

The most current revision of each method (as described in the Federal Register) was used. The following paragraphs summarize the protocol:

Stack Gas Volumetric Flow

The sampling points were selected in accordance with EPA Reference Method 1 so that a representative sample of stack gas was taken. The traverse points were located in the centers of equal area zones, the number of which was determined by the stack dimensions and the number of duct diameters upstream and downstream from the sampling points to the nearest disturbance.

The velocity of the gas stream was determined according to EPA Reference Method 2 by reading the instantaneous velocity head with an inclined manometer at each sampling point by means of a calibrated S-type pitot tube. The stack pressure was measured with the static side of an S-type pitot tube. A calibrated pyrometer was used to measure stack temperature at each sampling point. The stack was tested for cyclonic flow, according to EPA Reference Method 2.

Stack .Gas Molecular Weight

Carbon dioxide and oxygen concentrations were determined using EPA Reference Method 3. An integrated sample was taken for each run and analyzed with a Fisher brand Orsat having a 50 percent capacity for carbon dioxide and oxygen content. The molecular weight of the gas was calculated using the moisture, oxygen, and carbon dioxide contents.

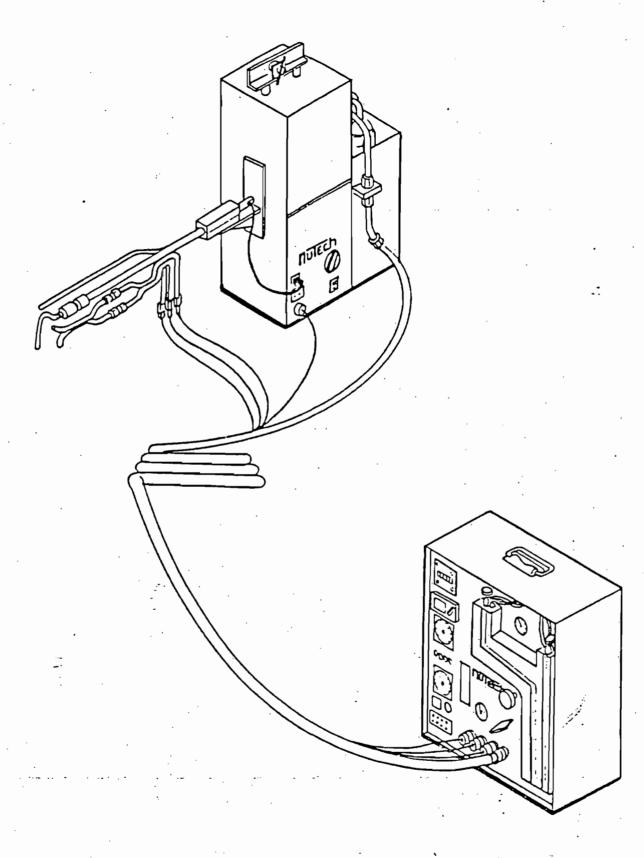
Moisture Content

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The preliminary moisture content was determined by estimation. The final moisture content used for calculating the gas stream flow rate was determined by measuring the amount of condensed moisture in the impingers of the particulate sampling train, as described in EPA Reference Method 4.

Particulate Concentration

The particulate emission testing was conducted using EPA Reference Method 5. The Method 5 sampling trains, including dry gas meters used during testing, were manufactured by Nutech or Anderson. Figures 3.1 and 3.2 provide schematic diagrams of the particulate sampling trains. The sampling points were selected in accordance with EPA Reference Method 1 described above. An



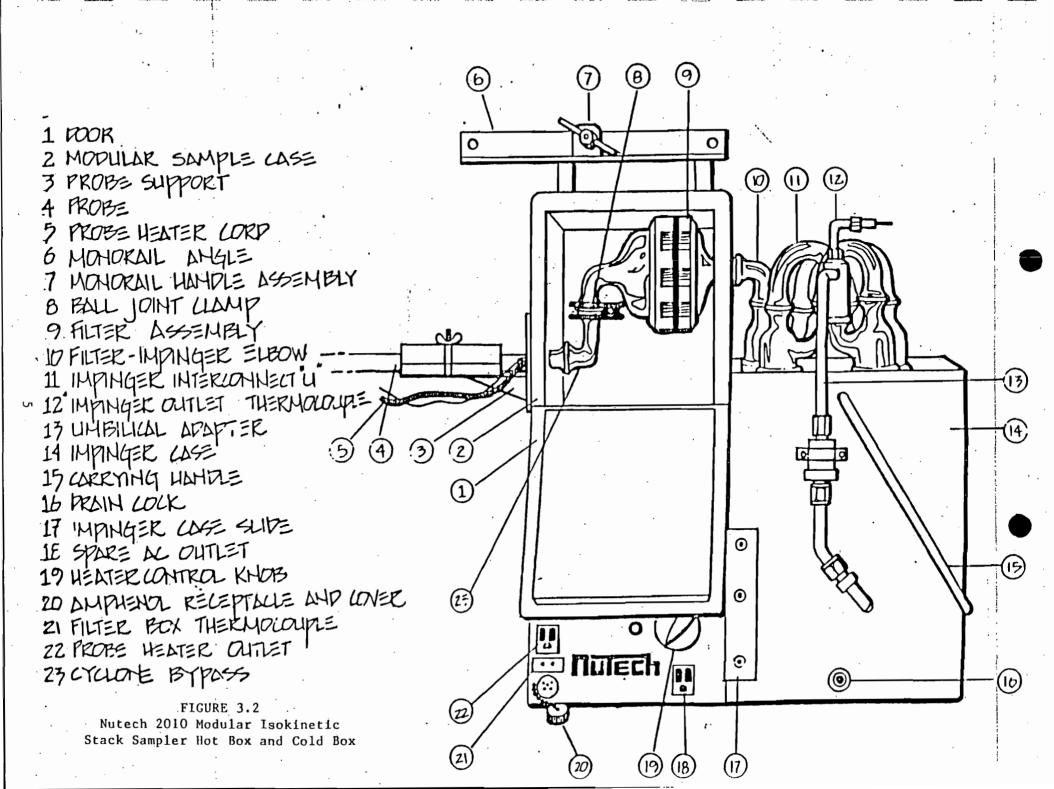
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FIGURE 3.1
USEPA Method 5 Stack Sampler
Manufacturer: Nutech Corporation
Type: Nutech 2010 Modular Isokinetic Stack Sampler





S-type pitot tube was connected adjacent to the sample nozzle so that an instantaneous head was measured at each sampling point during each test run. The stack temperature was also measured at each point.

Three runs (each of at least an hours duration) were performed. The gas stream was sampled isokinetically at each sampling point by adjusting the sample flow rate to correspond to the measured velocity at each point.

The probe and nozzle were washed with water after each run to remove adhering particulate matter. The filter was removed from the holder and stored in a petri dish until analyzed. The filter holder was then rinsed with water. This rinse was added to the probe rinse. The container was sealed and labeled and liquid levels marked for transport to the laboratory.

The mass of particulate matter collected was analyzed in the laboratory by evaporating the water in a tared beaker, adding the filter, and then weighing the residue. The filter tare weight and solvent blank corrections were subtracted from the final weight to give the weight of particulate matter collected. The total weight was used to calculate the particulate concentration. All weight measurements were made on the same Mettler balance (accurate to 0.1 mg).

The mean temperatures of the stack gas and the dry gas meter were used in calculating the final data. The mean isokinetic sampling rate and the stack gas velocity (volumetric flow) were calculated from the mean of the square roots of the velocity pressure measured at each traverse point during the particulate sampling. All calculations were performed using the equations given in the reference method.

Sulfur Dioxide

Sulfur dioxide sampling and analysis were performed using EPA Method 6 procedures. A Teflon-lined stainless steel probe of sufficient length to monitor the gas stream without wall effects was used to extract a gas sample from the emission source. Five midget bubblers were arranged in series. Fifteen milliliters of 80 percent isopropanol was placed into the first bubbler. The second bubbler was left dry and the three remaining bubblers each contained 15 mL of three percent hydrogen peroxide. Prior to sample collection, the weight of the midget bubblers and drying tube was recorded. The gas sample was then pulled through a silica gel drying tube, needle valve, pump, and dry gas meter. Sample flow rate was maintained at approximately 1.0 liter per minute. At the end of each run, a final weight was obtained for the midget bubblers and drying tube for percent moisture calculations. The bubblers containing the hydrogen peroxide were recovered volumetrically and titrated against a solution of barium chloride, using thorin as an indicator.

Visible Emission

Visible emission observations were performed using procedures described in EPA Method 9 given by GP personnel.



Total Reduced Sulfur

The total reduced sulfur (TRS) testing was performed using the techniques and procedures described in EPA Method 16. Appendix G provides a detailed description of the methodology, equipment, and instrumentation normally used by WESTON to conduct TRS testing. Appendix G also includes a discussion of calculation procedures and a demonstration of interference-free analysis of TRS in the presence of carbon dioxide. The following paragraphs provide specific details of the methodology used during this project.

A Teflon-lined, stainless steel probe of sufficient length to monitor the gas stream without wall effects was used to extract a gas sample from the emission source. The probe tip was directed away from stack gas flow to minimize particulate and moisture entrainment. The probe was plumbed directly to the recovery gas line and sample conditioning system.

The sample conditioning system consisted of a pair of Teflon impingers containing 2M citrate buffer, pH 5.4 to 5.8, arranged in series and maintained in an ice bath. Even though the impinger set traps entrained particulate matter, very fine particulate matter was removed by a Balston^R AQ Microfibre filter installed between the impinger outlet and sample line inlet.

An unheated nylon line was plumbed from the impinger outlet to the sample pump inlet. Sample line length and connections were minimized to reduce surface adsorption of TRS and the possibility of leaks. Sample flow rates were selected to yield one to two sample residence time per injection cycle.

The pump outlet was plumbed directly to a constant pressure bottle. At this point, the bulk of the sample was vented to the atmosphere, and the balance was used to charge the GC sample loop.

Separation of hydrogen sulfide (H,S), methyl mercaptan (MeSH), dimethyl sulfide (DMS), and dimethyl disulfide (DMDS) was accomplished by gas chromatography on a Carbosorb BHT 100 column. The Carbosorb BHT 100 column was backflushed to achieve separation of all four compounds within five minutes. The gas chromatograph was operated on a six-minute cycle to give ten injections per hour.

Detection of reduced sulfur compounds was accomplished with a flame photometric detector. The flame photometric detector response was calibrated before and after each three one-hour runs. The calibration FPD responses were recorded by an integrator and transferred to source data sheets by the field sampling personnel. Calibration curves were prepared using the log-log linear least square best fit of the data.

3.2. QUALITY CONTROL

Throughout the entire project, a high level of quality control was maintained to ensure the accuracy of the data. The test personnel are experienced in the use of the instrumentation, the procedures, and the quality control requirements. Resumes of the personnel involved in the project are included in Appendix A. The following paragraphs briefly summarize the quality control associated with the project:



General

All data were recorded at the time of collection on preprinted data sheets. All samples were prepared for shipment, and chain-of-custody was maintained from the sampling technician to the analyst. Calculations were performed (where possible) with preprogrammed calculators. Data transfers were minimized, and all calculations were verified by a second person. The report was reviewed and approved by the Project Technical Director, prior to transmittal. In general, all accepted quality control standards and practices recommended by the reference methods were followed.

Stack Gas Volumetric Flow

The stack was measured with a certified tape to an accuracy of 0.1 inch. The velocity and sampling traverse points were marked on the probe with heat resistant glass fiber tape.

The S-type pitot tubes used to measure the velocity pressures were geometrically calibrated prior to the test and verified at its completion. The pyrometer used to measure the stack gas temperature and all thermocouples for intermediate measurements were calibrated with respect to standard thermometers. At the completion of the test, all equipment were visually inspected, and damage was not indicated.

Stack Gas Molecular Weight

Quality control on oxygen analyses by EPA Reference Method 3 involved the analysis of ambient air before and after every sixth sample. If the measured concentration was less that 20.0 percent, the Orsat chemicals were changed before proceeding. If the measured concentration was greater than 20.0 percent but less than 20.6 percent, the sample data were corrected for the low measurement. If the measured concentration was 20.6 percent or greater, no correction was made.

WESTON also participated satisfactorily in the most recent EPA Audit Sample for Reference Method 3. Those data are on file at WESTON.

Moisture Content

Quality control of the moisture analysis involved the accurate measurement of the gas flow and the accurate determination of the moisture condensed in the sampling train. A graduated cylinder was used to measure the volume of water in each impinger before and after sampling. The silica gel was weighed, before and after its use, with a triple beam balance to the nearest 0.1 gram. The difference in measurement was considered to be the moisture collected.

Particulate Concentration

The dry gas meter used to measure the sample volume collected was calibrated before and after sampling. The calibration obtained was within the required specifications each time. A copy of the calibration data sheet is included in Appendix H. All thermocouples and other items used to calculate the mass emission rate were calibrated on a routine schedule described below.

WESTON participated satisfactorily in the most recent dry gas meter audit supplied by EPA. Those data are on file at WESTON.



WESTON uses Class S weights to verify the accuracy of the balance for each use. The weight is weighed when the filters are tared and also at the final weighing. Any significant difference in weight indicates a problem with the balance, and the balance is repaired before proceeding.

A water blank was analyzed at the same time as the filters. The mass collected on the filters was corrected by the blank measurement. A blank filter was also taken to the field and weighed upon return. The weight difference was acceptable.

The rate of sample collection was determined to be within 10 percent of the isokinetic rate. Those data indicate the validity of sample collection.

Sulfur Dioxide

The standard quality control associated with the dry gas meter calibration applied to the sulfur dioxide sampling. A copy of the dry gas meter calibration data sheet is included in Appendix H. To document the validity of the SO₂ analyses, EPA audit samples were used to document the results. Those audit samples were analyzed as unknowns at the time of sample analysis.

WESTON participated in the most recent \mathtt{EPA} audit for $\mathtt{SO_2}$. Those data are on file at WESTON.

Total Reduced Sulfur

Permeation devices certified by the vendor to an accuracy of ± 5 percent were used to calibrate the FPD response. The temperature of the devices was maintained at a constant value (as certified by vendor) to ensure a consistent, accurate permeation rate. The temperature of the permeation chamber was verified at the time of sampling with an NBS traceable mercury-in-glass thermometer. The temperature of the permeation chamber was $50.0\pm0.1^{\circ}\text{C}$ throughout the sampling.

VICI-Metronics, Santa Clara, California supplied the permeation devices used for the testing. The devices were gravimetrically analyzed to determine the emission rate ± 5 percent before shipment. The information regarding the devices used is summarized in table 3.1. Actual emission rate certificates are on file at WESTON. Copies of these emission rate certificates are provided in Appendix H.

Various concentrations of the permeants were generated by varying the flow of the diluent gas stream over the devices. A calibration curve was constructed of at least three concentrations of each permeant; three successive injections at each concentration yielded peak areas that differed from the mean peak area value by less than five percent.

An audit cylinder of $\rm H_2S$ in nitrogen was to document the accuracy of the permeation devices. The cylinder is maintained for audit purposes only. The concentration of 25 ppm cylinder was within ± 5 percent of the mean measured concentrations.



TABLE 3.1. SUMMARY OF PERMEATION DEVICE INFORMATION

Compound	Hydrogen sulfide	Methyl mercaptan	Dimethyl sulfide	Dimethyl disulfide		
Device Type	Wafer device	SE tube	HE tube	HE tube		
Length/Geometry	30 T3 wafer	4.0 cm	3.0 cm	20.0 cm		
Part Number	147-533-0110	117-040-6000	107-030-6200	107-200-6301		
Method of Certification	Gravimetric	Gravimetric	Gravimetric	Gravimetric		
Date of Certification	9-13-89	9-13-89	9-13-89	9-13-89		
Certification Number	89-38090	28-40474	82-40477	82-40478		
Certification Temperature, (°C)	50	50	50	50		
Emission Rate, ng/min	1240	733	1231	1022		

Trace gas recovery was evaluated after every three hours of sampling by injecting six to ten ppm H₂S at the probe tip and recovering the sample through the sample conditioning and sample transport subsystems. The same gas stream was then introduced directly to the GC sample loop. The ratio concentrations corresponds to the system correction factor. This factor was then used to adjust all measured reduced sulfur compound concentration.

All GC data were recorded by the electronic integrator. The GC operator transferred the data (time and peak areas) to preprinted data sheets which become a permanent record of the results of the test. The recorder output and the original field data sheets remain on file at WESTON for a period of three years after the completion of the project.

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APPENDIX A PERSONNEL RESUMES AND PROJECT SUMMARY



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

April 5, 1990

Mr. Ray Andreu, Chairman Florida Pulp and Paper Association Technical and Environmental Committee Route 3, Box 260 Perry, Florida 32347

Dear Mr. Andreu:

This is to confirm the agreements made by the Florida Pulp and Paper Association and the Bureau of Air Regulation at our meeting on March 20, 1990, regarding incineration of TRS gases in an incinerator(s).

- 1. Any company using an incinerator will initially test to show compliance with the 5 ppmvd limit, corrected to 10% oxygen, using DER approved test methods.
- 2. These tests will not be required annually. The Department reserves the right to require testing for operation permit renewal (every 5 years).
- 3. Compliance during the five year period will be demonstrated by continuous monitoring and recording of the temperature showing that a minimum temperature of 1200°F is being achieved.
- 4. By the selected design and the P.E. of record, the construction permit applications shall contain calculations to insure that the specified retention time (i.e., 0.5 seconds) will be achieved by the source in order to provide reasonable assurance to the Department.

Sincerely,

C. H. Fancy, P.E.

Chief

Bureau of Air Regulation

CHF/kt

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Henry Hirschman, General Manager
Georgia-Pacific Corporation
P. O. Box 919
Palatka, Florida 32078-0919

Re: Construction Permit Nos. AC 54-142282, AC 54-142283,

AC 54-142288, AC 54-142291 for the Batch Digester System,
the Multiple Effect Evaporation System, the Condensate

Stripper System, and the TRS Incinerator, respectively.

Dear Mr. Hirschman:

The Department has received and reviewed Mr. Cole's March 9, 1990, request for an extension of the expiration dates for the above referenced permits. The Department grants a 90-day extension of time with the understanding that none of the compliance dates for the affected sources will be extended by this action. The applicable compliance dates are set forth in part IX of F.A.C. Chapter 17-2 as well as the above referenced permits.

The following shall be changed and added to the permits:

Expiration Date Change:

FROM: March 9, 1990

TO: June 7, 1990

Attachments to be Added:

15. T. Cole's letter to C. Fancy dated March 9, 1990, and received March 9, 1990.

This letter shall be attached to the construction permits, AC 54-142282, AC 54-142283, AC 54-142288, and AC 54-142291, and shall become a part of these permits.

Sincerely,

STEVE SMALLWOOD, P.E.

Director

Division of Air Resources

Management

SS/MH/plm

- c: A. Kutyna, NE Dist.
 - D. Buff, P.E.
 - V. Adams
 - T. Cole